



SERGS  2025

# ABSTRACTS

SUPPLEMENT

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## ROBOTIC SURGERY IN SEVERELY OBESE FRAIL PATIENTS FOR THE TREATMENT OF ATYPICAL ENDOMETRIAL HYPERPLASIA AND ENDOMETRIAL CANCER: A PROPENSITY-MATCH ANALYSIS AT ESGO-ACCREDITED CENTRE

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### Background

Robotic-assisted laparoscopy (RS) has been widely adopted for the management of endometrial cancer (EC) due to favourable perioperative outcomes, especially in the context of obesity, which is an established risk factor for EC. This study retrospectively evaluated the perioperative outcomes of RS versus conventional laparoscopy (LS) in treating EC and atypical endometrial hyperplasia (AH).

### Methods

Between November 2021 and October 2023, 138 patients with AH or EC underwent robotic or laparoscopic surgery at the Clinic of Obstetric and Gynaecological - Azienda Sanitaria Universitaria Friuli Centrale, Udine, Italy. All patients had total hysterectomy with bilateral salpingo-oophorectomy, with or without lymphadenectomy or sentinel lymph node biopsy. The study included 62 patients treated with LS and 62 with RS.

### Results

The median BMI was higher in the RS group (35.5 vs. 24 kg/m<sup>2</sup>,  $p=0.001$ ). LS procedures had a shorter median duration (130 minutes) compared to RS (195 minutes,  $p<0.001$ ). However, there was no significant difference in operative time between the laparoscopic group and the robotic console time (median 130 vs. 130 minutes,  $p=0.131$ ). No significant differences were found in blood loss, conversion to laparotomy, intraoperative complications, hospital stay, or early postoperative complications between the two groups.

### Conclusions

Our data confirm the feasibility of robotic surgery in obese patients, allowing surgical results comparable to those of laparoscopy in normal-weight patients.



## EFFECT OF USING MCCARTNEY TUBE TO REDUCE TUMOUR SPILLAGE DURING MINIMALLY INVASIVE RADICAL HYSTERECTOMY FOR CERVICAL CANCER

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### Background/Purpose

Radical hysterectomy is a cornerstone treatment for early-stage cervical cancer. Since the publication of the LACC trial in 2018, there has been significant reflection and reassessment regarding Minimally Invasive Radical Hysterectomy (MIRH). Tumour containment has gained attention as an essential factor to minimize intraoperative tumor spillage. This study investigates whether the use of the McCartney tube during MIRH can effectively reduce tumor spillage.

### Methods

This retrospective study reviewed medical records of FIGO 2018 stage IA1–IIA2 cervical cancer patients who underwent radical hysterectomy at a single institution from 2014 to 2022. A total of 216 patients were included in the final analysis: 35 patients underwent Abdominal Radical Hysterectomy (ARH), and 181 patients underwent MIRH.

### Results

Baseline characteristics between the ARH and MIRH groups showed no significant differences except for age ( $p=0.004$ ) and tumour size

( $p=0.003$ ). There was no difference in stage distribution between the groups. The 2-year Disease-Free Survival (DFS) rates were comparable between the ARH and MIRH groups (94.3% vs. 91.2%,  $p=0.578$ ), as were the 5-year Overall Survival (OS) rates (97.1% vs. 93.9%,  $p=0.532$ ). Univariate analysis for recurrence identified tumor size  $>2$  cm as a significant factor (HR=0.29, CI: 0.094–0.903,  $p=0.033$ ).

The MIRH group was further subdivided based on McCartney tube usage into MIRH-Y ( $n=77$ ) and MIRH-N ( $n=104$ ). Baseline characteristics were comparable between these subgroups. Although the 2-year DFS rates showed no statistical significance, a trend favoring the MIRH-Y group was observed (96.1% vs. 87.5%,  $p=0.060$ ). A similar trend was noted for the 5-year OS rates (98.7% vs. 90.4%,  $p=0.051$ ). In patients with tumours  $\leq 2$  cm, DFS was significantly improved in the MIRH-Y subgroup ( $p=0.037$ ), while OS showed a trend favoring the MIRH-Y group without showing statistical significance ( $p=0.080$ ). For tumours  $>2$  cm, no significant differences were found in DFS or OS ( $p=0.469$  and  $p=0.301$ , respectively).

## Conclusions

The use of the McCartney tube during MIRH in cervical cancer may help reduce recurrence due to tumor spillage, with a particularly pronounced benefit in patients with tumours  $\leq 2$  cm. Efforts to minimize tumour spillage should be routinely implemented when performing MIRH.



## ENDO-COST: COST BENEFIT OF ROBOTIC SURGERY IN ENDOMETRIAL CANCER, HOW TO OVERCOME THE ECONOMIC BARRIER, BASED ON SCIENTIFIC EVIDENCE

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## Introduction/Background

The study evaluates the cost-effectiveness of robotic surgery versus laparoscopic surgery for the treatment of endometrial cancer. This type of cancer is common in women, especially in developed countries, highlighting the need to optimize treatments and efficiently manage resources. Minimally invasive surgery using laparoscopic and robotic techniques has advanced, but robotic surgery involves higher initial costs. Assessing its cost-effectiveness is crucial to determining the best option in healthcare systems with limited resources.

## Methods

Medical records of patients undergoing surgery for endometrial cancer between 2021 and 2024 at the Hospital Universitario La Fe were reviewed. Clinical and economic variables were compared

between laparoscopic and robotic surgery, assessing direct and indirect costs, surgical time, complications, and hospital stay duration. Statistical analyses were conducted using R Studio, applying tests (uni and multivariate) to detect significant differences ( $p<0.05$ ). A theoretical cost-benefit model in which the cost of robotic surgery is equal to that of laparoscopic surgery was developed.

## Results

Robotic surgery showed a significant reduction in hospital stay duration (11.2 days compared to 17 days for laparoscopic surgery,  $p<0.05$ ), but incurred higher associated costs. The costs for consumable materials were higher in robotic surgery (€1985 versus €1197,  $p<0.000$ ). Regarding costs based on amortization value, robotic surgery was also more expensive, with a cost of €6182 compared to €3544 for laparoscopic surgery ( $p<0.000$ ). However, no significant differences were found in postoperative complication rates or surgery duration between the two techniques. Applying an economy of scale model (3 robotic surgeries per day, without increasing hospital stay  $>1$  day: 7920 procedures in 10 years), statistical differences continue to exist (4596€ vs 5431€;  $p<0.000$ ). With a reduction of 15% in the acquisition cost of robotic equipment and 30% in consumables per procedure, the cost of robotic surgery is lower than laparoscopic surgery by performing 2 robotic procedures per day.

## Conclusions

Although robotic surgery reduces hospital stay duration, it comes with significantly higher costs compared to laparoscopic surgery, even when considering the amortization value. Since no substantial clinical benefits were identified to offset the additional expenses, laparoscopic surgery emerges as the more cost-effective option for treating endometrial cancer, particularly in contexts with budgetary constraints. However, by applying a small discount on the cost of robotic procurement and consumables, the cost of robotic surgery is brought in line with that of laparoscopic surgery.



## A NOVEL TECHNIQUE IN ENDOMETRIOSIS EXCISION USING THREE ARMS IN ROBOTIC SURGERY

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## Objective

In developing countries, robotic surgery is feasible; however, resources are limited. In this video we want to demonstrate the use of three arms in endometriosis excision.

## Methods

We perform ovarian suspension to facilitate access to the pelvic

sidewalls and posterior compartment to facilitate endometriosis excision with a three arm technique.

## Results

Ovaropexy enabled peritonectomy and excision of endometriosis implants.

## Conclusion

On our surgical practice, we always realize bilateral ovaropexy to enable the use of the three arm technique in endometriosis excision.



## IMPORTANCE OF CORRELATION WITH PET-CT IN SENTINEL NODE SAMPLING IN ENDOMETRIAL CANCERS, A CASE REPORT

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Endometrium cancer is an increasing frequency all over the world, an increasingly in young age groups.

## Aim

Since these young patients feel more pronounced during hospitalisation and surgery before and after surgery. Our clinic operations are working on performing in favor of the patient by pushing the limits of minimal invasive rules. From here, it is planned to remove the Sentinel lymph node and to provide maximal benefits.

## Conclusions

The fact that the same lymph nodes were stained with ICG during the operation, which was performed with the guidance of the pre-op PET-CT, shed light on the importance of imaging methods (especially PET-CT) in the application of minimal invasiveness and that statistically significant findings can be achieved in scientific studies that will include a large number of cases.



## ROBOTIC SINGLE-PORT SURGERY USING THE DA VINCI SP® SURGICAL SYSTEM FOR BENIGN GYNAECOLOGICAL DISEASES: A SINGLE CENTRE EXPERIENCE WITH 994 CASES

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## Aim

We aimed to present our initial experience with robotic single-port surgery performed using the da Vinci® SP surgical system for benign gynaecological diseases.

## Methods

This retrospective cohort study was performed at an academic

tertiary care hospital From January 2020 to January 2023. A total of 994 women with benign gynaecological diseases underwent robotic single-port surgery performed using the da Vinci® SP surgical system. All of the patients' charts were reviewed, and the clinical characteristics and surgical variables were analysed.

## Results

Among the total of 994 cases, there were 347 cases of RSS myomectomy (RSSM), 298 cases of RSS hysterectomy (RSSH), 339 of RSS adnexectomy, and 10 were classified as other RSS surgeries. The patient's mean age was  $42.64 \pm 10.42$  years. There was  $1.95 \pm 1.61$  min of mean docking time and  $60.57 \pm 41.64$  min of mean console time. When comparing the surgical variables for each year, docking time, console time, estimated blood loss was declined significantly and gradually after 1 year. There were a few laparoconversion and major complications.

## Conclusions

Robotic single-port laparoscopy using the da Vinci® SP surgical system might be a suitable alternative surgical technique for various benign gynaecological diseases. However, further studies are required to clarify the feasibility and safety of the application of this novel robot surgical system.



## EARLY EXPERIENCE OF GYNECOLOGIC ROBOTIC SURGERY IN A TERTIARY GOVERNMENT HOSPITAL

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## Background/Aim

Robotic surgery is a form of minimally invasive surgery where in the surgeon controls the camera and instruments in a console, remote from the operating room table. Currently, the system in place is the da Vinci Surgical System which was approved by the United States Food and Drug Administration in 2000 for laparoscopic surgery. Since its approval in 2005 for Gynaecological procedures, the da Vinci Surgical System has been used for hysterectomies, lymph node dissections, sacrocolpexies, myomectomies, and cerclage. This study presents the initial seven cases of benign gynaecological diseases operated on utilizing the da Vinci Surgical System in our institution - six hysterectomies and one myomectomy.

## Methods

Seven gynaecological surgeries that utilised the da Vinci Surgical System in 2019 until the first quarter of the year 2020 were done. Medical records of the seven patients were reviewed.

## Results

The average docking time was 38 minutes (range: 25 - 65 minutes) and the average console time was 227 minutes (range: 175 - 345 minutes). The average blood loss was 576 cc (range: 80 - 1200 cc). No cases converted to an abdominal laparotomy and no morbidities

were reported. While two cases underwent blood transfusion intraoperatively, all cases were stable post-operatively and were for discharge after two days. On follow-up, all patients were stable with an unremarkable clinical course.

## Conclusions

Our initial experience demonstrates that robotic surgery appears as a viable alternative to traditional approaches. As more cases are to be done in the future, fine-tuning of the logistical set-up and surgical skills are expected, as well as venturing into other gynaecological diseases such as malignancies. Further research must be conducted on various aspects of robotic surgery, such as but not limited to outcome comparison with traditional and other laparoscopic approaches, long term outcomes, patient safety, and patient experience and preference, among others.



## ROBOT-ASSISTED SURGERY IN BENIGN GYNAECOLOGY: SINGLE CENTER EXPERIENCE WITH 106 PATIENTS

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## Background/Aim

Robot-assisted surgery is increasingly used in gynaecology. It offers technological and ergonomic benefits that overcome the limitations of traditional laparoscopy. This retrospective study evaluates perioperative outcomes, learning curve, and feasibility of robot-assisted surgery for benign gynaecological indications using the Da Vinci Xi Surgical System (Intuitive Surgical) at the Department of Gynaecology and Obstetrics at Frauenzentrum Bern, Lindenhofspital AG.

## Methods

Between August 2021 and November 2024, we performed robot-assisted surgery for benign gynaecological diseases in 106 consecutive patients and assessed clinical and perioperative outcomes. We assessed the learning curve by splitting the cohort in two equally large groups: first and subsequent 53 cases. We analysed the influence of potential predictors on operation time using multivariate linear regression as well as the differences between the two patient groups using multivariate logistic regression. The significance level was set at  $p < 0.05$ . The potential predictors analysed were: age, body mass index, uterine weight, parity, previous surgery, console time, operation time, conversion rate, blood transfusions, number of incisions, and timepoint.

## Results

All cases were successfully completed with robotic assistance with no need for a conversion to laparotomy. No blood transfusions

were required. Linear regression analysis found uterine weight and console time (both  $p < 0.001$ ) were associated with operation time. Operation time increased by almost 7 (Confidence Intervals [CI] 4.5-8.6) minutes per 100g of uterine weight and by almost 9 (CI 7.2-10.7) minutes per 10 additional minutes of console time. Logistic regression analysis showed no statistical differences in patient characteristics between the two groups, except in a higher uterine weight (OR 1.007; CI 1.001-1.012;  $p = 0.009$ ), shorter console time (OR 0.95; CI 0.90-0.99;  $p = 0.027$ ), and a lower number of incisions (OR 0.17; CI 0.38-0.72;  $p = 0.016$ ) in the second group.

## Conclusions

The results confirm that robot-assisted surgery is a safe and feasible alternative to conventional laparoscopy. We confirmed the presence of a learning curve by the need of lower number of incisions and decreased console time despite the presence of heavier uteri in the second group. Further studies are needed to evaluate patient outcomes and cost-effectiveness of robot-assisted surgery in comparison to conventional laparoscopy.



## EXAMINATION OF BRAIN FUNCTION AND PSEUDO-HAPTICS IN DA VINCI SURGERY

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## Objective

Da Vinci surgery is a virtual operation performed with a 3D field of view through a monitor. At our facility, we started Da Vinci surgery in 2023 and have qualified 6 surgeons in a short period of time. Of these, there was only one surgeon who was not familiar with this procedure, and it turned out that his cause was a difference in vision. The Da Vinci surgery was a pseudo-haptics surgery in which 80% of the data obtained from vision was replaced by the brain. I will report on the individual setting and teaching method of Da Vinci using this principle.

## Methods

After obtaining the surgeon qualification, the running curves of each were checked and analysed, including the number of laparoscopic experience, the period as a doctor, and the period after obtaining a specialist.

## Results

Compared to the number of laparoscopic experiences, the start-up was faster, especially for young doctors, who improved quickly even if they had little laparoscopic experience. There was only one person who was not familiar with robotic surgery, so we examined the cause. He was a veteran of laparoscopy, had a large number of surgeons, and it turned out that he had been able to recognise stereoscopic objects with monocular stereoscopic vision on a daily basis due to the trauma of his left eye that he received as a school

child. Since Da Vinci has compound stereoscopic vision, it was found that the cause was his long-term memory and dissociation of data from vision, which he improved by using his own console settings (3D→2D, glasses correction).

## Conclusions

After experiencing 10 cases, I began to feel a sense of touch in my fingertips due to adhesion detachment. Da Vinci performs surgery through a monitor and a robotic arm, using so-called pseudo-haptics. About 80% of the information in the pseudo-tactile sense comes from sight, and recognition is made by linking data in the hippocampus and long-term memory in the cerebral cortex. Pseudo-tactile sensations, vision, are created in conjunction with long-term memory in the cerebral cortex. Long-term memory is important for sensory recognition. We examined how to improve surgical techniques early by optimizing visual input (appropriate console settings) and using neuroscience-based methods to replace short-term memory (experience) with long-term memory.



## IMPORTANCE OF CORRELATION WITH PET-CT IN SENTINEL LYMPH NODE SAMPLING IN ENDOMETRIAL CANCER

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### Background

Endometrial cancer is accelerated in developed countries today. Due to its increasing frequency, endometrial cancer early diagnosis and treatment methods, cancer centres and authors all over the World become a topic that is working on. MRI and PET-CT are used from imaging techniques. Minimal invasive methods are preferred in treatment. In this case, a young woman is considered to be an early stage endometrium cancer at the border, while the PET-CT reported low SUVMAX (<3.6) lymph nodes, taking into account the lymph nodes of ICG, with the painting of these lymph nodes, to be loyal to the minimal invasive approach.

### Methods

PET-CT results showed slightly increased FDG uptake is observed in lymph nodes approximately 10 mm in diameter in the right common iliac area adjacent to the psoas muscle (SUVmax: 3.56). Hypermetabolic lesions measuring, 42x32 mm in the endometrial cavity of the uterus (SUVmax: 34.54) and approximately 10 mm in diameter in the posterior wall of the uterus (SUVmax: 8.17) are observed. A lymph node showing minimal FDG uptake of approximately 10 mm in diameter is observed in the left internal iliac area (SUVmax: 1.90). Endometrial biopsy result was Grade 2 endometrioid adenocarcinoma. With these findings, the patient

who underwent robotic total hysterectomy, bilateral salpingo-oophorectomy, bilateral sentinel lymphadenectomy, right paraaortic lymphadenectomy and peritoneal lavage fluid aspiration, were performed. ICG was injected from the cervix, at the 3 and 9 o'clock positions, 1 cc deep and superficial before the surgery.

## Results

Sentinel lymph nodes PET-CT indicated right common iliac and left internal iliac lymph nodes were stained with ICG, there was no other stained lymph node. We removed these lymph nodes and also the paraaortic lymph node observed as 1-2 cm in size. Histopathology results were Grade 2 squamous differentiation of endometrioid carcinoma. Tumour size was 2 cm. Myometrial invasion was less than 50%. Myometrial thickness was 2 cm and invasion was 0.9 cm. Lymphovascular invasion and cervical stromal or glandular invasion were not seen. Sentinel lymph nodes were examined with ultrastaging. No metastasis was observed in 3 lymph nodes.

## Conclusions

The fact that the same lymph nodes were stained with ICG during the operation, which was performed with the guidance of the pre-op imaging, shed light on the importance of PET-CT in the application of minimal invasive technique and that significant findings can be achieved in scientific studies that will include a large number of cases.



## ROBOTIC ASSISTED ICG-GUIDED PELVIC SCHWANNOMA RESECTION WITH HYPOGASTRIC NERVE PRESERVATION

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### Background

Pelvic schwannomas are rare peripheral nerve sheath tumours that may cause significant pelvic pain and functional disturbances via local compression. Limited responsiveness to chemotherapy and radiation underscores the importance of complete surgical excision. We present a robotic-assisted approach employing indocyanine green (ICG) fluorescence and hypogastric nerve preservation to optimise surgical precision and maintain autonomic function.

### Methods

A 47-year-old female presented with severe pelvic pain and mild urinary symptoms. Magnetic resonance imaging (MRI) revealed a 5 cm schwannoma between the right hypogastric vein and nerve. A robotic-assisted transperitoneal approach was chosen for enhanced visualisation and dexterity. Six milligrams of intravenous ICG were administered to confirm the tumour's hypervascularity and guide dissection. Hemostatic control was prioritised, with special care taken to preserve the hypogastric nerve.

## Results

ICG fluorescence delineated the tumour's vascular supply, facilitating precise dissection and reducing hemorrhage risk. The robotic platform's magnification and wristed instruments enabled meticulous navigation around critical neurovascular structures, preserving hypogastric nerve function. The tumour was enclosed in an endoscopic retrieval bag and extracted via colpotomy, minimising abdominal trauma. The patient had an uneventful recovery, with no neurological deficits, and was discharged on postoperative day one. Histopathology confirmed a benign schwannoma with clear surgical margins; short-term imaging indicated no recurrence.

## Conclusions

Robotic, ICG-guided resection of pelvic schwannomas with dedicated hypogastric nerve preservation enhances surgical accuracy, lowers the risk of bleeding, and maintains autonomic function. This minimally invasive strategy may serve as a robust template for managing these uncommon tumors. Further studies and extended follow-up are warranted to establish standardised protocols and confirm long-term outcomes.



## WHY A BLIND-ENDED URETER IS STILL A URETER NEEDED TO BE TAKEN CARE OF? CASE REPORT OF A SURGICAL COMPLICATION

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### Background

Urinary tract endometrial (UTE) lesion can be found in 1 to 5.5% of patient suffering from endometriosis, of which only 9 to 23% involve the ureter. The risk of ureteric injury in gynaecological laparoscopic procedures varies from 0 to 6% making it a feared complication. More specifically, a systematic review of the literature showed that postoperative ureteral fistulas only happened in 2,8% of ureteral endometriosis (UE) surgeries. Also, radical nephrectomy (RN) is a common procedure, 5.000 RN were performed in France in 2015 leading to as many blind-ended ureters, it is still rarely indicated in UTE as it occurred in just 0,45% of UTE. Finally, a multicentered prospective study showed that 41,4% of UTE are associated with ureterohydronephrosis (UHN) and that it increases the risk of post-operative complications (OR 3.22). The same study reports a 2,3% rate of ureteral fistula consecutive to ureterolysis in UTE surgery. There is no mention in the scientific literature of post-operative complication such as urinoma on blind-ended ureters.

### Methods

Case presentation and proposed management of a blind-ended ureter

## Results

This video is a presentation of a 35-year-old patient suffering from

endometriosis with ureteral, vaginal and rectal endometriosis. The stenosis of her left ureter by the endometrial lesion led to an UHN and an atrophic kidney. She first underwent a RN in another center without an associated segmental ureterectomy(SU). She then underwent robotic laparoscopy in our center to remove her other endometrial lesions. During the procedure, we performed a thorough and extensive ureterolysis. In the case of a patient with two functional kidneys and ureters, we would have realized an SU followed by an anastomosis around a preoperatively placed double-J-stent. But in the case of a blind ended ureter putting a double-J-stent was not feasible. It was decided not to undertake any preventive precautions concerning the blind-ended ureter since there was not any kidney above it. The patient was readmitted 10 days post-operatively for a urinoma. It is our understanding that the urine contained in the UHN constituted the post-operative urinoma.

## Conclusions

A blind-ended ureter can still be a potential source of post-operative complication. When managing a blind-ended ureter at risk of being devascularized by the ureterolysis, we would recommend undergoing a preventive SU to avoid the risk of post-operative complication, especially if the UE previously led to an UHN. But more importantly, we would recommend associating an SU if a RN is decided in the case of an UTE.



## PRECAUTIONS FOR ROBOT-ASSISTED SURGERY IN PATIENTS WITH CARDIAC IMPLANTABLE ELECTRONIC DEVICES (CIEDs)

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### Introduction

In recent years, the spread of robotic surgery has been advancing rapidly. In Japan, robotic surgery in the field of gynaecology is performed for endometrial cancer, benign uterine tumours, and uterine prolapse. Compared to conventional open and laparoscopic surgeries, robotic surgery requires a more thorough understanding of the patient's physique, medical history, and medication regimen, as well as careful intraoperative management. Here, we report two cases in which robotic surgery was performed on patients with cardiac implantable electronic devices (CIEDs).

### Cases

**Case 1:** A 48-year-old female patient was diagnosed with vasospastic angina at the age of 39 and had an implantable cardioverter-defibrillator (ICD) placed. She was referred to our hospital with diagnoses of multiple uterine fibroids and a left ovarian tumor. Robotic-assisted simple hysterectomy (RASH), right salpingectomy (RS), and left salpingo-oophorectomy (LSO) were performed.

**Case 2:** A 79-year-old female patient had a history of complete atrioventricular block and had a pacemaker (PM) implanted. She had been managed with a pessary for uterine prolapse at another hospital since the age of 60. However, in 2022, the pessary spontaneously dislodged, and she was referred to our hospital in 2023. Due to increasing discomfort in the genital area, robotic sacrocolpopexy (RSC) was performed.

Results

In both cases, robotic surgery was performed without significant complications, including electrocautery-related issues, and both patients were successfully discharged.

Discussion

When performing robotic surgery on patients with CIEDs, the following considerations are necessary:

- 1. Electromagnetic interference (EMI) from electrocautery can pose a life-threatening risk. Therefore, it is crucial to ensure that the CIED functions properly without being affected by electrocautery. Additionally, care should be taken to avoid placing the generator or leads in the electrical current pathway.
- 2. Robotic surgery often requires a steep Trendelenburg position to optimise the surgical field by moving the intestines out of the way. However, attention should be paid to avoid excessive cardiac load due to this positioning.
- 3. Efforts should be made to shorten the operative time as much as possible.

Considering these points is essential for ensuring the safe execution of robotic surgery in patients with CIEDs.



DEEP LEARNING PREDICTION OF SURGICAL SKILLS AND TECHNICAL ERRORS DURING ROBOTIC-ASSISTED GYNAECOLOGICAL SURGERY

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Background

Robotic-assisted laparoscopic surgery has been increasingly applied in gynaecology. With the introduction of new surgical modalities, surgical education imposes an important role, to not only teach surgeons but also assure patient safety. To support this, there has been an increasing focus on integrating surgical data, including surgical motion, activity and process understanding, to develop predictive models to assess surgical skills. The objective of this study was to evaluate the efficacy of Artificial Intelligence (AI) models in detecting surgical errors and

technical skills during robotic-assisted hysterectomy (RAH) based on fine-grained analysis of technical errors during a specific task of a minimally invasive hysterectomy: vaginal vault closure (VVC).

Methods

We conducted a multi-center prospective observational cohort study. Videos were subtracted from the Video analysis of Minimally Invasive Surgery (VAMIS) trial (IRAS ID 309024) using Touch Surgery Touch Surgery™ Ecosystem. Inclusion criteria included any patient undergoing RAH. All VVC's were assessed for surgical skills through error-analysis using the validated Observational Clinical Human Reliability Assessment (OCHRA) and modifiable Global Evaluative Assessment of Robotic Surgery (mGEARS) by five blind raters. For error analysis we applied AI models to classify surgical procedures in VVC as either "normal", indicating no errors, or "error", indicating the presence of any technical error type. We employed seven prominent AI models. The performance of these models were assessed using three widely adopted metrics: Average Precision (AP), Area Under the Curve (AUC), and Macro-F1.

Results

A total of 40 videos, performed by 12 surgeons, were analysed. Mean number of technical errors per video was 26.06 (range 10-49). Good inter-rater reliability (ICC = 0.788, p=0.013) between assessor was observed and strong inverse correlation (r= -0.732, p<0.001) was observed between the error tool and skills tool. And a strong correlation between operative time and technical errors (r=0.511, p=0.003). Mean score of mGEARS assessment was 22.3 out of 30 (range 13-29) and a strong inverse correlation between mGEARS and operative (r=-0.665, p<0.001). Out of the seven AI models, the Asformer model achieved the highest mAP, AUC, and Macro-F1 scores, at 26.77%, 62.28%, and 55.54%, respectively.

Conclusions

To our knowledge, this is the first study presenting deep learning assessment of technical errors and skills in live gynaecological surgery. These findings underscore both the considerable challenges involved in detecting errors and skills in complex surgical environments and the promising initial results of utilizing AI models for this purpose.



A NEW APPROACH TO ROBOTIC ASSISTED SACROCOLPOPEXY

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Background

Robot-assisted sacrocolpopexy (RSC) uses 5 ports and is often

combined with supracervical hysterectomy at many institutions. However, the method varies from institution to institution and case to case, such as total hysterectomy for cases of complete uterine prolapse, cervical canal prolongation, and large uterus, although there are some problems such as mesh exposure. In this study, we present new approaches we have devised since the introduction of the RSC (e.g., reduction and placement of the number of ports, mesh molding, and prevention of exposure).

## Methods

We reviewed 160 4-port RSCs (76 RSCs with total hysterectomy, 59 RSCs with supracervical hysterectomy, and 25 RSCs only) performed at our institution between April 2020 and December 2024 using the Da Vinci Xi and X. The patient background, surgical technique, surgical outcomes, and complications of the cases were reviewed. Complications of mesh exposure were examined with and without two-layer suture of the transected end and peritoneal coverage. Cases with conventional 5-port RSC with an assistant port (5 ports RSC) were used as controls. The study was approved by the hospital ethics committee.

## Results

There were no significant differences in patient background, operative time, console time, closure time, removal time and weight, blood loss, or hospital days between the two groups. However, there was a significant difference in preparation time, which was prolonged for all procedures in the 5-port RSC. Complications included 3 cases of mesh exposure (all with concomitant vaginal cuff dehiscence) and 1 case of intraoperative cyst perforation (2.5%) in the 4-port RSC, while 3 cases of mesh exposure (2 of them with vaginal cuff dehiscence) and 1 case of postoperative abrupt hernia (11.4%) were seen in the 5-port RSC.

## Conclusions

The equal positioning of the four ports avoided interference between the robotic arms. All cases of mesh exposure occurred in cases with concomitant total hysterectomy, but these were initial cases and have not been observed since the technique was improved. The 12-mm da Vinci port was effective for mesh and needle thread insertion and removal. In the present study, there were no disadvantages of the 4-port RSC compared to conventional techniques, and it is a useful and safe surgical technique, especially for patients with a narrow waist.

## Background

Recent surgical trials have transformed the management of recurrent ovarian cancer; complete cytoreduction (R0) of recurrent ovarian cancer can prolong both progression-free and overall survival. This video abstract presents a case of a fifty-three-year-old patient with recurrent FIGO Stage IIIC high grade serous ovarian cancer. We demonstrate how R0 was achieved by using robotic-assisted approach to remove complex upper abdominal disease in this context.

## Methods

The patient, who had a positive AGO-Score (ECOG performance status of 0, complete resection at first surgery and absence of ascites), presented with disease in the central diaphragm adherent to segment 2 of the liver, small volume omental disease and a small bowel lesion. She had both CT of the chest, abdomen and pelvis, as well as Liver MRI to assess the spread of the recurrence. Feasibility of R0 resection and histological diagnosis was confirmed with diagnostic laparoscopy before this operation.

After pneumoperitoneum, standard port placement and upper-abdominal focused docking were undertaken. The liver and diaphragm were mobilised, allowing for the excision of a 4 cm central tendon diaphragmatic nodule. The lesser sac was explored, and adhesions at the lesser curvature of the stomach were divided, with the remnant of the omentum resected. A 2 cm nodule on the transverse colon mesentery was dissected, superficial serosal defect was closed using 3-0 PDS. A thorough review of the pelvis and lower abdomen revealed no additional disease.

## Results

The estimated intraoperative blood loss was 50 mL, and there were no intraoperative or postoperative complications. R0 resection was successfully achieved. Following surgery, the patient was discharged on the day after the operation and adjuvant chemotherapy was promptly initiated. The tumour marker Ca-125 fell significantly after this cytoreduction.

## Conclusions

The robotic approach enables precise dissection of complex upper abdominal disease, minimising blood loss and surgical morbidity without compromising optimal cytoreduction. In carefully selected cases, robotic-assisted secondary cytoreduction is a safe and viable alternative to open secondary cytoreduction for ovarian cancer in an expert centre with appropriate support.



## ROBOTIC-ASSISTED SECONDARY CYTOREDUCTION FOR OVARIAN CANCER RECURRENCE: COMPLEX UPPER ABDOMINAL DISEASE

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## ROBOTIC PARTIAL CYSTECTOMY FOR DEEP IN INFILTRATING ENDOMETRIOSIS OF THE BLADDER WITH HUGO RAS SYSTEM

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## Background

Involvement of the lower urinary tract is found in 0.2-2.5% of all deep infiltrating endometriosis (DIE). The bladder is the most affected organ with a prevalence of up to 80% of cases. Patients with bladder endometriosis are often symptomatic (dysuria, hyperactive bladder, recurrent urinary tract infections, and hematuria). Surgery is the gold standard treatment for this condition when medical therapy fails. Several studies have shown the feasibility, effectiveness, and safety of the laparoscopic approach but data about robotic-assisted approach are missing in literature. Currently, novel platforms are entering the market and the Hugo™ RAS (Medtronic, Minneapolis, USA) is a new system (HRS) consisting of an open console with 3D-HD screen and a multimodular bedside units. Even if some series are already available for radical cystectomies for oncologic purposes [5], a full description of DIE surgery performed with HRS is still lacking.

## Aim

Aim of this video-article is to show our technique and surgical setup to carry out a complex case of anterior compartment DIE.

## Methods

A step-by-step explanation of surgical technique with narrated video footage.

## Results

A 36-year-old nulliparous woman affected by DE was referred to our centre due to severe dyspareunia, dysuria with hematuria and postvoiding pain not responsive to oral progestins. The preoperative work up consisted of a gynaecological examination, pelvic ultrasound and MRI that showed the presence of an endometriotic nodule of the bladder base. All possible therapeutic strategies and related complications have been discussed with the patient before the signature of the informed consent. To carry out the procedure a "straight" port placement in a "compact" docking configuration was installed. After developing the paravesical spaces bilaterally, the bladder nodule was approached in a latero-medial direction then a partial cystectomy with macroscopical free margins was performed. A double layer horizontal running suture with barbed thread was used to repair the bladder wall. Intraoperative and postoperative periods were uneventful and no urinary or bowel complaint were reported. Retrograde cystourethrography (2 weeks after surgery) was negative for leakages and documented a normal post-voiding bladder volume. Removal of the bladder catheter on the same day. The patient was asymptomatic at 3 month follow up.

## Conclusions

To the best of our knowledge, this is the first case of bladder endometriotic nodule excision performed with HRS. In our experience Robotic-assisted laparoscopy for bladder endometriosis

is a feasible procedure. We explained our technique to successfully manage a complex case of DIE of the bladder.



## ROBOTIC-ASSISTED LAPAROSCOPIC ABDOMINAL CERCLAGE FOR RECURRENT ABORTIONS AFTER FERTILITY-SPARING MANAGEMENT FOR CERVICAL CANCER.

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## Aim

The objective of this video case report is to present robotic-assisted laparoscopic abdominal cerclage (RALAC) permanent placement and multiple step management of fertility sparing surgery in cervical cancer.

## Methods

A 32-year-old nullipara underwent multiple step management of fertility-sparing procedures for cervical cancer over a 3,5-year period. First step was colposcopy, punch biopsy and verification of the histology with finding of villoglandular adenocarcinoma. Second step was staging procedures ultrasonography, magnetic resonance and robotic assisted sentinel nodes detection and ultramicrostaging. Third step was vaginal simple trachelectomy. Fourth step, after two pregnancy losses at 16, 19 weeks robotic assisted laparoscopic abdominal cerclage was performed. Fifth step after eleven months of cerclage placement was cesarean section in 35 week of pregnancy with the birth of healthy newborn.

## Results

Villoglandular adenocarcinoma of the uterine cervix is classified as a rare tumour with good prognosis. Conservative surgical procedure as well as fertility sparing approach is considered feasible. Operating time of cerclage placement was 112 minutes. Blood loss was 30 ml. Hospital stay was 3 days without complications. Delivery was 11 months after cerclage placement. Cesarean section was done through corporal incision of the uterus.

## Conclusions

RALAC is a minimally invasive procedure with an acceptable risk profile and comparable efficiency to traditional open abdominal and laparoscopic cerclage and may be considered an acceptable alternative in women after trachelectomy due to cervical cancer.



## INVESTIGATION OF THE USEFULNESS OF 4-PORT ROBOT-ASSISTED TOTAL HYSTERECTOMY WITH PORT HOPPING FOR GIANT UTERINE FIBROIDS

## Background

In the case of giant uterine fibroids, intraperitoneal manipulation is often difficult in laparoscopic surgery in which forceps are manipulated due to interference between the fibroids and the forceps. On the other hand, robot-assisted surgery reduces interference in intraperitoneal manipulation due to the superior operability of forceps, but when surgery is performed with five ports including an assistant port, Japanese patients with small build and narrow abdominal wall sometimes have difficulty as in laparoscopy because the distance between the ports cannot be secured sufficiently. Therefore, we report on our efforts to improve the surgical operation for giant uterine fibroids by focusing on the number and position of ports.

## Methods

Thirty-six cases (group H) with a uterus weighing 1,000 g or more were selected for robotic-assisted total hysterectomy (RA-TLH) between July 2020 and December 2024. In addition, 221 cases (group N) weighing between 200g and 600g and 61 cases (group L) weighing between 600g and 1,000g were used as controls. Surgery was handled by a unique port-hopping technique (Ito H et al, J Robot Surg 18: 55, 2024) in which four da Vinci ports were placed in parallel at equal intervals horizontally, and instead of an assistant port, the endoscope and three forceps were moved to different ports respectively. Patient background, operative time, preparation time, console time, carry-out time, closure time, uterine weight removed, blood loss, hospital stay, and complications in each group were discussed.

## Results

The mean weight of the uterus removed from the H group was 1,638 g (1,005 - 7,141 g), and the H group showed significantly longer operative time (283 min), console time (181 min), closure time (18 min), and removal time (59 min) and increased blood loss (420 ml) compared to the N and L groups, but not other significant differences. However, there were no significant differences in the other parameters. Blood transfusion was observed in 2 patients (5.6%) in the H group, but there were no other complications.

## Conclusions

In RA-TLH, the combination of using only four da Vinci ports and port hopping enabled safe and easy surgical manipulation of giant uterine fibroids weighing more than 1,000 g without interference between fibroids and forceps or between forceps.

## ROBOTIC APPROACH IN 10 STEPS

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Pudendal nerve neuralgia is a debilitating condition that causes chronic neuropathic pain in the perineal and pelvic region, affecting the quality of life of patients, especially in women. Its diagnosis is challenging due to the variety of symptoms it can present, such as genital pain, dyspareunia and difficulty sitting. Conservative treatment includes physical therapy, analgesic medications and nerve blocks, however, in cases refractory to these interventions, surgical nerve release should be considered. Surgical release of the pudendal nerve seeks to decompress areas where the nerve may be trapped, most commonly in Alcock's canal. There are several surgical techniques, including the transgluteal, perineal and transvaginal routes.

## Material and methods

In our experience, the diagnosis of pudendal nerve neuralgia is based on a combination of detailed anamnesis, physical examination and complementary studies, such as pelvic MRI, neurophysiological studies and diagnostic pudendal nerve blocks. We offer the description of the surgical technique using robotic surgery thanks to our experience and tradition in gynaecological oncologic surgery of more than 30 years that make possible a series of resources and skills that allow us to perform this complex surgery. We will describe the technique in 10 steps:

1. Dissection of the paravesical space
2. Identification of the external iliac vessels.
3. Identification of the obturator complex
4. Identification of the sciatic spine
5. Identification of the pudendal complex
6. Section of the coccygeus muscle
7. Section of the levator ani muscle and sacrospinous ligament.
8. Identification of the pudendal nerve and isolation of the ligament stump
9. Placement of the lymphogracial flap.
9. Local infiltration

## Conclusions

Surgical release of the pudendal nerve by robotic technique has proven to be an effective and safe option in patients with neuralgia refractory to conservative treatment. The main advantages of this approach include:

**Surgical precision:** the use of the robot allows for magnified 3D visualisation and greater precision in the identification and release of the nerve, reducing the risk of damage to surrounding structures.

**Minimized morbidity:** As a minimally invasive technique, it is associated with lower postoperative complication rates, less pain and faster recovery compared to open approaches.

**Better bleeding control:** The possibility of using robotic instruments for electrocoagulation allows precise control of small vessels, reducing the risk of bleeding.

**Higher success rate:** Effective nerve decompression results in a significant improvement of symptoms and a remarkable recovery of patients' quality of life.

ID 21

## IMPACT OF VISCERAL OBESITY ON SURGICAL COMPLEXITY AND PROGNOSIS IN PATIENTS WITH ENDOMETRIAL CANCER UNDERGOING MINIMALLY INVASIVE SURGERY

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### Background

Obesity is one of the risk factors for the development of endometrial cancer. It can complicate surgery and worsen the prognosis, particularly in cases of increased visceral obesity, a measure that does not always correlate with body mass index (BMI). The aim of this study is to evaluate the differences in prognosis between obese and non-obese patients with endometrial cancer and to identify risk factors for recurrence. Secondly, the study assessed whether linear measurements of visceral obesity better predict the impact on survival compared to BMI.

### Methods

This is a retrospective cohort study of patients with endometrial cancer who underwent surgical treatment by minimally invasive surgery (laparoscopy or robotics) at Bellvitge Hospital between 2015 and 2023. Obesity was assessed comparing 4 different types of linear measurements from a sagittal slice of preoperative imaging (MRI or CT). ROC curves were calculated to estimate the better cut off point between different distances of obesity in relation to two outcomes: unsuccessful lymph node approach and prognosis. Univariate and multivariate analyses of prognostic factors were performed, and disease-free survival (DFS) and overall survival (OS) were calculated.

### Results

A total of 477 patients, 378 (79%) underwent robotics. Among the four visceral obesity measurements, the VO distance (anteroinferior vertex of the L5 vertebral endplate to the anterior peritoneum) demonstrated the best discrimination for unsuccessful lymph node approach and for survival, with a cutoff point of 89 mm determined by the ROC curve, yielding an AUC of 0.620 ( $p < 0.001$ ). The success rate of lymph node assessment in patients with  $VO \leq 89$  mm was 90.6%, compared to 70.8% in those with

$VO > 89$  mm.

The multivariate analysis of factors influencing understaging identified independent predictors, including  $VO > 89$  mm ( $OR = 2.561$ ), BMI ( $OR = 1.053$ ), age at diagnosis ( $OR = 1.045$ ), and laparoscopic approach ( $OR = 2.275$ ).

Multivariate analysis of prognostic factors identified independent predictors of OS, which were  $VO > 89$  mm ( $HR 1.648$ ) and FIGO 2023 stage ( $HR 1.163$ ). The only independent predictor for cancer-specific mortality was FIGO 2023 stage ( $HR 1.241$ ).

### Conclusions

Visceral obesity has a greater impact on unsuccessful lymph node approach and overall survival in patients with endometrial cancer, surpassing both the FIGO 2023 classification and BMI. It is essential to address visceral obesity as an integral part of treatment and it can be easily assessed to evaluate surgical complexity.

ID 22

## DETECTION RATE OF ROBOTIC SLN DETECTION IN ENDOMETRIAL CANCER USING ICG IN OBESE PATIENTS

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### Background

Sentinel lymph node (SLN) detection is a recommended part of the surgical treatment of endometrial cancer. For SLN detection to be a viable alternative to systematic pelvic and para-aortic lymphadenectomy, it must achieve a high detection rate (DR) per patient. Additionally, since the uterus has bilateral lymphatic drainage, an essential parameter is the specific side detection rate (SSDR), ensuring bilateral SLN detection. One factor that negatively affects both DR and SSDR is high BMI, which is also a known risk factor for endometrial cancer.

### Methods

The study included 109 patients with early-stage endometrial cancer and a BMI of 30 or higher. These patients underwent surgery at the Department of Obstetrics and Gynecology between February 2022 and June 2024. SLN detection success rates were prospectively monitored. In all cases, SLN detection was performed exclusively via intracervical application of indocyanine green (ICG). In cases where lymph nodes were not initially visualized, reinjection of ICG was performed.

### Results

The overall detection rate (DR) per patient was 100%, while the specific side detection rate (SSDR) was 93% (bilateral SLN detection was achieved in 101 out of 109 patients). The lowest bilateral

detection rate was observed in patients with grade 2 obesity—89% (24 out of 27 patients). In patients with grade 1 and grade 3 obesity, SSDR was 94% (48 out of 51 patients and 29 out of 31 patients, respectively). Similar detection rates were observed in non-obese patients (DR 98%, i.e., 52 out of 53; SSDR 92%, i.e., 49 out of 53).

## Conclusions

Robotic SLN detection using ICG in obese patients with endometrial cancer achieved high detection rates in our study. This minimises the need for extensive pelvis and paraaortic lymphadenectomy, reducing operative time and postoperative morbidity in this already high-risk patient population. Additionally, ICG reinjection proved to be an effective method to improve SLN detection in cases where initial visualisation was unsuccessful.



## CORRELATION BETWEEN PATIENTS' BMI AND ICG MAPPING OF SENTINEL LYMPH NODE IN PATIENTS WITH EARLY STAGE ENDOMETRIAL CANCER, A RETROSPECTIVE COHORT STUDY

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### Background/Aim

Sentinel lymph node biopsy has been introduced into the treatment of early stage endometrial cancer patients in order to assess the lymphatic involvement and correctly stage these patients. Several articles have investigated the usage of different tracer in sentinel lymph node mapping with Indocyanine green (ICG) to be emerged as the most effective. Patients' BMI remains of the parameters that could affect the success of lymph node mapping. Aim of this retrospective study is to evaluate the correlation between body mass index (BMI) and sentinel lymph node mapping in early endometrial cancer patients.

### Methods

In order to achieve sentinel lymph node mapping, 25mg of ICG were diluted with 20mls of normal saline aiming to concentration of 1,25mg/ml. In total, 4mls of diluted ICG were injected into the cervix. Patients were subcategorized based on their BMI; one group with BMI below 30kg/m<sup>2</sup> and one with BMI above 30kg/m<sup>2</sup>. Detection rate, site of SLN, interval time between injection and SLNB and total operation time were documented.

### Results

48 patients with low/intermediate endometrial cancer (stage IA-IIA, grade 1 or 2) were included in our retrospective study; 27 patients with BMI lower than 30kg/m<sup>2</sup> and 21 patients with BMI above 30kg/m<sup>2</sup>. Successful detection of SLN was achieved in 61.9% (13/21) in obese group of which 69.2% (9/13) bilaterally, while

SLN was detected in 88.9% (24/27) in non-obese group of which 87.5% (21/24) bilaterally. Interval time between SLN detection and removal differed between obese and non-obese group; 24±3 mins and 16±3 mins, retrospectively. Regarding total time of operation, mean duration of obese group was 72±11mins, while for non-obese group 51±10mins. The most common localization site of SLN detection was external iliac and the obturator lymph node group. No complications regarding the SLN mapping procedure in both groups were experienced.

## Conclusions

Based on our experience, SLN mapping for obese women is feasible with acceptable success rate. Increased surgical time was documented in obese group.



## HOW TO ACHIEVE OPTIMAL QUALITY INDICATORS FOR ENDOMETRIAL CANCER PATIENTS' MANAGEMENT IN A ROBOTIC SURGERY EPICENTRE

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### Background/Aim

Enhancing and maintaining surgical excellence is crucial for elevating patient care and outcomes in endometrial cancer treatment. High-quality surgical interventions, particularly minimally invasive techniques such as robotic-assisted surgeries have been shown to reduce complications, improve recovery times, and enhance disease-free survival compared to traditional open surgery. ESGOs quality indicators for the management of endometrial cancer patients could be useful to ensure excellence in Robotic epicentre.

### Methods

Retrospective analysis of endometrial cancer patients treated with the robotic assisted surgical approach in a tertiary gynaecological oncology centre.

### Results

In total, 56 patients were treated from January of 2023 until December of 2024. Mean age of included patients was 59.1 years, while 48 patients (86%) were postmenopausal. At the time of treatment, 27 patients (48%) had BMI lower than 30kg/m<sup>2</sup>, while 29 (52%) were obese. Regarding the comorbidities, 46 patients (82%) were evaluated as ASA I-II, while 10 patients (18%) were evaluated as ASA III. As for FIGO stage, 48 patients (86%) were staged as early endometrial cancer (IA1, IA2, IB, IIA), while 8 patients were IIB and above. 44 patients (79%) were grade 1, 7 (13%) grade 2 and 5 (8%) grade 3 at the final histopathology. For 48 patients sentinel lymph node biopsy were performed; 37 procedures were successful (77%). Mean length of hospital stay was 1.2 days. No intraoperative complications were faced, while 2 unilateral lymphoceles and 1

vaginal dehiscence were observed as postoperative complications.

## Conclusions

Experienced gynaecological oncologists using robotic-assisted technology for endometrial cancer surgeries have achieved outstanding success, leading to improved patient outcomes. This approach underscores the significance of ESGO quality indicators in the management of endometrial cancer patients through robotic-assisted techniques.



## EFFECTIVENESS OF ROBOTIC DETECTION OF SENTINEL LYMPH NODES (SLN) IN ENDOMETRIAL CANCER USING ICG IN OBESE PATIENTS

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### Background

The detection of sentinel lymph nodes (SLN) is part of the recommended surgical treatment for early stage endometrial carcinoma. For SLN detection to be an alternative to systematic pelvic and paraaortic lymphadenectomy, this method needs to achieve a high success rate, not only in detection on the patient (detection rate - DR) but also, since the uterus has bilateral lymphatic drainage, an important parameter is bilateral SLN detection, known as specific side detection rate (SSDR). One of the factors that reduces DR and SSDR is, among other things, high BMI, which is also one of known risk factors for the development of endometrial carcinoma.

### Methods

The study included 147 patients with early-stage endometrial carcinoma and a BMI of 30 or higher. These women underwent surgery at the Gynaecological and Obstetric Clinic of the University Hospital in Ostrava between February 2022 and December 2024. Data on the detection success rate were prospectively monitored. SLN detection was performed in all cases using intracervical application of indocyanine green (ICG) following Fires trial procedure. In cases where lymph nodes were initially not visualized, reinjection of ICG was selectively performed based on the patient's assigned prognostic risk group.

### Results

The detection rate per patient was 100%, and the specific side detection rate was 92% (bilateral SLN were visualized in 135 out of 147 patients). Interestingly, the success rate for bilateral SLN detection (SSDR) was lowest in patients with class 1 obesity, at 90% (in 57 out of 63 patients). In patients with class 2 and 3 obesity, the SSDR was 92% and 93%, respectively (in 35 out of 38 patients and 43 out of 46 patients). Comparable detection levels were also achieved in non-obese patients group (DR 97%, i.e., 58

out of 60, SSDR 92%, i.e., 55 out of 60).

## Conclusions

Robotic SLN detection using ICG in obese patients with endometrial carcinoma achieved high values in our study. As a result, it is not necessary to perform extensive procedures on the lymphatic system, which both shortens the duration of the surgery and reduces peri- and postoperative morbidity in these already high-risk patients. One method that has proven effective in increasing SLN detection success at our institution is the reinjection of ICG in cases where SLN were initially not visualised in patients categorised as higher intermediate or high risk for disease recurrence.



## ROBOTIC CERVICAL RECONSTRUCTION WITH FIBROID HOOD IN LARGE CERVICAL FIBROID

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### Background/Aim

1-2% of fibroids are located in the cervix.

The objectives were:

1. Prevention of left ureteric injury
2. Maintain the integrity of the cervical canal.

### Methods

A 34-year-old lady reported infertility and frequency of urine. She had no menstrual dysfunction. Abdominal examination revealed a large, firm, fixed mass (14–16 weeks). The cervix was flush with the vagina. USG suggested a large fibroid measuring 11 x 9 x 10 cm in the anterior-lateral wall of the cervix, causing elongation of the cervix and superior displacement of the uterine body. MRI confirmed the same. The cervical length was elongated to 7 cm.

### Results

The interstitial type of fibroid arose from the supravaginal portion of the cervix. There was no capsule between the fibroid and cervical canal wall. The fibroid was enucleated from the lateral pelvic wall, with the left ureter reflected laterally. During the medial dissection, a breach in the cervical canal was identified. A flap of fibroid tissue was then shaved off, and a "HOOD" was created to reconstruct the endocervical canal's anterior wall over a stent. The stent was held in place with Ethilon sutures, which were threaded through the eye of the stent and tied to the abdominal wall. The stent was kept in situ for two weeks.

### Conclusions

The Integrity of the cervical canal is crucial for future reproduction. In cases where no cervical tissue is present for reconstruction, a portion of fibroid tissue can be used to reconstruct the cervix. This patient did not need any cervical cerclage during pregnancy. The continuous evaluation recorded an adequate cervical length.

## Follow-up

The patient was followed for three menstrual cycles. At the time of the video submission, she had a confirmed delivery of a full-term pregnancy by caesarean section.



## ROBOT-ASSISTED SACROCOLPOPEXY BY THE DOUBLE BIPOLAR METHOD USING 3 ROBOTIC ARMS AND 2 INSTRUMENTS

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### Aim

Robot-assisted sacrocolpopexy (RSC) has become the recent gold standard in surgical treatment of pelvic organ prolapse due to its therapeutic efficacy and minimal invasiveness. However, robotic surgery has its own problems, including arm-to-arm interference, as well as high costs. In our department, RSC was initially performed with four arms and one assistant port (4a-RSC), but was first modified a three-arm, three-instrument RSC (3a3i-RSC) without a third arm to reduce interference. Subsequently, the double bipolar method was introduced, and the RSC was modified again to a three-arm, two-instrument RSC (3a2i-RSC) using only two instruments in order to reduce costs. The surgical outcomes of different RSC modification techniques in our department were reviewed and the advantages of these techniques were discussed.

### Methods

We retrospectively evaluated 34 women who underwent RSC by the same surgeon at our hospital between December 2022 and October 2024, divided into three groups: 3 4a-RSC, 11 3a3i-RSC, and 20 3a2i-RSC. The patients were statistically analysed for age, number of trimesters, BMI, operative time, console time, specimen weight, and blood loss. Statistical analysis was performed by multiple comparison tests using the Tukey-Kramer or Steel-Dwass method. Costs between groups were also compared.

### Results

The results were respectively: operative time (median: 4a-RSC 348 min vs 3a3i-RSC 300 min vs 3a2i-RSC 231 min), console time (234 min vs 192 min vs 158 min) and blood loss (100 ml vs 80 ml vs 30 ml). The operating time was significantly shorter in the 3a2i-RSC group than in the other two groups. In addition, the conversion from 4a-RSC to 3a3i-RSC resulted in a cost saving of 250 EUR, and the re-conversion to 3a2i-RSC resulted in a further cost saving of 262 EUR. At a mean follow-up time of 14 months, the anatomical success rate was 97% with one failure.

### Conclusions

The double bipolar method enables not only incision and coagulation, but also grasping, traction and dissection of the tissue

with each hand, as well as needle movement. The 3a2i-RSC therefore does not require a single instrument change. Only two bipolar instruments are required, which reduces costs. The number of arms used can also be reduced from four to three, which reduces the number of wounds and improves the appearance. On the other hand, even when the number of arms and instruments used was reduced, there was no increase in operative time or blood loss, and the quality of the operation was maintained.



## THE VALUE OF ROBOTIC SURGERY IN MAXIMISING SURGICAL EFFICIENCY AND ADDRESSING LONG WAITING LISTS IN GYNAECOLOGICAL CARE - THE FUTURE ROLE OF AI IN SURGICAL WORKFLOW OPTIMISATION

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### Background

The increasing burden of long waiting lists for gynaecological procedures worldwide presents a significant challenge to healthcare systems, impacting patient health outcomes and economic stability. Delays in treatment exacerbate conditions such as endometriosis and fibroids, leading to chronic pain, reduced quality of life, and increased financial burden due to lost productivity and out-of-pocket expenses. Robotic surgery offers promising solutions by enhancing surgical efficiency and enabling high-volume, minimally invasive operations. The integration of Artificial Intelligence (AI) has the potential to further optimise operating room logistics and workflow prediction.

### Objective

To assess the efficiency of robotic-assisted gynaecological surgeries across intensive surgical days and explore the potential role of AI in forecasting surgical workflows and optimising resource utilization.

### Methods

A retrospective analysis was conducted on 270 robot-assisted gynaecological surgeries performed between 2021 and 2025 at a private hospital in Greece. Cases were categorised based on daily surgical volume (2–6 cases per day), and key time components such as anesthesia time, preparation time, docking time, surgical duration, and overall efficiency ratio were analysed. These findings were integrated with a literature review on the global impact of surgical waiting lists and the role of robotic surgery in improving efficiency. The potential applications of AI in predicting delays, optimizing team readiness, and dynamically allocating resources were reviewed.

### Results

The study demonstrated that increasing the number of robotic

surgeries per day did not compromise surgical efficiency. Instead, patient preparation time significantly decreased with higher case volumes, suggesting improved workflow standardisation. While total case duration remained stable, a trend toward reduced surgical time was noted in higher-volume groups. The highest efficiency ratio was observed in the four-case day group (0.81), indicating an optimal balance between case load and resource utilisation. Literature findings support that robotic-assisted surgery can enhance operative throughput while maintaining surgical precision and patient safety.

## Conclusions

Robotic-assisted surgery offers a viable strategy to optimise surgical efficiency and reduce waiting times in gynaecological care. Standardisation of preparation processes and optimisation of docking and undocking times can further improve performance. Healthcare systems should consider integrating robotic surgery into high-demand settings to address the global challenge of surgical backlog and improve patient outcomes. The integration of AI to model workflow patterns and predict bottlenecks could enhance OR performance, reduce waiting lists, and improve healthcare delivery globally.

ID 29

## FIRST CASE-SERIES OF ROBOTIC SACROCOLPOPEXY USING THE CMR VERSIUS SURGICAL SYSTEM®: OUTCOMES AND TECHNICAL INSIGHTS

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## Background

Minimally invasive sacrocolpopexy is regarded as the gold standard technique for Pelvic Organ Prolapse (POP) surgical treatment. It demonstrated excellent anatomical and functional outcomes, offering high success rates and low risk of recurrence compared to alternative techniques. We present the first case-series of robotic sacrocolpopexy (RSCP) performed using the Versius Robotic Surgical System® (CMR Surgical, Cambridge, UK) evaluating feasibility, outcomes, and technical aspects. This system features independent mobile bedside units and wristed instruments, allowing for great flexibility. The surgeon operates from an open console equipped with ergonomic controller handgrips, enhancing communication with the surgical team. Differently from other available platforms, the device is completely controlled through the console handgrips, allowing use in both seated and standing positions.

## Methods

After a comprehensive preoperative evaluation and adequate counseling on different surgical approaches, twenty patients with symptomatic multicompartimental, ICS POP-Q stage > III POP underwent nerve-sparing RSCP using the Versius® robotic system from May 2024 to December 2024. The optimal setting of the Versius® platform, perioperative outcomes of surgical procedure, and anatomical and functional results were assessed.

## Results

The surgical procedures were completed without any complications. No system errors or faults of robotic arms were recorded with the chosen three-robotic-arm configuration and port placement. This setting also allows for hybrid procedures or easy transition to conventional laparoscopy. The compact design of independent arms ensures easy access to the patient from multiple angles, reducing the risk of robotic arms collisions and lowering ergonomic risks. The median operative time was 174 minutes (range 146–229), with a median docking time of 4 minutes (range 2–12). Intra- and post-operative outcomes were comparable to previously described minimally invasive techniques. Urogynaecological examination at three-months demonstrated statistically significant improvement of outcome parameters using the POP-Q classification, with anatomical restoration and resolution of prolapse-related symptoms.

Patient-reported outcome data showed that all 20 (100%) women had Patient Global Impression of Improvement (PGI-I) scores 1–2.

## Conclusions

The Versius robotic platform is a feasible and effective option for robotic sacrocolpopexy (RSCP), offering flexibility in accessing deep pelvic planes and enabling precise suturing. Operative times, outcomes, and hospitalisation length were comparable to other minimally invasive techniques. Larger studies and longer follow-ups are needed to further assess its benefits. This study presents the first case series of RSCP using the CMR Versius Surgical System®, providing technical insights for institutions adopting this platform in urogynaecology and pelvic reconstructive surgery.

ID 30

## EXPLORING SAFETY, EFFICACY, AND OUTCOMES OF LAPAROSCOPIC SACROCOLPOPEXY VERSUS ROBOTIC SURGERY WITH THE HUGO RAS SYSTEM

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## Background

Minimally invasive sacrocolpopexy (SCP) is regarded as the gold standard procedure for treating Pelvic Organ Prolapse (POP) offering excellent anatomical and functional outcomes, superior success rates, and a lower risk of recurrence compared to alternative techniques. While it is feasible to perform SCP using conventional laparoscopic techniques, robotic-assisted surgery (RAS) represents an evolution of this procedure and has emerged as a solid alternative to laparoscopy. Recently, alternative platforms to the DaVinci® have been introduced in the market, including the Hugo RAS (MEDTRONIC Inc, USA), a system featuring multiple independent mobile bedside units and wristed instruments, aiming to enhance flexibility and distinguishing it from the monolithic structure of the DaVinci® system.

The surgeon operates from an open console equipped with ergonomic controller handgrips, enhancing communication with the surgical team. This console provides the surgeon with a three-dimensional, high-definition visualisation. Although RAS is increasingly utilised for SCP and solid evidence proves its non-inferiority to laparoscopy, there is still limited evidence on the safety and feasibility of novel multi-arm robotic platforms compared to standard laparoscopic approach. Primary aim was to analyse and compare the safety, feasibility, and clinical outcomes of SCP performed using conventional laparoscopic techniques versus robotic-assisted surgery with the Hugo RAS system.

## Methods

We conducted a retrospective study on 450 patients undergoing minimally invasive sacrocolpopexy between January 2022 and December 2023, using propensity score matching to correct for selection bias. After screening, 420 patients with multicompartamental POP were analysed. The matching process resulted in two balanced groups: 142 underwent laparoscopic sacrocolpopexy, and 143 underwent robot-assisted surgery.

## Results

Our findings demonstrated that robotic-assisted surgery did not significantly differ from standard laparoscopic procedure in terms of intra- and post-operative complications, length of hospitalisation, except for operative time and intraoperative blood loss. Operative time was on average 15 minutes longer and intraoperative blood loss was slightly lower in the Hugo RAS population after matching. The mean follow-up was 18 months (range 12-36), and a statistically significant improvement of objective and subjective outcomes was reported in both populations, with a significant POP symptoms resolution and no difference between groups in term of satisfaction rate.

## Conclusions

Robotic-assisted SCP procedures performed with the Hugo RAS system appear to be safe and effective in treating symptomatic POP, representing a feasible alternative to laparoscopy. Our

insights on this recently released robotic system may be useful for validating its use for urogynaecology and pelvic reconstructive surgery.



## DEXAMETHASONE REDUCES PERIOPERATIVE PAIN: DEBUNKED!

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## Background

Robotic-assisted hysterectomy with adjunct dexamethasone is reported to reduce surgical stress, decrease postoperative pain, and hasten recovery. The aim of this randomized trial was to assess improvement of postoperative outcomes like pain and opioid use besides the well-known lowering inflammatory response and postoperative vomiting and nausea.

## Methods

The study recruited women scheduled for robotic-assisted hysterectomy and randomised them into two groups: One receiving 24 mg of dexamethasone preoperatively and the other receiving a placebo. Various measures were taken, including blood tests, pain assessments using the visual analogue scale (VAS), and reports on postoperative vomiting, nausea, and medication usage at five time points: 0, 4, 8, 12, and 24 hours postoperatively. The primary outcome included inflammatory response and, secondarily, vomiting and nausea as well as pain and opioid consumption. Once a week in 4 weeks postoperatively, questionnaires were mailed to the women.

## Results

A total of 112 women participated, with complete data available from all participants for blood tests, medical interventions, and VAS measures at all time points. The primary finding was a reduction in surgical stress measured by c-reactive protein. On the other hand, pain was reported similar in the two groups. Ratings on pain were collected simultaneously to the above and were neither different at hospital during the first 24 hours (Fig. 1, p=0.32) nor in the follow-up time, where questions on pain at leisure-, work- and sex life were asked. Surprisingly, the opioid dose provided were similar in the two groups. The use of painkillers was similar in the two groups as were the number of women who resumed work or reported that pain were hindrance for work at the weekly follow-up.

## Conclusions

We gave higher doses of dexamethasone than most other trials and found surprisingly no difference in pain reported. We wonder whether the timing of administration and at which threshold of dexamethasone the pain-relevant outcomes occur. Previously, medium doses (i.e. 8 mg) in abdominal surgery did not reduce pain unanimously. We wonder whether this is due to a bias in previous

studies or they were not perfectly blinded. Type of surgery, i.e. laparoscopic vs. robotic surgery or the pain relief regimens could may explain these findings; the latter we doubt when scrutinising previous trials. In any way, in this randomised controlled trial we find no pain relief associated with use of dexamethasone.

ID 32

## ENHANCED URETERAL VISUALISATION USING LIGHTED STENTS DURING ROBOTIC SINGLE-SITE RADICAL HYSTERECTOMY

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### Introduction

Radical hysterectomy for early-stage cervical cancer often poses a risk of ureteral injury, especially in single-site robotic surgeries. The use of lighted ureteral stents (LUS) has been proposed as a method to enhance the visualisation of the ureters during surgery, reducing the risk of injury.

This study aims to evaluate the safety and feasibility of LUS in robotic single-site radical hysterectomy (RSSRH) through a retrospective review of 20 cases in a single institution.

### Methods

A retrospective review of medical records was conducted for 20 patients who underwent RSSRH with LUS insertion. Collected data included patient demographics, surgical details, incidence of ureteral and other complications, and total operation time. The primary outcomes measured were the occurrence of ureteral injuries and other intraoperative and postoperative complications, as well as the duration of the surgery.

### Results

Among the 20 cases reviewed, no ureteral injuries were reported. The average total operation time was comparable to standard RSSRH procedures, with no significant increase due to LUS insertion. Additionally, no immediate or delayed postoperative complications related to LUS were recorded. The enhanced visualisation provided by LUS was noted to be beneficial in overcoming the limitations inherent to RSSRH.

### Conclusions

The use of lighted ureteral stents in robotic single-site radical hysterectomy is a safe and feasible option that does not significantly increase the duration of operation time. Furthermore, LUS helps to prevent ureteral injuries and addresses the limitations associated with single-site surgical procedures. This technique should be considered as a standard practice to enhance patient safety and surgical outcomes in RSSRH.

ID 33

## PUDENDAL NEURALGIA, A COMMON CAUSE OF PELVIC/PERINEAL PAIN. ROBOTIC APPROACH

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### Introduction

Pudendal neuralgia is a debilitating condition characterised by pelvic pain and discomfort, often resulting from nerve entrapment or trauma. This condition significantly impacts the quality of life and can be challenging to diagnose. Our recent findings emphasize the effectiveness of minimally invasive techniques in the management of pudendal neuralgia.

### Materials and Methods

Our dedicated team, comprising pain specialists, neurologists, and pelvic floor therapists, evaluated a cohort of patients presenting with symptoms of pudendal neuralgia at the Bucharest Endometriosis Center from 2022 to 2024, encompassing 212 cases (25 of which involved bilateral nerve release). We employed minimally invasive approaches, including nerve blocks and laparoscopic interventions, to assess and alleviate symptoms.

### Results

Among the patients evaluated, most reported relief by the first postoperative day. Additionally, robotic-assisted techniques were utilized in 36 cases, contributing to enhanced precision and recovery. Our data indicate that targeted nerve decompression and associated therapies led to positive outcomes in a majority of cases.

### Conclusions

Minimally invasive techniques offer a promising therapeutic option for managing pudendal neuralgia, providing substantial relief and enhancing the overall quality of life for affected individuals. Our findings support a multidisciplinary approach, advocating for comprehensive evaluation and treatment strategies tailored to individual patient needs.

ID 34

## ANTEGRADE AND RECTROGRADE TECHNIQUES OF RECTAL SHAVING FOR BOWEL ENDOMETRIOSIS

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### Study Objective

Demonstrate Endoscopic shaving for rectosigmoid colon endometriosis, with focus on anatomy and technique.

### Design

Stepwise video demonstration

## Background

Deep Infiltrative Endometriosis (DIE):

Characterised by lesions extending more than 5 mm beneath the peritoneum, often affecting the rectovaginal septum, bladder, ureters, bowel, and pelvic nerves

- Bowel Involvement: Bowel endometriosis, particularly involving the rectovaginal septum, rectum, and sigmoid colon, affects 8-12% of patients with endometriosis.
- Primary surgical approaches for rectovaginal endometriosis include:
  - Rectal shaving
  - Rectal disc resection Rectal segmental resection. The selection of techniques depends on various factors such as depth of invasion.
  - Extent of lesion
  - Focal or multifocal lesions.

However, a review by Donnez and Roman emphasises that rectal shaving should be considered the first- line surgical approach for rectovaginal endometriosis.(Donnez, O.; Roman, H. Choosing the right surgical technique for deep endometriosis: Shaving, disc excision, or bowel resection? Fertil. Steril. 2017, 108, 931–942.)

## Methods

There are two main methods of rectal shaving, one is the traditional/antegrade method and 2nd is the reverse technique or the retrograde method of rectal shaving. Antegrade method is the traditional method shown in first part of video, In this method, the surgeon begins by mobilizing the sigmoid, perform bilateral ureterolysis and then opens pararectal fossae, before detaching the nodule from its uterine attachment, the nodule is then shaved off the surface with use of rectal probe to delineate the nodule. Disadvantages of this technique is chance of residual disease, and use of additional assistance.

Retrograde method as shown in the second part of video describes the use of uterine manipulator as guide to lift the nodule and allow dissection on the serosal surface of the rectum. Dissection is performed in close contact with the lateral face of the rectum, and is directed towards the healthy rectovaginal space located below the endometriotic nodule. Once the lateral faces of the rectum are freed, rectal shaving is performed as deeply as possible into the thickness of the rectal wall to remove abnormal fibrous lesion involving the rectal layers, thus the nodule is dissected away from the rectal wall, which then can be progressively mobilised upwards.

## Conclusions

Retrograde method is faster and allows complete excision of the serosal superficial nodule. Antegrade method is effective for deeper lesions and use of Rectal probe is needed to lift the anterior wall and delineate the lesion. Robotic approach allows better visualisation and faster excision, ICG can be used to identify the mucosa.



## ENDOMETRIOSIS IN UNUSUAL TERRITORY: A ROBOTIC TRIUMPH

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Cervical endometriosis is rare (0.11–2.4%) and often diagnosed retrospectively by HPE. Among other pelvic sites, urinary tract endometriosis (UTE) is particularly challenging, accounting for 6–10% of cases which pose difficulty to surgeons.

This case presents the successful robotic-assisted management in a challenging case of deep cervical endometriosis and extrinsic ureteric obstruction.

## Aim

To highlight efficacy of robotic-assisted surgery (RAS) in managing rare cervical endometriosis. To highlight precise excision of parametrial disease and resolution of ureteral obstruction with minimal tissue damage.

## Methods

Robotic Surgery:

- Adhesiolysis and anatomy restored.
- Excision of cervical endometrioma and parametrial endometriosis.
- Ureteral obstruction released with preservation of ureter adventitia and vasculature.
- Intra op ureteroscopy confirmed ureter integrity with no thinning of the walls.
- Recovery was uneventful; the patient was discharged in 48 hours.
- Postoperative imaging showed improved ureteral caliber.
- At follow-up, the patient reported significant pain relief and no recurrence.

## Conclusions

Discussion: Cervical endometriosis is rare, often asymptomatic, or misdiagnosed as Nabothian cysts, cervical myomas, premalignant or malignant lesions of the cervix. Deep cervical endometriosis are often associated severe pelvic endometriosis and may present with intractable pelvic pain. UTE cases pose surgical challenges with risks of fistulas or need for ureteric resection which lead to increased morbidity.

RAS has been widely proven to have comparable peri- and postoperative outcomes to CLS, and it also obviates the drawbacks like 2-dimensional view, counterintuitive hand movements, gradual learning curve, operator fatigue, tremor amplification.

In our case, RAS due to:

- High-definition 3D visualization of fascial planes,
- Articulating instruments (7 degrees of freedom),
- Enhanced ergonomics allowed exceptional access to the posterior cervix and parametrium, enabling the precise excision of endometriotic lesions with minimal cervical trauma while preserving adventitia of ureters and vasculature.

## ROBOTIC MASTERY IN ADENOMYOMECTOMY: UNLOCKING FERTILITY THROUGH PRECISION SURGERY

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### Background

Adenomyomectomy, a surgical procedure aimed at excising adenomyotic lesions while preserving the uterus, presents significant challenges due to its intricate nature and the demand for precision. Robotic-assisted surgery has recently emerged as a promising approach to address these challenges, offering enhanced dexterity, visualization, and control. This presentation delves into the realm of robotic mastery in adenomyomectomy, exploring the surgical technique, advantages, and our institution's experiences with this innovative approach.

### Methods

Through a comprehensive review of the literature and our own clinical experiences, we highlight the advantages of robotic technology in optimising surgical outcomes, minimising complications, and promoting patient satisfaction.

### Results

The present study reports on eight cases of robotic-assisted adenomyomectomy, aiming to demonstrate the efficacy of robotic surgery in managing adenomyosis. Detailed analysis encompasses preoperative planning, multidisciplinary collaboration, surgical techniques, and postoperative care, highlighting key factors essential for achieving optimal outcomes. Outcomes data from these cases demonstrated significant postoperative symptom improvement in all patients.

Follow-up examinations revealed no residual adenomyosis in any patient. Additionally, two patients successfully achieved pregnancy post-surgery, underscoring the potential effectiveness of robotic-assisted adenomyomectomy in restoring fertility among individuals affected by adenomyosis.

### Conclusions

A robot-assisted laparoscopic adenomyomectomy was feasible and could be a minimally invasive surgical option for fertility-sparing treatment in patients with adenomyosis. By leveraging advanced robotic technology, we aim to enhance patient care and redefine surgical excellence in the management of adenomyosis. Our findings underscore the importance of continued innovation and collaboration in advancing surgical techniques, ultimately benefiting patients and improving their quality of life.

## NAVIGATING COMPLEXITY: PELVIC ANTERIOR EXENTERATION IN ADVANCED AND RECURRENT GYNAECOLOGICAL CANCERS

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### Background

Pelvic anterior exenteration represents an extensive and challenging surgical intervention utilised primarily for advanced or recurrent gynaecological malignancies. This study evaluates the efficacy, safety, and patient outcomes associated with pelvic anterior exenteration procedures performed at our institution, aiming to provide insight into surgical success rates and postoperative recovery.

### Methods

A retrospective analysis was conducted on five patients who underwent pelvic anterior exenteration between 2020 and 2024. Surgical indications included advanced vulvar cancer with bladder involvement (two cases) and recurrent cervical carcinoma resistant to previous chemoradiotherapy (three cases). Surgical techniques involved both conventional and robotic-assisted approaches, accompanied by comprehensive preoperative assessments and standardised postoperative care.

### Results

The median patient age was 58.6 years. All patients underwent anterior exenteration accompanied by Bricker-type urinary diversion, with additional radical vulvectomy performed in patients diagnosed with vulvar malignancy. Robotic-assisted anterior exenteration was successfully completed in one patient. Follow-up ranged from 4 months to 4 years, with no significant intraoperative or postoperative complications recorded.

### Conclusions

Pelvic anterior exenteration remains an effective surgical approach for selected patients with advanced or recurrent gynaecological cancers, particularly those involving bladder infiltration or refractory to standard treatments. The integration of robotic-assisted techniques appears promising, potentially enhancing surgical precision and patient recovery. Future studies with larger cohorts are needed to further define the clinical role and optimize the outcomes associated with this complex surgical intervention.

## SENTINEL LYMPH NODE MAPPING IN ENDOMETRIAL

## CANCER: A COMPARISON BETWEEN LAPAROSCOPIC AND ROBOTIC SURGERY

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### Background

Sentinel lymph node (SLN) mapping is an alternative technique to systematic lymphadenectomy for the surgical staging of early-stage endometrial cancer. This retrospective study compares SLN mapping between laparoscopic and robotic surgery using indocyanine green (ICG) as a tracer. The aim of this study was to compare the detection rate of SLN mapping between laparoscopic and robotic surgery and to assess differences between surgical approaches.

### Methods

Retrospective, observational study from February 2025 to March 2025 that compares detection rate of SLN between laparoscopic and robotic approach in early stage endometrial cancer. A total of 60 patients with endometrial cancer who underwent hysterectomy, bilateral salpingo-oophorectomy, and SLN mapping were included. Among them, 38 (63.3%) underwent laparoscopic surgery and 22 (36.7%) robotic surgery. After anesthetic induction, ICG was injected into cervical mucosa and stroma at the 3 and 9 o'clock position.

### Results

The overall SLN detection rate was 97.3% for laparoscopic surgery and 95.5% for robotic surgery, with no statistically significant differences ( $p=0.698$ ). The bilateral detection rate was 84.2% in laparoscopic surgery and 91% in robotic surgery, without reaching statistical significance. Significant differences were observed in operative time ( $p=0.004$ ) and hospital stay duration ( $p=0.002$ ), being both shorter in the robotic surgery group. No differences were found in terms of overall complications rate between both surgical approaches.

### Conclusions

No significant differences were found in SLN detection rate between laparoscopic and robotic surgery. However, robotic surgery demonstrated advantages in terms of reduced operative time and shorter hospital stays, potentially leading to faster recovery. Further studies with larger sample sizes are needed to validate these findings and optimize the choice of surgical approach in the management of endometrial cancer.

## ANATOMICAL SITES

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### Background

Deep infiltrating endometriosis (DIE) involving challenging anatomical sites such as the diaphragm and ureter represents a surgical challenge. Robotic-assisted surgery offers enhanced 3D visualisation, precision, and ergonomic benefits that may facilitate surgery in these complex cases. This observational study evaluates outcomes from robotic-assisted surgery in endometriosis with involvement of challenging anatomical sites.

### Methods

Between 2020 and 2024, we prospectively evaluated 50 patients undergoing robotic-assisted laparoscopic excision for severe DIE at our centre. All patients had complex anatomical involvement confirmed preoperatively by MRI or specialized ultrasound. Specific attention was given to diaphragmatic ( $n=2$ ) and ureteral ( $n=15$ ; 8 extrinsic and 7 intrinsic) endometriosis. Data on surgical completeness, conversion rates, complications, and postoperative outcomes were analyzed.

### Results

The median age was 34 years, with multi-organ involvement common in the series. Complete robotic excision was achieved in all cases. Diaphragmatic lesions were successfully managed robotically without thoracotomy, and all ureteral lesions were treated conservatively, preserving kidney and ureteral function. Intrinsic ureteral disease required robotic ureteral resection and re-anastomosis or reimplantation, performed without conversion to open surgery. Median operative time was 140 minutes with minimal blood loss. No conversions to laparotomy occurred.

Minor complications included transient urinary retention and superficial wound infections. Median hospital stay was 4 days. At median follow-up of 12 months, 88% reported significant pain reduction and improved quality of life. No diaphragmatic recurrences occurred, and ureteral obstruction resolved in all cases.

### Conclusions

Our findings confirm robotic-assisted surgery as a highly effective, minimally invasive approach for severe endometriosis involving anatomically challenging locations like the diaphragm and ureter.

The robotic platform facilitated complex dissections, organ-preserving reconstructions, and allowed complete excision without laparotomy, translating into excellent short-term outcomes, minimal morbidity, and significant symptomatic relief. These results support considering robotic surgery as a preferred surgical approach for complex DIE cases.

## A ROBOTIC PATHWAY TO FERTILITY: RADICAL TRACHELECTOMY FOR EARLY STAGE CERVICAL CANCER

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### Background

With nearly 570,000 new cases/year and 310,000 deaths/year, cervical cancer is the second most frequent cancer in women and the third leading cause of cancer-related deaths in females.

Cervical cancer continues to affect young patients that desire to preserve their fertility. In selected cases, this procedure offers a good outcome for the patient. Although the procedure was initially performed via the vaginal and laparoscopic route, radical robotic trachelectomy with bilateral pelvic lymphadenectomy can be a safe alternative for the treatment of early cervical cancer in patients who desire to preserve fertility.

### Methods

This study aimed to determine the safety and feasibility of robotic radical trachelectomy with bilateral pelvic lymphadenectomy and sentinel lymph node using indocyanine green. We also describe our surgical technique. This is a retrospective review of all patients who underwent robotic radical trachelectomy in 2021-2022. We analysed our data to evaluate the safety and feasibility of this surgery.

### Results

This analysis included 7 patients with early-stage squamous cell carcinoma of the cervix. Four patients had in situ carcinoma; 1 patient had stage IB1 adenocarcinoma, and 2 patients had stage IA1 carcinoma.

All patients received radical robotic trachelectomy with bilateral pelvic lymphadenectomy and sentinel lymph node procedure using indocyanine green (ICG). The mean operating time was 188 minutes. The mean blood loss was around 90 ml. The mean hospital stay was two days. There were no conversions to laparotomy. There were no intraoperative complications. No patient required a blood transfusion. No patient had residual tumour in the trachelectomy specimen, and no patient underwent adjuvant therapy. There were no recurrences; at 1 or more than 1 year, the patients are disease-free.

### Conclusions

Robotic radical trachelectomy and bilateral pelvic lymphadenectomy are feasible and safe and should be considered for patients desiring fertility-sparing surgery.

## MAPPING THE FUTURE: EVALUATING SENTINEL LYMPH NODE RELIABILITY IN HIGH-RISK ENDOMETRIAL CANCER

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### Background

High-risk endometrial cancers have a greater propensity for lymphatic dissemination, traditionally necessitating comprehensive pelvic and para-aortic lymphadenectomy (PLND/PALND) to assess nodal metastasis and guide adjuvant therapy. However, this approach is associated with increased operative time, blood loss, adjacent tissue injury (ureters, nerves and vessels), and postoperative complications, including lymphedema and lymphocele. While sentinel lymph node (SLN) mapping is well-established in low- and intermediate-risk cases, its efficacy in high-risk endometrial cancer remains under investigation. SLN mapping offers a targeted approach that may reduce surgical morbidity while maintaining staging accuracy. In high-risk early-stage disease endometrial cancers, SLN mapping combined with systemic lymphadenectomy for failed mapping may enhance diagnostic accuracy while reducing unnecessary lymphadenectomy.

### Aim

To evaluate the sensitivity and negative predictive value (NPV) of SLN mapping using a robotic surgical platform in high-risk endometrial cancer.

### Methods

A retrospective analysis was conducted at the Centre for Cancer, Kokilaben Dhirubhai Ambani Hospital, Mumbai. A total of 307 patients with endometrial cancer who underwent robotic assisted surgery between January 2022 and December 2025 were considered. Inclusion criteria included biopsy-confirmed high-risk endometrial cancer (e.g., serous, clear cell, grade 3 endometrioid, or carcinosarcoma) with radiologically and clinically early-stage disease with no pre/intraoperative nodal involvement. All patients underwent robotic-assisted hysterectomy with SLN mapping and systemic lymph node dissection (PLND+PALND). SLN detection rates, accuracy, and NPV were analysed.

### Results

Of 307 cases, 62 were high-risk endometrial cancers. Total SLN detection rate was 98% (61/62), bilateral in 80% (50/62), unilateral in 18.5% (11/62) and no mapping in 1/62 patients. SLN mapping algorithm was 92% sensitive in detecting true positives. The overall NPV of SLN mapping for detecting lymph node metastasis was 96% when only SLN nodes were analyzed. Two false-negative cases were identified: one with a positive left common iliac node (left SLN undetected) and another with a positive para-aortic node (despite bilateral SLN mapping). When analysing according to the SLN algorithm (ipsilateral PLND and PALD in failed mapping), detection

accuracy improved to 98%, with only one isolated para-aortic metastasis missed.

## Conclusions

SLN mapping, when combined with PLND/PALND in failed mapping cases, provides a highly accurate and safe alternative to routine lymphadenectomy in high-risk endometrial cancer. This approach significantly reduces surgical morbidity while maintaining oncologic integrity. Integrating robotic assisted surgery and advanced imaging, such as contrast-enhanced CT/PET-CT, may further refine staging and improve patient outcomes.

ID 42

## EVALUATION OF OVARIAN RESERVE AFTER ROBOTIC SINGLE-SITE OVARIAN CYSTECTOMY USING ANTI-MÜLLERIAN HORMONE LEVELS COMPARED TO HISTORICAL LAPAROSCOPIC COHORTS

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### Background/Aim

Serum anti-müllerian hormone (AMH) is regarded as a useful marker in predicting for ovarian functional reserve. The aim of this study was to investigate the impact on the ovarian reserve after robotic single-site ovarian cystectomy.

### Methods

About 130 patients who underwent robotic single-site ovarian cystectomy for benign ovarian tumour from 2020 to 2024 were analysed retrospectively. The AMH levels were measured by enzyme immunoassay preoperatively and at 6 or 9 months after surgery. The difference and ratio of AMH levels were compared to the historical laparoscopic cohorts from published studies.

### Results

The AMH levels were decreased at 6 or 9 months after surgery in all patients 9 (ratio of AMH levels between preoperative and 6 or 9 months,  $0.53 \pm 0.22$  ng/mL). Considering age, total operation time, tumour histology, tumor size, and tumour bilaterality, both preoperative basal and postoperative AMH levels in bilateral endometrioma group were significantly lower than the unilateral endometrioma group ( $p = 0.022$  and  $p < 0.001$ , respectively).

In addition, the decrease of AMH level after surgery in bilateral endometrioma in this study was less compared to the historical laparoscopic cohorts.

## Conclusions

Robotic single-site ovarian cystectomy could be considered for preserving ovarian function in patients with bilateral ovarian endometrioma.

ID 43

## RELATIONSHIP WITH THE EARLY SURGICAL PERIOD AND RECURRENCE AFTER ROBOTIC RADICAL HYSTERECTOMY IN STAGE IB CERVICAL CANCER: VALIDATION STUDY OF TWO SURGEONS

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### Background/Aim

To delineate recurrence patterns and evaluate clinicopathologic prognostic factors for survival following robotic radical hysterectomy (RRH) in the treatment of stage IB cervical cancer.

### Methods

We conducted a retrospective historical cohort study enrolling 124 patients from two academic hospitals. These patients underwent RRH with pelvic lymph node dissection performed by two surgeons (S1, S2). Patient statuses were assessed in terms of operative outcomes, pathologic results, and survival outcomes.

### Results

The recurrence rates for S1 and S2 were 9.4% (6/64) and 8.3% (5/60), respectively, while the overall survival rates were 95.3% (61/64) and 98.3% (59/60). The pattern of recurrence site was similar, including peritoneal recurrence. When patients were categorized into three groups based on surgery date, the initial surgical period for both surgeons exhibited significantly higher recurrence rates compared to the second and third periods, with no recurrences observed in the third period. Multivariate analysis revealed that the early period of RRH (S1:  $p = 0.025$ , S2:  $p = 0.028$ ) and clinical tumour size more than 3 cm (S1, S2:  $p = 0.001$ ) were prognostic factors related to the recurrence.

## Conclusions

The early surgical period and large tumour size were associated with disease recurrence after RRH regardless of surgeon factors. We emphasize the importance of achieving proficiency and appropriate patient selection for favorable prognosis after RRH in stage IB cervical cancer.

ID 44

## IS THERE A ROLE FOR DAVINCI SP IN ENDOMETRIAL CANCER? – FIRST EXPERIENCES FROM KAROLINSKA UNIVERSITY HOSPITAL

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### Background

The da Vinci SP (single port) robotic platform has recently been approved in Europe. Single-port robotic-assisted surgery could potentially improve outcomes for women with endometrial cancer.

We report our initial experiences with the daVinci SP compared to standard multiport (MP) surgeries.

Methods

From April 2024 – March 2025, women undergoing robotic-assisted hysterectomy, BSO and sentinel node biopsy (SNB) using the daVinci SP or the standard MP systems (daVinci Xi/X) were included in the analysis. Descriptive statistics include perioperative outcomes and 30-day complications.

Results

A total of 215 women underwent standard robotic-assisted surgery for endometrial cancer during the study period. Of them, 20 (9 %) were operated with the daVinci SP-system and 195 (91 %) with MP. Operative time, blood loss, SLN mapping and length of stay was similar between SP and MP cases (Table 1). The conversion rate was 4/195 and 1/20 for MP and SP respectively (4 out 5 due to disseminated disease). 30-day complications according to Clavien-Dindo grade ≥3a was recorded in 5/195 (2.6%) of MP cases and in 1/20 SP cases (herniation of small intestine in port incision).

Conclusions

The implementation of daVinci SP for endometrial cancer was accompanied with similar perioperative outcomes compared to standard multiport surgeries. No learning-curve effect in terms of prolonged OT was observed. As daVinci SP is associated with significantly higher costs, the place of daVinci SP in endometrial cancer should be further investigated.

TABLE 1

|                                      | MP (n=195)   | SP (n=20)   |
|--------------------------------------|--------------|-------------|
| Age (median, range)                  | 66 (39-91)   | 65 (49-92)  |
| BMI (median, range))                 | 29 (19-56)   | 28 (21-35)  |
| Operative time (median, range)       | 104 (43-186) | 98 (76-148) |
| SLN bilat mapping (%)                | 82%          | 91%         |
| Blood loss, ml (median, range)       | 40 (0-500)   | 45 (0-100)  |
| Length of stay, days (median, range) | 2 (0-5)      | 2 (1-3)     |
| Conversions                          | 4/195        | 1/20        |
| C-D ≥3a                              | 2.5%         | 5%          |



AN UNEXPECTED DOUBLE URETER: OVERCOMING CHALLENGES IN DEEP ENDOMETRIOSIS SURGERY

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Background

Double ureter, a congenital anomaly in which two ureters drain a single kidney instead of one, is often asymptomatic and remains undiagnosed throughout life. However, it can be discovered incidentally during pelvic surgeries performed for other reasons, such as endometriosis or oncologic procedures. Studies suggest that ureteral duplication occurs in approximately 0.7% to 4% of the population, with a higher prevalence in females.

The intra-operative incidental finding of a double ureter highlights the complexity of pelvic anatomy and the importance of careful dissection to avoid complications. In laparoscopic procedures for severe endometriosis, dense adhesions may obscure normal anatomical landmarks, increasing the risk of ureteral injury. In some reported cases, surgeons identified an unexpected ureteral duplication only after noticing separate peristaltic movements in two adjacent tubular structures, prompting further investigation to confirm the anomaly.

These findings emphasize the need for a thorough preoperative assessment, particularly in patients with complex pelvic pathology. Imaging techniques such as intravenous pyelogram or magnetic resonance urography can help identify anatomical variations before surgery. However, when a double ureter is encountered unexpectedly during an operation, the surgeon must exercise caution to preserve both structures and ensure appropriate post-operative evaluation to rule out any functional impairment. Understanding and anticipating such anomalies can significantly reduce the risk of iatrogenic ureteral injury and improve surgical outcomes.

Methods

We report the case of a 33-year-old G2P2 woman who underwent robotic-assisted surgery for deep endometriosis using the Da Vinci Xi system at San Carlo Hospital, Milan.

Results

Surgical instrumentation included monopolar scissors, Maryland bipolar, and prograsp forceps. The procedure began with adhesiolysis to free the ovaries, followed by mobilisation of the sigmoid colon. The retroperitoneum was dissected in an anterograde manner to expose the bilateral ureteral course. As documented intraoperatively, a duplicated ureter on the left side was suspected. To further delineate the anatomical structures, the Latzko and Okabayashi spaces were developed deeply to the level of the obturator nerve, enabling precise tracking of ureteral trajectory. Finally, intravenous administration of indigo carmine was performed to assess ureteral peristalsis and confirm functionality.

Conclusions

Robotic-assisted surgery represents a valuable approach in the management of deep endometriosis, allowing for superior 3D visualization and precise dissection, even in cases with severe anatomical distortion. The enhanced dexterity and stability provided by robotics significantly improve surgical precision, ultimately

benefiting both the surgeon and the patient by minimising complications and optimising outcomes.



## EFFECTIVENESS OF VESSEL SEALER IN ROBOTIC ASSISTED SURGERIES FOR UTERINE CANCER

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### Aim

To see the effectiveness of vessel sealer in reducing the blood loss and console time.

### Methods

From July 2022-January 2025 medical charts and electronic data of patients who underwent Robotic endometrial cancer surgery were reviewed retrospectively. Data was collected on predesigned proforma analysed statistically by using SPSS 29. Categorical variables by descriptive and continuous variables by frequencies.

### Results

The study included 142 patients, majority were EAC 91 (64%) and HGSC 33 (23%). The mean age of the study population was 67.58.

Out of all, 75 (52.8%) were obese having BMI >30 kg/m<sup>2</sup>. Half of the patients presented with stage 1 disease i.e. IA, 60 (42.3%) and IB, 37 (26.1%) and stage 3C1 with positive lymph nodes were 21 (14.8%).

According to the molecular type 91 (64.1%) were MMR proficient, 47 (33.1%) was MMR deficit. 123 (86.6%) were ER positive and 126 (88.7%) had P53 wild type. The POLE testing was opted according to the British society guideline, 108 (76.1%) were POLE negative, 06 (4.2%) had mutant and positive gene variant respectively. However, 22 (15.5%) patients don't qualify for the POLE testing according to the grade and stage of the disease. Surgical approach was Robotic assisted with use of vessel sealer. Majority of the patients 87 (61.3%) had surgery with TRH, BSO, SLNB, 49 (34.5%) had infracolic omentectomy too and 6 (4.2%) had pelvic or para-aortic lymph nodes dissection too. The mini-laparotomy (transverse scar) was given for specimen retrieval in 11.3% (16).

The mean console time noted was 61.42 minutes with range from 35-155 minutes. During surgery filmy adhesions found in 12 (8.5%) patients, 13 (9.2%) had strong adhesions needed sharp dissection, 4 (2.8%) had very strong vascularized adhesions. The hospital stay was <24 hours for most of the patients 126 (88.7%), only 3 (2.1%) patients stayed more than 72 hours due to anesthesia issues. The EBL for majority of the patients was <50 ml in 138 (97.2%) patients, 3 (2.1%) had blood loss of 100 ml while

1 (0.7%) patient had blood loss of 500ml due to dense adhesions between sigmoid colon, bladder and uterus.

After MDT discussion, 50 (35.2%) went for pelvic radiotherapy, 24 (16.9%) required Brachytherapy and sequential chemo-radiotherapy respectively and 06 (4.2%) required the systemic chemotherapy.

### Conclusions

The results show that with vessel sealer Robotic cancer surgeries can be performed with less intraoperative blood loss, reduced hospital stay and less average console time for the operation.



## ROBOTIC RADICAL TRACHELECTOMY

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### Background/Aim

Radical trachelectomy represents an alternative for early-stage cervical cancer in patients who want to preserve fertility. This procedure can be performed by vaginal, open or minimal invasive approach.

The robotic approach may offer some advantages, especially for the surgeon's ergonomics. Since the evidence is still scarce, larger studies are needed.

Our objective is to present a video of robotic radical trachelectomy showing our technique.

### Methods

Video surgery.

### Conclusions

In selected cases robotic radical trachelectomy is a safe option for patients that wish to preserve their fertility.



## ROBOTIC RADICAL TRACHELECTOMY IN CERVICAL CANCER

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### Background/Aim

Radical trachelectomy represents an alternative for early-stage cervical cancer in patients who want to preserve fertility. The robotic approach may offer some advantages, especially for the surgeon's ergonomics. Our objective is to present a retrospective review of our experience with robotic radical trachelectomy.

### Methods

Descriptive study carried out in Clinico San Carlos University Hospital,

Madrid, Spain. We included all our patients with early-stage cervical cancer that wished to preserve fertility, from 2022 to 2024. The surgery included bilateral pelvic lymphadenectomy followed by radical trachelectomy and cervical cerclage after confirmation of absence of nodal metastasis. Demographic data of the study population, perioperative and oncological outcomes were analysed.

Results

9 patients who underwent radical robotic trachelectomy were studied. Median patient age was 30 (range 23-35) years old. Median body mass index was 24 (range 19-28). Tumour histology was squamous cell carcinoma in 57% (4) and adenocarcinoma in 43% (3) of the patients. Median surgical time was 285 (range 247-315) minutes. The median of pelvic nodes obtained was 15 (range 12-40). Two postoperative complications were observed. One patient tried to conceive and had preterm labor. One patient died of the disease.

Conclusions

In selected cases robotic radical trachelectomy is a safe option for patients that wish to preserve their fertility with similar rates of oncological safety and complications than open procedures and a shorter recovery time.



IMPACT OF SURGICAL APPROACH ON LYMPH NODE YIELD IN MINIMALLY INVASIVE PARA-AORTIC LYMPHADENECTOMY FOR ENDOMETRIAL AND OVARIAN CANCER

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Background

The role of extensive lymphadenectomy has significantly declined over the past decade following evolving guidelines for gynaecological malignancies. When indicated, the choice of surgical approach remains crucial to optimising oncologic and perioperative outcomes. This study aims to compare perioperative outcomes and lymph node retrieval quality between transperitoneal (TP) and extraperitoneal (EP) para-aortic lymphadenectomy (PALND) in patients with gynaecological malignancies.

Methods

We conducted a retrospective, single-center cohort study of patients who underwent minimally invasive PALND for endometrial or ovarian cancer between January 2016 and December 2024. Demographic characteristics, intraoperative parameters, and postoperative outcomes were analysed. Statistical significance was

set at  $p < 0.05$ .

Results

A total of 59 patients underwent minimally invasive PALND at the Paoli-Calmettes Institute, Marseille, France. Of these, 44 patients (TP group) underwent transperitoneal PALND (81.8% robotic, 18.2% laparoscopic), while 15 patients (EP group) underwent extraperitoneal PALND (53.3% laparoscopic, 46.7% hybrid robotic-laparoscopic).

Patients in the EP group had a significantly higher body mass index (BMI) (32.03 [26.95, 35.93] vs. 23.00 [20.87, 24.58]  $\text{kg/m}^2$ ,  $p < 0.001$ ) and Charlson Comorbidity Index ( $p < 0.05$ ). Endometrial cancer was more prevalent in the EP group (73.3% vs. 43.2%,  $p < 0.05$ ), whereas ovarian cancer was more frequently observed in the TP group (56.8% vs. 26.7%,  $p < 0.05$ ). The median number of retrieved para-aortic lymph nodes was significantly higher in the EP group (13 [10.5, 20] vs. 8 [4, 11],  $p < 0.05$ ). However, the TP group had a significantly shorter median operative time (270 vs. 311 minutes,  $p < 0.05$ ).

Intraoperative blood loss was comparable between groups. No significant differences were observed in median age or in postoperative outcomes, including early complications, complication severity, time to bowel function recovery, hospital length of stay, and late complications ( $p > 0.05$ ).

Conclusions

Our findings indicate that the extraperitoneal approach, despite requiring a longer operative time, yields a significantly higher lymph node count, suggesting potential advantages for precise oncologic staging. Patient characteristics, particularly elevated BMI and higher comorbidity burden, appear to influence the choice of surgical approach. Given the comparable perioperative morbidity and recovery profiles between techniques, the extraperitoneal approach remains a valuable alternative to transperitoneal PALND in appropriately selected patients.



CRITICAL VIEW OF SAFETY ASSESSMENT IN SENTINEL NODE DISSECTION FOR ENDOMETRIAL AND CERVICAL CANCER: ARTIFICIAL INTELLIGENCE TO ENHANCE SURGICAL SAFETY AND LYMPH NODE DETECTION (LYSE STUDY).

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# Prof. Giovanni Scambia and Prof. Nicolas Padoy equally contributed to the study

## Objective

This study aims to evaluate the feasibility of video-based assessment rate of Critical Views of Safety criteria for sentinel lymph node dissection in endometrial and cervical cancer. Goal of these Critical Views of Safety is to help standardize the evaluation of surgical quality, improve the precision of sentinel lymph node identification, and lead to better patient outcomes.

## Methods

This international multi-center observational prospective study was conducted from April to September 2024. Surgical robotic and laparoscopic videos from patients with cervical and endometrial carcinoma undergoing minimally invasive sentinel lymph node dissection were collected. Three Critical Views of Safety criteria (lateral pararectal space, lateral paravesical space, internal iliac artery) were proposed based on the anatomical structures defined as mandatory to be identified before sentinel node dissection, according to previously published expert consensus. Three independent surgeons, blinded to each other's assessments, evaluated whether the proposed criteria were identifiable in the robotic and laparoscopic surgical videos to establish applicability (content validity) and inter-rater agreement (reliability).

## Results

A total of 80 patients were enrolled, of these, 71 cases (88.8%) had videos suitable for annotation, 64 (90.1%) underwent sentinel lymph node dissection for endometrial cancer, and 7 (9.9%) for cervical cancer; median age was 52 years (IQR 34-71) and median body mass index was 28.8 Kg/m<sup>2</sup> (IQR 23.7-32.17). The lateral pararectal space was identified in 62% of videos, the lateral paravesical space in 94%, and the internal iliac artery in the 32%. Inter-rater reliability was high for the lateral pararectal and paravesical spaces (Fleiss' Kappa of 0.90) and moderate for the internal iliac artery (Fleiss' Kappa of 0.73).

## Conclusions

The low assessment rate of the internal iliac artery criteria should raise concerns about missing sentinel lymph nodes in the internal iliac and pre-sacral area. The assessment of such standardized safety criteria could potentially standardize the procedures thereby improving adherence to guidelines. The introduction of the video-assessment of these criteria lays the foundation for exploring the feasibility of artificial intelligence algorithms to automatically assess and document the Critical Views of Safety in surgical videos.

## CELL CANCER – CASE SERIES FOCUSING ON ONCOLOGIC ROBOTIC SURGICAL APPROACH

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## Background

The incidence of multiple primary malignancies (MPMs), including synchronous tumours, has been rising in recent decades, driven by increased life expectancy, improved cancer survival, and advances in diagnostic imaging. Recent studies estimate that MPMs occur in up to 18% of cancer patients, with approximately 20% of these cases classified as synchronous. Both endometrial carcinoma (EC) and renal cell carcinoma (RCC) are strongly associated with obesity.

Accordingly, the global rise in obesity has been accompanied by an increase in the incidence of both malignancies, with RCC increasing by approximately 1% per year from 2015 through 2019. This trend may contribute to a growing number of patients diagnosed with MPMs involving EC and RCC. While these malignancies are commonly managed surgically, their synchronous or metachronous occurrence remains rare and presents unique clinical and surgical challenges. There is no established consensus regarding the optimal management of such cases.

## Aim

To evaluate the optimal management approach for MPMs involving EC and RCC based on a series of cases managed at our institution in recent years.

## Methods

A retrospective review of all patients diagnosed with EC and RCC at our institution between 2014 and 2024. Clinical, surgical, and pathological data were collected, including tumour characteristics, treatment modality, surgical technique, perioperative course, and oncologic outcomes.

## Results

Seven patients that were diagnosed with synchronous or metachronous EC and RCC were identified. Six underwent surgical treatment for both tumours. Three of whom were managed with combined robotic-assisted procedures performed during a single operative session that was performed collaboratively by gynaecological and urologic oncology teams. Patients who underwent combined minimal invasive surgery experienced lower intraoperative blood loss, required no blood transfusions, and had shorter hospital stays compared to those who underwent staged procedures.

## Conclusions

Synchronous or metachronous EC and RCC are rare, with no standardised treatment guidelines. Our case series demonstrates that

combined robotic-assisted surgery is a feasible and safe strategy, particularly in patients with obesity. This approach is associated with reduced perioperative morbidity, shorter hospitalisation, and timely initiation of adjuvant therapy. The multidisciplinary nature of combined robotic procedures facilitates more coordinated care delivery and may contribute to improved clinical outcomes. This approach should be considered for appropriately selected patients with MPMs involving EC and RCC.



## SOLITARY FIBROUS TUMOUR OF RETROPERITONEAL LOCALISATION TREATED WITH ROBOT-ASSISTED LAPAROSCOPIC SURGERY: A CASE REPORT AND LITERATURE REVIEW

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### Background/Aim

Solitary fibrous tumours (SFTs) are rare mesenchymal neoplasms that can develop in various anatomical locations, including the retroperitoneum. Given their unpredictable biological behavior, complete surgical resection remains the primary treatment. We report a case from our institution of a retroperitoneal SFT successfully managed with robot-assisted minimally invasive surgery. Additionally we conducted a literature review.

### Methods

A review of the literature was conducted, collecting all papers published until January 2025 that described cases of SFTs in women, affecting the female genitourinary tract or pelvic region. Finally, we present a case of SFT diagnosed and treated at our institution.

### Results

We analysed 21 papers reporting 36 cases, with 16 out of 36 tumours involving the urinary tract or perirectal region. Patients' age ranged from 21 to 70 years (mean: 49 years). Seventeen out of 34 women were asymptomatic, while the main symptoms were pelvic pain (13 of 34 cases) and urinary tract obstruction (3 of 34 cases). At diagnosis, tumour size ranged from 4 to 40 cm (mean: 12 cm), with CA 125 elevation in 3 cases. Most patients underwent laparotomic surgery, with a minimally invasive approach in only 3 cases. Recurrence occurred in 6 out of 30 cases (latency: 3–72 months, mean 17 months). Among these, 4 histopathologically analysed cases, 50% showed moderate risk according to Demicco's classification.

### Case-report

We performed total hysterectomy, bilateral salpingo-

oophorectomy, and tumorectomy of a pararectal nodule using robot-assisted laparoscopic surgery on a 57-year-old woman for an asymptomatic retroperitoneal mass, incidentally detected during a follow-up examination for a germline mutation in RAD51C. Tumour markers at diagnosis were negative.

Ultrasound examination revealed a solid mass measuring 30 × 30 × 24 mm, with regular contours, heterogeneous echogenicity, no acoustic shadows, and a Color Score of 2. From a histopathological perspective, the mass was diagnosed as a solitary fibrous tumour with the following characteristics: no areas of necrosis, a mitotic index of 5% (Ki-67), rare mitoses (1–2 per 10 high-power field), and negative surgical margins. The patient was subsequently referred for exclusive clinical and imaging follow-up, and at 20 months post-surgery, no recurrence of disease has been observed.

### Conclusions

Solitary fibrous tumours are rare and often asymptomatic, though they can cause mass-related symptoms such as pelvic pain and urinary obstruction. Surgical resection remains the primary treatment, with laparotomic approaches being more common than minimally invasive techniques. However, minimally invasive surgery could be a viable option in selected cases.



## RETROSPECTIVE STUDY OF POLOXAMER 407-BASED ROPIVACAINE HYDROGEL AFTER MINIMAL INVASIVE GYNAECOLOGICAL SURGERY

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### Background

Robotic and laparoscopic surgeries, offering minimal incisions and rapid postoperative recovery, are widely utilised across gynaecological procedures. As minimally invasive techniques evolve, pain control has become a key focus to reduce surgical burden. Local anesthetics such as ropivacaine and bupivacaine are commonly used, administered via continuous wound infusion (CWI, e.g., On-Q) or direct local injection. However, concerns persist regarding CWI-related side effects and the limited duration of effect with injections. This study retrospectively evaluates the efficacy of a Poloxamer 407 (P407)-based drug delivery system—approved by the U.S. FDA and recently introduced in Korea as a new medical technology—for sustained analgesia with reduced adverse effects.

### Methods

From January to December 2023, the Department of Obstetrics and Gynaecology at Yonsei University College of Medicine Severance Hospital is collecting mandatory records for patients who underwent minimal invasive surgery (robotic or laparoscopic hysterectomy with

or without adnexa operation such as cyst enucleation, oophorectomy, salpingectomy and lymphadenectomy using gel-type local anesthetics (welpass with ropivacaine) or bupivacaine as a sole local anesthetic. Through these mandatory records, clinical information about patients, histopathological results, surgical findings, postoperative pain levels, and postoperative side effects are being gathered. This data collection aims to confirm the clinical significance of the use of the mentioned anesthetics for postoperative pain control.

## Results

During the research period, a total of 209 patients were examined, with 42 being welpass users and 167 being bupivacaine users. There were differences in operation history, operation time, and intraoperative bleeding amount between the two groups in demography and surgical outcomes. After propensity score matching to adjust for these difference, we confirmed the postoperative Numeria Rating Scale. Before matching, the two groups showed significant differences starting 12 hours after surgery, and even after matching, significant differences were observed starting 12 hours after surgery.

## Conclusions

In the context of local injection for pain control after minimal invasive surgery, it was observed that using Poloxamer 407 with ropivacaine resulted in lower pain levels for patients compared to the traditional use of bupivacaine alone. Further prospective studies will be necessary to evaluate the effectiveness of this medication.



## TREATMENT OF DEEP INFILTRATING ENDOMETRIOSIS WITH DAVINCI CONSOLE. SINGLE CENTER STUDY

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### Background

Endometriosis is a chronic condition affecting 6-10% of women of reproductive age, with endometriosis-related pain and infertility being the leading symptoms.

Deep infiltrating endometriosis (DIE) is the most aggressive type of endometriosis, in which tissue infiltration leads to anatomy disruption and dysfunction of pelvic organs, and lowers in quality of life. Surgical approaches consist mainly of minimally invasive techniques. According to research, robot-assisted laparoscopy (RAS) have revolutionised the treatment of complex cases, such as DIE, offering improved precision and effectiveness.

### Methods

A prospective study was conducted, including the experience of

colorectal resection using the NOSE technique in 91 patients with infiltrative endometriosis of the intestine for the period from 2021 to 2024. All patients were operated by using robot-assisted access.

Indications for surgical treatment were:

1. Patients with a symptomatic form (severe pain syndrome, proctological complaints, infertility - unsuccessful IVF attempts in history) of colorectal endometriosis.
2. Characteristics of the endometrioid infiltrate: length 30 mm or more, depth of invasion 7 mm or more, and degree of involvement of the intestinal circumference 40% or more.
3. Narrowing of the intestinal lumen according to colonoscopy in asymptomatic patients diagnosed with colorectal endometriosis using endoscopic diagnostic methods.

## Results

The median age of the patients was 36 (30; 45) years, the median values of the body mass index (BMI) was 22.3 (18.5; 23.7) kg/m<sup>2</sup>. Median blood loss was 130 (100-150) ml and the median operation time was 209 (150-270) minutes, the fact can be explained by the need for station docking and undocking. As well as mean hospital stay were 4 (4-7) days. To early diagnose of postoperative complications, C-reactive protein (CRP) was monitored, which is a sensitive but nonspecific marker of inflammation. During the normal course of the postoperative period, an increase in CRP was noted on the 2nd day, followed by a gradual decrease.

## Conclusions

Robotic surgery offers improved visualization, greater dexterity, and more precise dissection skills compared with conventional laparoscopy. RAS is not clinically inferior to standard laparoscopy, although it typically requires a longer operating time. Despite this, there is no significant difference between two methods in blood loss, complication rates. RAS has proven to be safe and effective in treating endometriosis, particularly in complex cases involving deep infiltrating endometriosis affecting the bowel.



## ANTIADHESION BARRIERS AFTER COLORECTAL ROBOTIC AND LAPAROSCOPYC RESECTION FOR DIE

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### Background

Pelvic adhesions after DIE removing is a most often reason of chronic pelvic pain. Big surface without peritoneum coverage after DIE and superficial endometriosis removing can be a reason of adhesion formation and requires using of antiadhesion barriers at the end of surgery. Applying of gel barriers after after colorectal resection can be a reason of anastomosis leak as a complication.

## Aim

Underestimate clinical and laboratory parameters of early postoperative period and QOL after DIE colorectal resection.

## Methods

60 patients of DIE colorectal removing were included/ In 30 cases we apply hyaluronic acid antiadhesive gel on the resection area, 30 patients – control groupe.

## Results

In the postoperative period, the most sensitive marker correlated with clinical data was C-reactive protein. At 1, 2, 3, 14 days C-reactive protein, blood leukocyte level was monitored in all patients who underwent surgical treatment of infiltration of endometriosis. The degree of severity of the pain syndrome had a positive correlation with the amount of medication administered in patients of group 1. In the postoperative period, there was an increase of CPR level in the main group patients compared to this indicator of the control group patients with a CPR peak on the second day in group 1 with a gradual decrease and normalisation to 14 days. In the late postoperative period, there was a reduction of the severity of the pain syndrome in patients of group 1.

## Conclusions

Intraoperative use of the adhesion barrier is safe and reduces the possibility of development and degree of pain syndrome in the postoperative period.



## ROBOTIC APPROACH IN ADNEXAL MASS MANAGEMENT

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### Aim/Objective

To assess the feasibility of robotic approach in adnexal mass management and determine predictors of disease recurrence.

### Methods

A retrospective analysis, including patients who had undergone robotic surgery for any adnexal mass (benign, borderline or malignant) between January 2022 - January 2025 was done. Surgical extent/duration, mass histology, size of the tumor, ORADS score, laterality, endobag use, intraoperative spill, complications, pain score, residual disease and recurrences were analysed for all patients. Univariate analysis followed by multivariate logistic regression was carried out to determine the independent risk factors for recurrence. The level of statistical significance was placed at  $P < 0.05$ .

### Results

80 patients were included in the study of whom 64 (81.2%) were

benign, 7(8.7%) borderline and 9 (11.2%) malignant. The mean age of the group was 40 ( $\pm 12$ ) years having a mean cyst/mass size of 6.8 ( $\pm 2.1$ ) cm. Fifty-five (68.7%) patients had a unilateral condition and twenty-nine (36.2%) underwent cystectomy. The average operating time was 2.9 ( $\pm 1.07$ ) hours with a median nodal yield of 35 (20- 45) in malignant cases. Median post-operative pain score was 1 (0-3) and 7 (8.7%) developed Clavien-Dindo grade 2-3 complications.

In the median follow-up period of 10 (2-36) months, 4 patients with endometriosis and one with borderline mucinous neoplasm developed recurrence (6.2%). Residual disease ( $p=0.02$ ), intra-operative spillage ( $p=0.01$ ) and cyst size  $> 8\text{cm}$  ( $p=0.04$ ) were associated with disease recurrence on univariate analysis while only spillage (RR 9.2, 95% CI 8.01-17.02) and residual disease (RR 7.8, 95% CI 6.05-15.02) remained significant on logistic regression.

## Conclusions

A careful patient selection, surgical expertise and prevention of intraoperative spillage ensures good patient outcomes in robot-assisted adnexal mass surgeries without the disadvantages of an open surgery.



## VIDEO DEMONSTRATION OF ROBOTIC UTERINE ARTERY SPARING RADICAL TRACHELECTOMY WITH SENTINEL LYMPH NODE MAPPING

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### Background/Aim

To present a case of robotic radical trachelectomy and illustrate the technique step-by-step, highlighting the anatomical landmarks.

### Methods

Surgical film from a single case operated at Seoul National University Bundang Hospital (tertiary referral center), Republic of Korea. Thirty-five years old lady with cervical cancer FIGO stage 1B2 (3.6 cm with a 3 mm depth of invasion, moderately differentiated, non-keratinising invasive squamous cells) who wished to preserve her fertility.

### Results

In this surgical video, we describe the fertility-sparing surgical procedure of radical trachelectomy with abdominal cerclage, performed using a robotic approach. The procedure consisted of the following steps:

- 1) Cervical injection of ICG, followed by cutting of the vagina 360° and suturing of the vaginal cuff over the tumor to prevent tumour spillage during colpotomy.
- 2) Development of the para-rectal and paravesical spaces on both sides.
- 3) indocyanine green dye-guided bilateral sentinel lymph node

mapping.

- 4) Identification of the internal iliac artery and skeletonisation of the bilateral uterine arteries.
- 5) Ureteric dissection up to the ureteric tunnel, sparing the hypogastric nerve.
- 6) Clearance of the parametrium and paracolpos, sparing the ascending branch of the bilateral uterine arteries.
- 7) Opening the vesicouterine space, dividing the vesicouterine ligament, and pushing the bladder down to create a safe anterior vaginal margin.
- 8) Dissection of the rectum downwards, securing a safe posterior vaginal margin.
- 9) Trachelectomy.
- 10) Cerclage.
- 11) Suturing the isthmus with the vagina.

The surgical procedure was performed without any complications. The operative duration was 280 min, and intraoperative blood loss was 342 ml. The sentinel lymph nodes were devoid of metastasis and the resection margins were free of invasion. The patient was discharged on second post-operative day. During the follow-up period, no recurrence was observed and the patient was referred to a fertility specialist for further management.

## Conclusions

Robotic radical trachelectomy appears to be a viable option for women with early cervical cancer who wish to preserve their fertility because it provides improved visualisation and dexterity, which contributes to better precision during surgery.



## MULTINATIONAL EVALUATION OF ROBOTIC-ASSISTED HYSTERECTOMY WITH ADNEXAL SURGERY USING THE DEXTER® SYSTEM

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## Background/Aim

Robotic-assisted surgery is becoming an integral part of minimally invasive gynaecological procedures, particularly hysterectomy. While conventional platforms offer advantages in surgical precision and ergonomics, many require significant infrastructure, high costs, and dedicated operating room (OR) space, limiting accessibility.

The Dexter® robotic surgery system offers a small, mobile, open architecture solution, designed to provide a flexible operating room workflow allowing the surgeons to alternate easily between laparoscopic and robotic assistance without major infrastructure changes. This study aimed to confirm the safety and clinical

performance of Dexter for hysterectomy with adnexal surgery.

## Methods

This prospective, multicentre, single-arm trial (NCT06473675) included 50 patients undergoing hysterectomy for benign indications using the Dexter system. Four hospitals across three countries used their existing laparoscopic towers and endoscopic systems compatible with Dexter. The primary endpoints were short-term safety, assessed by the occurrence of Clavien-Dindo grade  $\geq 3$  adverse events up to 42 days postoperatively, and procedural success without conversion to laparoscopy or open surgery. Secondary endpoints included additional surgical data and patient outcomes.

## Results

The median patient age was 42 years (IQR 37-47), with a median BMI of 23.95 kg/m<sup>2</sup> (IQR 21[GM1] [GM2] .39-27.03). In addition to total hysterectomy, 42 (84%) patients underwent salpingectomy, 7 (14[GM3] [BB4] %) salpingo-oophorectomy, and 1 (2%) oophorectomy. All procedures were successfully completed without intraoperative complications or conversions. The median docking time was 4 min (IQR 3-5), and the median operative time was 114 min (IQR 90-142), including a median console time of 70 min (IQR 57-88). The estimated blood loss was minimal, with a median of 50 ml (IQR 30-100), and no blood transfusions required. The median uterine weight was 120 g (IQR 70-185) and the median length of hospital stay was 2 days (IQR 1-2). Only one postoperative complication of Clavien-Dindo grade 3b was reported, and it was not related to the device.[GM5] [BB6] Currently, recruitment in the study continues to increase the representation of patients undergoing oophorectomy.

## Conclusions

The Dexter® System is a safe, efficient, and flexible alternative to existing robotic platforms for hysterectomy with adnexal surgery. The system enables rapid docking and operative times comparable to other robotic systems and laparoscopy reported in the literature. Moreover, it allows continued use of standard laparoscopic tower instrumentation, eliminating the need for a dedicated robotic OR, and thus integrating seamlessly into surgical workflows. Further research is warranted to assess long-term clinical outcomes with larger cohorts.



## ULTRASOUND SENTINEL LYMPH NODE ASSESSMENT IN ROBOTIC SURGERY FOR UTERINE CANCERS USING A DROP-IN PROBE: A PROSPECTIVE STUDY

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## Introduction

The sentinel lymph node (SLN) technique is widely regarded as the gold standard for surgical staging in uterine carcinomas ensuring significantly lower complication rate compared to lymphadenectomy<sup>1</sup>. However, challenges such as low accuracy of frozen sections and the potential for empty packets remain<sup>2-4</sup>. This study explores an innovative approach that integrates robotic surgery with real-time ultrasound to assess SLN status<sup>5,6</sup>.

## Methods

To assist the SLN dissection, the Arietta L43K (2-12 MHz-Hitachi, Japan) drop-in robotic ultrasound probe is used, demonstrating the ultrasound-guided surgical technique performed using the da Vinci Xi platform (Intuitive Surgical Inc., USA). To allow the real-time ultrasound imaging in split-view mode on the surgeon's console, the ultrasound probe is introduced through the accessory trocar and manipulated by robotic instruments. Ultrasound images are captured by the surgeon under the guidance of an expert ultrasonographer.

The SLN are assessed by the sonographer both in vivo and ex vivo and described according to the consensus opinion from the Vulvar International Tumor Analysis group (VITA consensus)<sup>7</sup>.

## Results

With the aim of developing a standardised surgical technique, we describe the steps necessary for performing the lymph node status assessment. The procedure starts with the cervical injection of indocyanine green. The surgeon opens the retroperitoneum to allow for identification of anatomical landmarks such as pararectal and paravesical spaces and the internal iliac area. Using the near-infrared imaging mode which highlights the lymphatic pathways, the SLN is identified bilaterally.

The drop-in ultrasound probe is introduced, and the console is switched to split-view mode enabling the surgeon to observe real-time ultrasound images simultaneously to the endoscopic view. An in vivo ultrasound evaluation of the SLN is performed before the SLN dissection, describing the lymph node according VITA consensus, followed by the extraction of the SLN specimens and an ex vivo ultrasound examination to further evaluate its characteristics.

## Conclusions

Currently, the accuracy of image-guided robotic lymph node ultrasound compared with histology as the gold standard is yet to

be fully established, but it seems to be a feasible and promising approach. The ongoing prospective monocentric study, R-LYNUS (NCT06621823), aims to clinically validate this technique.



## ROBOTIC-ASSISTED UTERINE TRANSPOSITION FOR FERTILITY PRESERVATION IN A YOUNG PATIENT WITH PELVIC MALIGNANCY: STEP-BY-STEP PROCEDURE

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## Background/Aim

The increasing incidence of cancer in young patients, combined with the rising average age of the first pregnancy, underscores the importance of developing fertility-preserving strategies. Young patients with pelvic malignancies (such as rectal cancer, anal cancer, and sarcomas) may require radiotherapy as part of their treatment, particularly in the case of locally advanced tumors or in the adjuvant setting. Direct pelvic irradiation can severely impair both ovarian and endometrial function. While ovarian transposition is an established technique, corresponding surgical approaches for uterine displacement remain largely investigational.

Among these, uterine transposition has proven to be the safest option, as it results in the lowest radiation dose delivered to the uterus during radiotherapy, compared to alternative techniques such as uterine suspension or ventrofixation. In this video a case of robotic-assisted uterine transposition is shown step-by-step.

## Methods

A 35-year-old woman diagnosed with cT4ycN0M0 low rectal adenocarcinoma and scheduled for total neoadjuvant treatment (TNT) with radiochemotherapy (nCRT) followed by consolidation chemotherapy (cCT) was referred for fertility preservation. After receiving a gonadotropin-releasing hormone (GnRH) agonist for menstrual suppression, she underwent robotic-assisted utero-ovarian transposition with Da Vinci Xi (Intuitive, Ca). The uterine corpus, cervix, and ovaries were mobilized from the pelvis following extensive dissection of the gonadal vessels and then sutured to the anterior upper abdominal wall. Intraoperatively,

intravenous indocyanine green was administered intraoperatively to assess cervical perfusion.

The procedure lasted 240 minutes, with no complications reported within the first 30 days.

## Results

Two weeks postoperatively, the patient was enrolled in the Thunder2 protocol and started nCRT with RT dose escalation (60.1 Gray) delivered on the gross tumour volume guided by magnetic resonance imaging and concomitant CT with 5-fluorouracil and oxaliplatin, followed by 3 cycles of cCT (FOLFOX). After a clinical evaluation demonstrating a major response with a mucinous residue above the dentate line, a trans-anal local excision was performed 16 weeks after completion of radiotherapy (ypT0pNxTRG 1 Mandard scale).

Eight months after the transposition and one month after oncological surgical treatment, the uterus and ovaries were laparoscopically repositioned, and the cervix was anastomosed to the vagina. At the threemonth follow-up, the patient reported regular menstrual cycles, normal hormonal function, no evidence of disease recurrence. She had not yet attempted to conceive.

## Conclusions

This case highlights the feasibility and potential benefits of robotic-assisted uterine transposition as a fertility-preserving strategy in selected cancer patients undergoing pelvic radiation. A prospective study is ongoing to evaluate the safety and obstetric outcomes of uterine displacement techniques.



## INFORMED AND INVOLVED: TRANSFORMING PATIENT EDUCATION IN ROBOTIC GYNAECOLOGY

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## Background

Robotic-Assisted Surgery (RAS) was introduced to gynaecology in 2001. Compared to conventional minimally invasive or open surgery, RAS offers numerous documented advantages, including reduced blood loss, postoperative pain, and morbidity across several surgical specialties. However, there remains a paucity of data on patient experience with RAS within gynaecology, particularly in terms of patient satisfaction and quality of life. At the study site, no formal method exists for collecting feedback specific to Robotic-Assisted Gynaecology Surgery.

## Objective

This study aimed to understand patient experience and satisfaction in Robotic-Assisted Gynaecology Surgery and to identify potential

areas for improvement from both patient and staff perspectives.

## Methods

A mixed-methods design was utilized, incorporating qualitative and quantitative data from ethnographic observations, validated service evaluation questionnaires, semi-structured interviews with patients and staff, non-participant qualitative observations, and a focus group involving nine staff members. Data from all gynaecology patients who underwent RAS between July 2023 and April 2024 were included. The Design Council Double Diamond Framework and SEIPS 3.0 model were employed to identify the factors influencing patient experience and to guide recommendations for practice improvement. Quantitative data from patient questionnaires were analysed using descriptive statistics, while qualitative data were collected iteratively, with thematic analysis guided by inductive and deductive coding using the SEIPS framework. NVIVO12 software facilitated coding and theme development.

## Results

A total of 42 women completed the patient experience and satisfaction questionnaire between February and August 2024. Additionally, eight semi-structured interviews were conducted, including five patients (average 6.3 months postoperative) and three staff members (with a minimum of six months of robotic theatre experience). Findings revealed that while most women reported satisfaction with their RAS experiences, some expressed a lack of preparedness regarding what to expect from robotic surgery. The information provided preoperatively was not tailored to RAS, leaving patients feeling under-informed about the unique aspects of robotic techniques. Recommendations from the study include enhancing patient education with preoperative and postoperative resources specifically designed for RAS.

## Conclusions

Improving patient education in Robotic-Assisted Gynaecology Surgery is essential to ensure patients feel informed and engaged in their care. The study identifies key areas where practice changes could positively impact patient experience, emphasizing the need for RAS-specific educational interventions.



## FEASIBILITY AND SAFETY OF SINGLE-PORT ROBOTIC VAGINALLY ASSISTED NOTES HYSTERECTOMY (SPRVNH) USING THE DA VINCI SP SYSTEM FOR BENIGN GYNAECOLOGICAL CONDITIONS

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## Background

Single-port robotic vaginally assisted NOTES hysterectomy (SPRVNH)

is a novel surgical approach that combines the advantages of robotic assistance with a natural orifice access route. While the da Vinci SP system is increasingly applied in gynaecological surgery, existing studies on SPRVNH have only involved highly experienced surgeons or specialised teams. To date, no study has evaluated the safety and reproducibility of SPRVNH performed by a surgeon without prior experience in vNOTES.

### Aim

To assess the feasibility, safety, and reproducibility of SPRVNH using the da Vinci SP system, performed by a general gynaecological surgeon without previous vNOTES experience.

### Methods

We retrospectively reviewed 10 patients who underwent SPRVNH from June 2023 onward. All procedures were conducted by a single surgeon experienced in robotic (Xi and SP), laparoscopic, and vaginal hysterectomy, but with no prior exposure to vNOTES. Patients had benign uterine pathology, no suspected malignancy, and were suitable for general anesthesia and Trendelenburg positioning. Uterine mobility was confirmed by a positive sliding sign. Clinical data included demographics, operative variables, blood loss, and postoperative outcomes.

### Results

The mean patient age was 54.6 years, with a BMI of 25.5 kg/m<sup>2</sup>. Uterine myoma was the most common indication, and additional adnexal surgeries were performed as needed. The mean total operative time was 171.6 minutes (vaginal phase 74.5, console time 78.0, docking 17.2), and mean EBL was 118.5 mL. The average hemoglobin drop was 1.5 g/dL. No intraoperative complications or conversions occurred. One patient experienced transient hematuria, managed conservatively. The mean hospital stay was 2.4 days, and no other short- or long-term complications were observed during 6-month follow-up.

### Conclusions

SPRVNH using the da Vinci SP system is feasible, safe, and reproducible, even when performed by a surgeon without prior vNOTES experience. The SP system's ergonomic single-port design minimises instrument collisions and simplifies docking, supporting broader adoption of this approach in benign gynaecological surgery. Further large-scale studies are warranted to validate outcomes and assess the learning curve.

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### Background

Prematurity poses a significant burden on both patients and healthcare systems worldwide. Cervical insufficiency is a recognised contributor to preterm birth and fetal loss. Early identification and appropriate management of cervical insufficiency are crucial in reducing adverse pregnancy outcomes and improving neonatal survival rates.

### Aim

To evaluate surgical and obstetric outcomes following insertion of a pre-pregnancy and during pregnancy laparoscopic transabdominal cerclage in women at high risk for pre-term labour and/or mid-trimester pregnancy loss.

### Methods

A retrospective analysis of all eligible patients from 2019-2024 who underwent LAC in a tertiary care centre was conducted. Eligible patients had at least 1 second- or third-trimester fetal loss due to cervical incompetence and/or a short or absent cervix after cervical surgery or previous failed vaginal cerclage. The primary outcome measure was delivery at  $\geq 34$  weeks of gestation with neonatal survival at hospital discharge. Secondary outcome measures included surgical and obstetrical outcomes, such as pregnancy rates after preconceptional surgery, obstetrical complications, and fetal survival rates.

### Results

During the study period, 114 women underwent laparoscopic transabdominal cerclage of which 68 were interval cerclage while 46 were applied during pregnancy. We present the outcomes of 92 pregnancies resulting in 96 babies. The perinatal survival rate of viable pregnancies was 97% with a mean gestational age at delivery of 36.2 weeks; 84 % of babies were delivered at  $\geq 34.0$  weeks gestation.

### Conclusions

Laparoscopic abdominal cerclage, performed both before and after conception, is a safe and effective procedure that improves obstetric outcomes in patients at high risk for cervical incompetence. For the best outcomes, the procedure necessitates proper surgical expertise, specialised equipment, and careful patient selection.



## EFFICACY AND SAFETY OF PRE AND POSTCONCEPTIONAL LAPAROSCOPIC ABDOMINAL CERCLAGE : A SURGICAL AND OBSTETRIC REVIEW OF 114 CASES



## ROBOT-ASSISTED LAPAROSCOPIC ETHANOL SCLEROTHERAPY

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## Background/Aim

Ethanol sclerotherapy is being increasingly used in the management of endometriomata. It benefits from similar recurrence rates to ovarian cystectomy<sup>1</sup> without the detrimental effect on ovarian reserve<sup>2</sup>. Both trans-vaginal<sup>3</sup> and laparoscopic<sup>4</sup> techniques have been described.

## Methods/Results

We present a case of robot-assisted laparoscopic ethanol sclerotherapy of a 4 cm endometrioma.

## Conclusions

The laparoscopic technique for ethanol sclerotherapy of endometrioma can be easily adapted to robot-assisted laparoscopy.

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## ENHANCING SURGICAL OUTCOMES: PREDICTORS OF SAFE SAME-DAY DISCHARGE AFTER ROBOTIC HYSTERECTOMY

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## Background/Aim

Robotic-assisted surgery has revolutionised gynaecological procedures, offering enhanced precision and reduced recovery times. However, transitioning to outpatient robotic hysterectomy necessitates a comprehensive understanding of factors that ensure safe discharge and optimal recovery. Identifying these variables is crucial for improving patient outcomes and validating feasibility of same-day discharge protocols. This study aims to determine key predictors for safe outpatient robotic hysterectomy.

## Methods

This prospective study included 182 patients who underwent robotic-assisted hysterectomy for benign conditions at University Hospital Crosshouse, Scotland, between July 2023 and February

2025. Demographic and perioperative data were collected and analysed to identify factors associated with successful same-day discharge.

## Results

The most common presenting symptom was heavy menstrual bleeding, with fibroids being primary diagnosis. The largest uterus in cohort measured 36 weeks in size and weighed 2.9 kg. There were no significant differences in demographic or perioperative variables between patients discharged on same day and those requiring hospitalisation. Patient age ranged from 30 to 80 years, with a mean BMI of  $33.18 \pm 7.61$  and a mean uterine weight of  $330.13 \pm 43.95$  grams (range 38.2 to 2900 grams).

Mean operative time was 56.9 minutes, with no conversions to laparotomy. One case involved an iatrogenic thermal injury to sigmoid colon, successfully repaired by operating surgeon. All patients had their catheters removed immediately after procedure. A total of 172 patients (94.51%) had an estimated blood loss (EBL) of less than 100 ml, while 10 patients (5.49%) had EBL exceeding 100 ml. Mean postoperative pain score was  $0.64 \pm 1.14$ .

Of cohort, 172 patients (94.6%) were discharged on same day, with a mean discharge time of 3.16 hours post-surgery. 6 patients (3.3%) were discharged within 23 hours due to social factors or medical reasons, including port-site bleeding, comorbidities with transient chest pain, and additional pain management need. One patient (0.5%) was discharged on day two, and 3 patients (1.6%) on day three, due to non-surgical complications such as acute kidney injury and lung atelectasis, both of which resolved spontaneously. Six patients (3.3%) required readmission within 30 days due to urinary tract infection, postoperative infection, hematoma, and pain management issues. A multivariable logistic regression analysis identified positive predictive factors for same-day discharge.

## Conclusions

This study highlights key factors influencing successful same-day-discharge following robotic hysterectomy, including shorter surgical duration, reduced EBL, lower postoperative pain scores, faster oral intake resumption, and prompt voiding after catheter removal. Optimising these factors may improve patient outcomes, streamline postoperative care and support broader adoption of outpatient robotic surgical procedures.



## THE BENEFITS OF ROBOTIC-ASSISTED SURGERY IN MANAGING DEEP INFILTRATING ENDOMETRIOSIS

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## Background

20% of women with endometriosis are affected by deep infiltrating endometriosis (DIE) and can involve the urological and digestive systems. The lower urinary tract affects 0.2-2.5% of endometriosis cases (bladder in 80%, and ureter in 15% of cases).

Dysuria, pollakiuria, haematuria, and urinary urgency are the most common signs, related to the size and infiltration nodules (20-60% associated with menstruation).

## Case report

44-year-old woman presented severe dysmenorrhea, dysuria, and dyschezia, which did not respond to hormonal therapy.

Ultrasound and MRI revealed multiple nodules: left vesicouterine pouch (30mm), left ureteral infiltration and ipsilateral hydronephrosis, sigma/cervical-posterior (58 mm), left vaginal fornix (12 mm), and left ovarian endometrioma (56 mm). Cystoscopy showed that the ureteral meatus was infiltrated.

Robotic surgery was scheduled with the participation of a multidisciplinary team (Gynaecology, Urology, Colorectal Surgery). Given the presence of DIE with right ureteral, parametrial, and rectovaginal septum involvement, a complex surgical procedure was performed:

- Hysterectomy with an extension of the posterior vaginal cuff due to the presence of two endometriotic nodules and bilateral adnexectomy.
- Rectal shaving: resection of the endometriotic plaque in the rectovaginal septum area. Shaving of the plaque on the anterior rectal wall.
- Partial cystectomy and left ureteral reimplantation: endometriotic nodule in the distal left ureter with bladder infiltration at the level of the left ureteral meatus.

The surgery lasted eight hours; no complications. The patient was discharged 72 hours after the surgery. Follow-up showed a significant improvement in quality of life (the patient is not in need of analgesics) and high satisfaction.

## Discussion

Bladder endometriosis often coexists with other forms of endometriosis, requiring a multidisciplinary approach. Surgical removal of bladder nodules is recommended if pain persists despite medical treatment, if the lesion causes ureteral stenosis, or in patients who cannot undergo or refuse hormonal therapies.

Current literature indicates that isolated transurethral resection is ineffective. A partial cystectomy, combined with ureteral resection and reimplantation, is recommended. It is crucial to address surgery of the affected structures and adjacent organs. Surgery is not always successful and carries significant risks. Surgical failure can be attributed to the heterogeneity of endometriosis, surgical expertise, case complexity, and anatomical location of the disease.

Optimising outcomes requires correct indication and individualised surgical strategy.

## Conclusions

A multidisciplinary perspective is crucial in the surgical treatment of vesicoureteral endometriosis. Robotic surgery offers numerous advantages, including 3D image magnification, articulated instruments, and surgeon's ergonomics, facilitating DIE surgery.



## INNOVATIVE SOLUTION FOR SECOND TRIMESTER RUPTURED RUDIMENTARY HORN PREGNANCY

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### Aims and Objectives

Robotic surgery has revolutionised gynaecology however role in obstetrics is limited and unexplored. This study aims to showcase innovative robotic-assisted techniques used in managing challenging obstetric condition, highlighting their impact on surgical outcomes and patient care.

### Study Design

A complex obstetric cases managed using robotic-assisted surgical techniques. The case has been meticulously documented from initial presentation through to postoperative outcomes.

### Results & Discussion

Primigravida admitted to the Emergency with a ruptured non-communicating rudimentary horn pregnancy at 21 weeks gestation, managed with robotic removal via posterior colpotomy. This case demonstrated minimal intraoperative blood loss, rapid recovery, and favorable postoperative outcomes.

### Conclusions

Innovative robotic-assisted techniques can significantly enhance the management of complex obstetric condition like ruptured rudimentary horn pregnancy. The approach offers superior outcomes compared to traditional methods, including reduced blood loss, minimal scarring, and accelerated recovery. This case underscores the transformative potential of robotic technology in enhancing surgical precision and patient outcomes in obstetrics, positioning it as a pivotal innovation in modern surgical practice.



## INTRAOPERATIVE USE OF ICG FOR THE ROBOTIC MANAGEMENT OF CESAREAN SCAR NICHE

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## Background/Aim

Uterine niche (isthmocele) is a condition with increasing incidence, due to the rising frequency of cesarean section worldwide.

Symptomatic patients who require future fertility can be managed with a minimally invasive approach, and robotic surgery for this intervention has been well established. Although the relation to previous uterotomy is clear, the exact localisation of the incision margins can be complicated in cases with large uterine defects.

We demonstrate a fluorescence guided niche detection technique with the use of intrauterine indocyanine green (ICG) in a case with large uterine defect and adhesion situs.

## Methods

A 34-year-old patient presented with lower abdominal pain and intermittent spotting after repeat cesarean section. Transvaginal sonography, as well as MRI with contrast enhancement demonstrated a large semicircular uterine niche involving the full thickness of the anterior uterine wall and partially containing an IUD. The patient wished to preserve fertility. We performed a robotic (DaVinci Xi) complete excision of the niche after filling the uterine cavity with 20 mL of ICG solution (25 mg in 50 mL aqua) to the uterine cavity. Patient consent for scientific presentation was obtained.

## Results

ICG transillumination using the DaVinci Firefly mode facilitated the correct identification of the margins of the uterine niche through the dense bladder adhesions, thus enabling us to create a broad bladder flap. We sharply dissected the uterine scar to the level of the vesicovaginal fascia bilaterally in a wedge-shaped pattern including a broad area of the uterine serosa in order to achieve sufficient wound debridement. The lateral borders of the excision were defined in the near infrared spectrum using ICG and the dorsal border of the excision was defined through the probe of the uterine manipulator. Excessive electrocoagulation was avoided.

The degrees of freedom of the robotic instruments are ideal for the orientation of the uterotomy suturing which was performed in 3 layers. For the 2 internal layers, a spiral barbed suture was selected, and the superficial suture layer was completed with Vicryl 2–0.

The patient recovered uneventfully and could be dismissed from the hospital on the first day after surgery. Follow-up transvaginal ultrasound demonstrated normal anatomy with sufficient thickness of the anterior uterine wall.

## Conclusions

Intraoperative use of ICG improves the correct identification of cesarean scar niche, even in difficult cases with dense adhesions and thus enables the complete excision of the uterine wall defect without unnecessary injury to the adjacent tissue.



## NEW ACCESS POINT THROUGH OPTICAL TROCAR IN ROBOTIC GYNAECOLOGICAL SURGERY: A RETROSPECTIVE OBSERVATIONAL STUDY

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## Background/Aim

Reducing the complication rate related to cavity access is crucial. The Hasson technique provides greater safety due to visualised entry but can be difficult to perform in obese patients; moreover, if the skin incision is not perfectly calibrated, the trocar often becomes unstable, tending to oscillate. An alternative is to use safer access points, such as Palmer's, but this may shift on the abdomen depending on the patient's habitus. In an attempt to address these issues, we experimented with direct optical access (DOA) at a new fixed point, suitable for all habitus types, through a retrospective observational study in obese women undergoing robotic gynaecological surgery, evaluating its effectiveness, safety, and speed.

## Methods

We observed 212 patients who underwent robotic surgery from December 2019 to March 2025 for both benign and malignant gynaecological conditions, with a mean BMI of  $34.6 \pm 2.8$ , using DOA at a point corresponding to the cranial apex of an equilateral triangle, with each side measuring 8 cm, idealised according to precise standardised criteria. Complications related to cavity access were analysed, and the time required for access was timed.

## Results

No complications related to access were observed in all the patients analysed. The mean time required for entry was  $13.9 \pm 1.7$  seconds. The identified access point allowed for easy manipulation of the robotic arms in all patients, regardless of habitus, ensuring both efficacy and rapidity of the procedure.

## Conclusions

Direct Optical Access (DOA) at a specific point on the abdominal wall, not fully defined in previous literature, has proven to be a safe, rapid, and effective method in all patients, regardless of BMI and habitus.



## UTILITY OF NEAR INFRARED FLUORESCENCE IMAGING WITH INDOCYANINE GREEN DURING LAPAROSCOPIC AND ROBOTICALLY ASSISTED

## ENDOMETRIOSIS SURGERY

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### Background/Aim

Near infrared fluorescence (NIRF) imaging with the use of Indocyanine Green (ICG) is a promising imaging modality with significant potential in the identification of endometriosis lesions and in guiding their management. The aim of this review and meta-analysis is to examine the different applications of this remarkable technology in the modern surgical treatment of endometriosis.

### Methods

A systematic literature search was performed in the Scopus, Web of science and PubMed databases in accordance with the PRISMA 2020 guidelines. Studies were evaluated for relevance and included in the qualitative synthesis. Where sufficient data were available, meta-analysis was also performed.

### Results

Ultimately, 19 studies were included. The majority provided qualitative data in one of three primary NIRF-ICG applications; namely organ perfusion after resection, ureter protection during resection or ureterolysis and lesion detection. Qualitative data indicated the NIRF-ICG is highly effective in verifying adequate organ perfusion after resection and/or anastomosis in the context of extensive endometriosis surgery. Ureterolysis under NIRF-ICG was also shown to be faster and with fewer complications than in controls assessed with conventional white light visualisation.

Additionally, qualitative data indicated that more endometriosis lesions were identified when NIRF-ICG was applied. Furthermore, 5 studies provided quantitative data on the comparison of NIRF-ICG and the standard white light optical camera, in the identification of endometriosis lesions, with histologic confirmation. Meta-analysis showed that NIRF-ICG was less sensitive than simple WL (57% versus 89%,  $p < 0.05$ ), however it was more specific (79% versus 57%) based on relative sensitivity and specificity ratios, with significant statistical heterogeneity.

### Conclusions

Endometriosis surgery is a challenging endeavor, requiring both accurate identification of obscure lesions, in addition to protection of sensitive healthy tissues during extensive resection of deep foci.

Qualitative data seem to indicate that ICG could contribute significantly to endometriosis surgery, both in terms of lesion identification and in healthy tissue protection. Comparative data seem to indicate that traditional WL is more sensitive in identifying obscure lesions; however, NIRF-ICG appears more specific, thus minimising unnecessary excisions. Further research should focus on

identifying particular patient sub-groups that would benefit most from the application of this modality.



## APPLICATION OF ROBOTICS IN BENIGN GYNAECOLOGICAL SURGERY: A SINGLE CENTRE'S EXPERIENCE WITH BENIGN HYSTERECTOMY AND MYOMECTOMY

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### Background/Aim

Robotic Surgery is very promising modality in the field of Gynaecological Surgery with a plethora of applications. With robotics having been available for five years at our centre so far, we aimed to examine the efficacy and safety of robotic surgery in the treatment of benign gynaecological conditions, via reviewing all robotic benign hysterectomies and myomectomies performed in our centre to date.

### Methods

A retrospective chart analysis was performed for all robotically assisted laparoscopic hysterectomies for benign etiology and myomectomies performed at our centre in the past 5 years. All surgical procedures were performed by a single Surgeon using the da Vinci X surgical system.

### Results

In total, 66 benign hysterectomies and 49 myomectomies were eligible for inclusion. The majority of benign hysterectomies were performed due to myomatous uterus and related clinical symptoms. Average total operative time was 136.88 minutes, estimated blood loss was 62.85 millilitres and average haemoglobin drop pre- and post-operatively was 1.487 mg/dl. Total complication rate was 6.2% and included only minor complications (Clavien-Dindo Classification Grade  $\leq 2$ ). Average length of stay was 1.85 days. The majority of myomectomies were performed with infertility as the primary indication. Patients had on average 3.4 myomas removed, average total operative time was 149.41 minutes and estimated blood loss was 74.45 millilitres, with an average 1.21 mg/dl drop in haemoglobin post-operatively.

Total complication rate was 4.2% with only minor complications noted (Clavien-Dindo Classification Grade  $\leq 2$ ) and average length of stay was 1.57 days. No blood transfusions were required for any included patient and no procedures ever required conversion to laparotomy.

### Conclusions

Robotic gynaecological surgery is a rapidly advancing and evolving

field, which has been more widely adopted in Greece during recent years. Based on bibliographical evidence, as well as our own observations, robotic surgery offers exceptional therapeutic outcomes combined with increased surgical safety (fewer complications, no transfusion, shorter length of stay) rendering it an excellent option for the treatment of benign gynaecological conditions, with particular effectiveness on high surgical risk patients.



## ROBOTIC LICH-GREGOIR URETERONEOCYSTOSTOMY FOR DEEP INFILTRATING ENDOMETRIOSIS: PRECISION IN URETERAL RECONSTRUCTION

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### Background/Aim

Urinary tract endometriosis affects 1-5.5% of patients with endometriosis, with the bladder being the most common site of involvement. The ureter is affected in 9-23% of cases. Patients often present with symptoms like dysuria, hyperactive bladder, recurrent urinary tract infections, and hematuria. Surgical intervention is required in cases of ureteral compression, which may be intrinsic or extrinsic.

Treatment options range from conservative ureterolysis to radical approaches like ureterectomy with end-to-end anastomosis or ureteroneocystostomy, the latter being indicated when the lesions are close to the vesico-ureteral junction. While laparoscopic approaches have been widely studied, data on robotic-assisted techniques are scarce. This video-article aims to demonstrate our technique and surgical setup for a complex case of ureteral deep infiltrating endometriosis (DIE).

### Methods

This article provides a step-by-step explanation of the surgical technique, supported by narrated video footage.

### Results

A 47-year-old female with symptomatic DIE involving the left parametrium and associated ipsilateral hydronephrosis was referred to our center. Imaging and clinical evaluation confirmed significant ureteral obstruction due to extrinsic compression by a parametrial endometriotic nodule. Given the severity of the condition, surgical intervention was necessary to prevent renal damage and alleviate symptoms. The procedure was carried out robotically and involved the delicate excision of the left parametrial endometriotic nodule, followed by left ureteral reimplantation using the Lich-Gregoir technique to relieve ureteral

compression and restore normal kidney function.

### Conclusions

The surgery was performed using robot-assisted laparoscopic techniques to ensure minimal invasiveness, rapid recovery, and optimal outcomes. This video-article explains our technique and robotic setup for managing complex DIE cases involving both the parametrium and ureter. While the role of robotic laparoscopy in endometriosis treatment remains under investigation, its advantages—such as enhanced manual dexterity, three-dimensional vision, and improved ergonomics—make it an excellent choice for complex and time-consuming surgeries like ureteral reimplantation.



## ROBOTIC SURGERY VERSUS CONVENTIONAL LAPAROSCOPY IN THE TREATMENT OF DEEP INFILTRATING ENDOMETRIOSIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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### Background/Aim

Endometriosis is a common gynaecological condition which affects up to 15% of women worldwide. Although benign, it does possess cancer-like properties, namely the potential for infiltration and local expansion, rendering its effective treatment a surgical challenge. The aim of this review is to ascertain whether the application of robotics can improve surgical outcomes of deep endometriosis surgery, over conventional laparoscopy.

### Methods

A systematic literature search was performed in the Scopus, Web of science and PubMed databases in accordance with the PRISMA 2020 guidelines. Studies were evaluated for relevance and included in the qualitative synthesis.

### Results

Ultimately, 16 eligible studies were identified and included in the data synthesis, encompassing over 3000 women with an average age of 32.6±9.7 years and BMI of 23±2.5. Meta-analysis indicated significantly longer operative time for robotic over laparoscopic surgery (MD: 29.4; 95%CI 11.2-45.6). No statistically significant differences could be demonstrated for estimated blood loss, length of stay, complication rate, transfusion rate and conversion to laparotomy rate between robotic and laparoscopic surgery. Studies demonstrated increased statistical heterogeneity.

### Conclusions

Endometriosis surgery remains a surgical challenge, owing to the properties and behavior of the condition. While robotic surgery

possesses several technical advantages over conventional laparoscopy, this does not seem to translate to improved surgical outcomes based on the findings of this review. It is important to stress that reproductive outcomes after surgery were not assessed due to the lack of available data, an important omission since infertility is a common indication for endometriosis surgery. Further studies with longer follow-up times and an emphasis on additional outcomes are needed to further examine the role that robotic technology can play in the effective and safe treatment of endometriosis.



## COMPARISON OF THE EFFICACY AND SAFETY OF ROBOT-ASSISTED AND TRADITIONAL LAPAROSCOPIC SURGERY IN ONCOGYNAECOLOGY: THE IMPACT OF THE LEARNING CURVE ON SURGICAL OUTCOMES

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### Background

Modern operative oncogynaecology faces the challenge of choosing the optimal surgical approach, combining minimal invasiveness with maximum efficiency and safety. Our analysis sheds light on key aspects of mastering robotic technologies in comparison with established laparoscopic techniques, which is particularly important in the context of: the expanding integration of robotic systems into clinical practice, the need for an objective assessment of the time required to master new technologies.

### Methods

A comparative retrospective analysis was conducted based on the following parameters: operative time, blood loss, number of postoperative hospital days, complications, patients' body mass index (BMI), and age. A total of 50 initial robot-assisted (RA) surgeries and 134 routine laparoscopic surgeries were analyzed. All patients were with endometrial cancer. The surgeries were performed between September 2024 and February 2025 and included the following procedures: total hysterectomy with bilateral adnexectomy (THBA), THBA with sentinel lymph node biopsy (SLNB) or pelvic lymphadenectomy. RA surgeries were performed using the Da Vinci Xi robotic system.

### Results

The average age of patients undergoing RA surgery was 61 years (range from 35 to 77), while for those undergoing laparoscopic access was 60.1 years (range from 27 to 86). RA hysterectomy with adnexectomy was performed in 86% of cases, while THBA and pelvic lymphadenectomy or SLNB was performed in 14% of cases. TLHBA was performed in 92.3%, TLHBA and pelvic lymphadenectomy in 6,7% of patients. The median operative time

for RA procedures was 120 minutes (range from 45 to 270), compared to 87.2 minutes (range from 40 minutes to 270) for laparoscopic surgery. The median estimated blood loss for RA and laparoscopic procedures were similar (56 mL vs 62 mL). The median length of hospital stay for patients after RA and laparoscopic surgeries were similar (2,5 vs 3 days). The complication rate according to Clavien-Dindo classification, grade III, was 4% for RA surgery (vaginal stump dehiscence and omental entrapment in the trocar wound) and 1.5% for laparoscopic surgery (two cases of vaginal stump suture dehiscence). The docking time decreased with experience, ranging from 30 minutes to 10 minutes.

### Conclusions

Based on our initial findings, robot-assisted surgery demonstrates comparable safety and efficacy but requires more time during the learning phase. The reduction in docking time, comparable blood loss, and operative time indicate that the initial phase of the learning curve is rapidly overcome. Optimisation of training programs could shorten the adaptation period to the robotic system.



## ROBOTIC RADICAL HYSTERECTOMY IN FRAIL AND OBESE WOMEN AFFECTED BY ENDOMETRIAL CANCER

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### Background/Aim

Endometrial carcinoma is the most common malignancy of the female genital tract. Obesity is one of the main risk factors. Robotic surgery offers advantages in frail patients. The aim of this study is to evaluate the benefits of robotic surgery in this subgroup of patients.

### Methods

This prospective study compared 104 cases of patients with endometrial cancer from April 2021 to December 2024. The inclusion criteria were BMI > 25 and ACCI ≥ 2. The sample was compared with 104 patients treated with laparoscopy, selected from a historical cohort.

### Results

The mean BMI was  $31.9 \pm 6.9$  vs  $28.7 \pm 4.5$  ( $p < 0.01$ ). The mean ACCI was  $4.04 \pm 1.48$  vs  $3.54 \pm 1.71$ . The  $\Delta$ Hb was lower in the robotic group ( $p = 0.03$ ). The complication rate was lower in the robotic cohort (5.7% vs 22.8%;  $p < 0.01$ ). The conversion rate was higher in the laparoscopic group (4.3% vs 18.6%;  $p < 0.01$ ). Docking time decreased over time ( $31.74 \pm 6.9$  in the first period,  $24.16 \pm 5.73$  in the second period, and  $19.57 \pm 8.2$  in the third period).

### Conclusions

Frail and obese patients undergoing robotic surgery experienced

reduced intraoperative blood loss, lower conversion rates, and a decreased incidence of postoperative complications. Docking times decreased over time. Our data appear to support the safety and effectiveness of robotic surgery for the treatment of frail or obese patients with endometrial cancer.



## ROBOT ASSISTED SURGERY FOR EXCISION OF ACUM- ACCESSORY CAVITATED UTERINE MALFORMATION

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### Background

ACUM- Accessory Cavitated Uterine Malformation is a Müllerian abnormality within isolated cystic lesion in the myometrium separate from the normal endometrial cavity. The literature, unfortunately has only sporadic cases of ACUM and till recent decades, it remained unknown. Even today, ACUM is easily misdiagnosed due to lack of knowledge. High level of suspicion is needed in nulliparous women less than 30 years of age present with severe dysmenorrhea. Ultrasound remains the primary tool for diagnoses of pelvic pathology.

But even in experts hands, ACUM can be misdiagnosed as subserosal/degenerated fibroid or Endometrioma.

- USG shows a Well circumscribed, spherical cavitated lesion with echogenic material surrounded by a myometrial mantle.
- Magnetic Resonance Imaging of pelvis typically shows a well circumscribed spherical mass in the myometrium with haemorrhagic inner layer and a thick fibrous crown. The accessory cavity has no communication with the normal endometrial cavity.
- There is a consistent myometrial ring surrounding the haemorrhagic cavity, with same signal like the junctional zone.

Expectant/Medical management rarely provide relief from severe dysmenorrhea. Surgical excision of the accessory cavity relieves the symptoms completely in most cases if operated early and hence is the treatment of choice.

### Case details

- A 19 year old girl presented with history of severe dysmenorrhea for last 4 menstrual cycles which did not respond to analgesics.
- Ultrasonography of pelvis was reported as atypical fibroid or endometrioma.
- The Magnetic Resonance Imaging showed a 2.2 cm sized well defined cystic lesion with subacute blood products seen in the left anterolateral myometrium of the uterus. No communication with the endometrial cavity. No features of uterine adenomyosis.

- Diagnosis of Accessory cavitated uterine malformation made.

This video demonstrates the step by step approach of Robotic assisted excision of ACUM.

### Conclusions

- ACUM still remains unknown to many clinicians and Radiologists frequently leading to misdiagnosis
- High index of suspicion needed for early diagnosis.
- Early diagnosis and surgical excision can help avoid the adenomyotic changes in the surrounding myometrium.
- Awareness among clinicians and radiologists is crucial in the correct management
- Surgical management by excision of the accessory cavity is the treatment of choice as it can relieve the associated secondary dysmenorrhea in these patients
- Robot assisted surgery has advantages over Laparotomy, in managing ACUM which usually affect young nulliparous women.



## IMPLEMENTATION OF CMR VERSIUS ROBOTIC SYSTEM IN A UK GYNAECOLOGICAL CANCER CENTRE

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### Background

The Versius system (CMR Surgical, UK) is a modular robotic platform for soft tissue surgery. West Hertfordshire Teaching Hospital NHS Trust was one of the first centres in the UK to integrate the Versius robotic system into gynaecological cancer treatment. In the current study we report early outcomes from its introduction at the West Hertfordshire Cancer Centre, a tertiary gynaecological cancer centre.

### Methods

A retrospective analysis was conducted of 121 consecutive robotic procedures performed between February 2023 and February 2025. Perioperative outcomes included operative time, estimated blood loss, length of stay, conversions, complications, and body mass index (BMI). A learning curve was assessed in a standardised subgroup of 73 total robotic hysterectomy (TRH) ± bilateral salpingo-oophorectomy (BSO) cases with no additional procedures.

### Results

The mean BMI was 28.97, with the highest recorded BMI being 60.0. The mean operative time was 179.96 minutes, the mean estimated blood loss was 70.41 mL, and the mean length of stay was 2.52 days. Two conversions to laparotomy occurred early in the learning curve. No major complications or returns to theatre were observed. In the refined TRH ± BSO subgroup (n=73), clear learning curves were observed, demonstrating progressive reductions in operative time and estimated blood loss across consecutive cases. Linear

trendlines illustrated consistent improvement, with operative time decreasing by an average of 0.25 minutes per consecutive case and estimated blood loss decreasing by 1.34 mL per case, indicating significant gains in operative efficiency and patient safety.

## Conclusions

These findings suggest that implementing the Versius robotic system in a gynaecological cancer referral centre is safe, effective, and associated with measurable improvements in surgical performance metrics. These findings align with gynaecological oncology studies using the de Vinci platform and broader non-oncological data from the Versius platform. The observed learning curves highlight the potential benefits of structured robotic training and support the wider adoption of the Versius robotic system in gynaecological oncology.

ID 82

## TRAINING OPPORTUNITIES IN EMERGENCY ROBOTIC SURGERY IN GYNAECOLOGY

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### Background

With continuing advances in technology, and the expansion in provision of robotic-assisted surgery (RAS), minimal access surgery (MAS) is fast becoming the principal surgical approach for gynaecological surgery, in even the most complex of cases. As such, it is imperative the current generation of trainees and future gynaecology surgeons seek and are exposed to every potential learning and training opportunity in this fast-evolving surgical landscape to develop the exemplary surgical skills required to operate safely whilst providing the best surgical care.

### Case

We present the application of our robotic gynaecological surgery programme in the provision of a training opportunity in the emergency setting: surgical management of ectopic pregnancy in a nulliparous patient who presented with acute abdominal pain in early pregnancy. Imaging demonstrated a right tubal ectopic pregnancy with an element of haemoperitoneum, alongside a significantly raised serum  $\beta$ -HCG.

The elective RAS theatre utilisation was enhanced with incorporation of the emergency case, whilst simultaneously seizing the opportunity to maximise training provision. After preparation for emergency surgery, uncomplicated right salpingectomy with a three-port approach was performed with the da Vinci Xi Surgical System and Vessel Sealer Extend (Intuitive Surgical, Sunnyvale CA) by the MAS senior clinical fellow during their on-call duties, under

senior supervision. The patient was discharged the same day.

## Conclusions

We encourage trainees and trainers alike to recognise and optimise all available training opportunities in RAS and MAS, including the emergency setting.

ID 83

## ROBOT ASSISTED LAPAROSCOPIC TUMOUR RESECTION OF RECURRENT RETROPERITONEAL DESMOID TUMOUR

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### Background

Recently, the indications for robot assisted laparoscopic surgery in the treatment of gynaecological field are being carefully expanded. Desmoid tumours are noncancerous growths that occur in the connective tissue and most often occur in the abdomen and extremities. Desmoid tumours aren't considered cancers but sometimes can be very aggressive, acting more like cancers and growing into nearby structures and organs. Therefore, during surgical treatment, it is necessary to remove the tumour while minimising damage to the involved surrounding structures.

### Methods

It is known that robot-assisted laparoscopic surgery is helpful in treating deep pelvic floor diseases through experience gained in pelvic floor surgery, gynaecological cancer surgery, and deep infiltrating endometriosis surgery. Therefore, we decided to introduce robotic assisted laparoscopic surgery to treat recurrent pelvic floor desmoid tumour.

### Results

A 32-year-old female presented with a recurrent desmoid tumour. The patient underwent laparotomy for a retroperitoneal desmoid tumour of the pelvis in 2022. Since then, she has had no signs of recurrence. A follow-up pelvic MRI in 2024 revealed a recurrent tumour invading the pelvic floor muscles and surrounding nerves. To remove the tumour, robot assisted laparoscopic surgery was performed.

During the operation Desmoid tumour invading the levator ani muscle, obturator internus muscle, and surrounding nerve bundles was noted. The Lt. lateral pelvic peritoneum was incised, the ureters were dissected, and the retroperitoneal fatty tissue containing the lymph nodes was removed to expose the tumour and then remove the tumour. The expanded field of view of the robotic surgery method helped greatly in removing the tumor while minimising damage to the muscles and surrounding nerve bundles. The patient had mild lower extremity disability after surgery, but her symptoms

improved with rehabilitation.

## Conclusions

Robotic assisted laparoscopic surgery is feasible to remove pelvic floor tumours and is useful for securing visibility and ease of operation when performing deep pelvic floor surgery.



## RADIOTHERAPY PLANNING SOFTWARE DERIVED 3D STRUCTURAL IMAGING FOR PLANNING AND EXECUTION OF ROBOTIC SECONDARY CYTOREDUCTION IN SINGLE/OLIGOMETASTATIC RECURRENT GYNAECOLOGICAL CANCERS

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### Objective

Retrospective series have shown MIS cytoreductive surgery is feasible in selected cases of recurrent gynaecological cancers. No predictors of MIS cytoreductive surgery feasibility are currently available. Free surgical margin is the most important criteria. Isolated recurrences pose surgeons with the challenge of involvement of vital organs. Based on imaging we sacrifice these vital structures for the sake of adequate margins.

This study aimed to utilise 3D multiplanar images derived from RT planning software for planning and executing robotic surgeries while preserving organs and achieving adequate margins.

### Methods

RT planning software, Eclipse Treatment Planning System, v16.1 (Varian Medical Systems Inc, USA), was utilised to intricately construct a 3D rendition of pelvic structures, meticulously contouring recurrent disease and important adjacent organs like the rectum, bladder and ureter.

This innovative technique stands unparalleled in existing medical literature. Leveraging the 3D visualization of contoured structures, the anatomical relationship among them were seen from different planes and angles, surgical strategies were devised.

### Results

**Case 1:** Patient presented with vault recurrence of cervical cancer 3 years from primary radical surgery and adjuvant RT. It was single lesion arising from vault and encasing the right ureter with involvement of a small segment of rectum as per MRI report. 3D image revealed that the right ureter and rectum was adherent but not encased by the mass and were successfully salvaged at surgery.

**Case 2:** Single site nodal recurrence in right pelvis in previously treated patient of stage 2b SCC cervix with CTRT. MRI and CT scan mentioned infiltration of right external iliac vein up to

segment of 2.5 cms. Where as 3D multiplanar images revealed that mass was compressing but not infiltrating the vein. The nodal mass was successfully removed while preserving the external iliac vessels.

## Conclusions

3D image planning increased the chances of achieving a complete minimally invasive cytoreduction while preventing exenteration. Integration of such imaging modalities on the robotic platform in real time will go a long way in image guided surgery.



## VAGINAL ROBOTIC-ASSISTED COLPECTOMY AFTER VIN-3 RECURRENCE

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### Background

High-risk HPV (hrHPV)-driven vaginal intraepithelial neoplasia (VIN-3) recurrence after hysterectomy poses diagnostic and therapeutic challenges. This case report aims to illustrate the role of robotic-assisted surgery in managing localized VIN-3 recurrence while preserving functional outcomes, emphasising the importance of multidisciplinary surveillance in high-risk patients.

### Methods

A 46-year-old Hispanic female (BMI 28, G3P3) with HPV-16-associated CIN-3 underwent conization, revealing positive margins, prompting total laparoscopic hysterectomy (TLH). Despite surgery, persistent hrHPV and HSIL on 12-month follow-up led to VIN-3 diagnosis at the vaginal cuff (biopsy-confirmed). Preoperative MRI excluded invasion.

Robotic-assisted partial colpectomy was performed using the Da Vinci Xi system:

- **Technique:** En bloc resection of 2 cm vaginal cuff with 5-mm margins (frozen section confirmation).
- **Outcome Measures:** Margin status, operative time (38 min), blood loss (10-20 mL), and postoperative complications.

### Results

- **Pathology:** VIN-3 with clear margins (2 mm); no lymphovascular invasion.
- **Postoperative Course:**
  - Discharge on postoperative day 1.
  - Transient dyspareunia resolved with topical estrogen by 6 weeks.
- **Follow-up:** HPV vaccination (Gardasil-9) initiated; q6-month cytology/HPV testing planned.

## Conclusions

1. **HPV-16 persistence** necessitates long-term vaginal cuff

surveillance post-hysterectomy.

2. **Robotic colectomy** offers precision for oncologic resection with minimal morbidity, ideal for localized recurrences.

3. **Multidisciplinary care** (pathology, oncology) is critical for margin assessment and adjuvant strategies.

4. **Secondary prevention** (HPV vaccination, smoking cessation) remains integral to reducing recurrence risk.

ID 86

## ROBOTIC-ASSISTED SINGLE-PORT AND MULTI-PORT SURGICAL STAGING IN EARLY-STAGE ENDOMETRIAL CANCER: A PROPENSITY MATCHED COMPARISON

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### Objective

Robotic-assisted surgery has emerged as an effective method for managing endometrial cancer. Recently, the new Da Vinci SP was developed with the aim to minimize surgery-related morbidity, using a single-port approach. The present research evaluated outcomes of apparent early-stage endometrial cancer patients undergoing single- and multi-port robotic-assisted surgery.

### Methods

This is a retrospective study. Data of consecutive patients affected by early-stage endometrial cancer who had robotic-assisted staging (including hysterectomy, bilateral salpingo-oophorectomy and nodal staging) with Da Vinci SP were matched 1:1 with a cohort of patients undergoing robotic-assisted surgery with the multi-port Da Vinci Xi. The matching was conducted by a propensity-score comparison.

### Results

Fifty patient pairs (50 undergoing single-port surgical staging vs. 50 undergoing multiple-port surgical staging) were included. Demographic and baseline characteristics were balanced between groups. Median (skin to skin) operative time was similar between groups (120 (range, 70-229) vs. 115 (range, 60-205) minutes;  $p=0.367$ ). Estimated blood loss were comparable between groups ( $p=0.317$ ). No intra-operative complication or intra-operative blood transfusion were recorded. The median length of hospital stay was similar between groups ( $p=0.269$ ). Overall, 10 (10%) patients developed 90-day surgery-related complications: six (12%) and four (8%) in the single- and multi-port group, respectively ( $p=0.740$ ). One (2%) and two (4%) patients experienced severe

(grade 3 or more) 90-day complications after single- and multi-port robotic assisted staging ( $p=1.00$ ).

### Conclusions

Introducing Da Vinci SP is safe and effective. The single-port approach does not increase operative time and complications rates in comparison to the multi-port robotic-assisted system.

ID 87

## ROBOT-ASSISTED, LAPAROSCOPIC AND TRANSVAGINAL SURGERY FOR PELVIC ORGAN PROLAPSE: A COMPARATIVE RETROSPECTIVE SINGLE-CENTER STUDY

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### Background

Transvaginal surgery (TVS) is the traditional approach for pelvic organ prolapse (POP) but shows limited durability in advanced cases and requires longer hospitalisations. Minimally-invasive abdominal techniques are associated with shorter stays, being preferred in managing pelvic floor disorders. This study compares robot-assisted surgery (RAS), laparoscopy (LPS), and TVS in terms of operating times, hospital stay, complications, reinterventions.

### Methods

We retrospectively analysed medical records from Pisa Teaching Hospital (January 2017–December 2023), including women receiving RAS or LPS (lateral suspension/sacrocolpopexy), or TVS (colpohysterectomy). Cysto/retropexies without colpohysterectomy were excluded. Surgical approach and technique were determined from operative descriptions. Sociodemographic and clinical data were collected (age, civil status, citizenship, education, Elixhauser index, hysterectomy/adnexal surgery, vault prolapse, operating unit, year).

Outcomes included:

- 1) Operating time (minutes);
- 2) Hospital stay (days);
- 3) Complications;
- 4) Reinterventions (follow-up until December 2024).

Surgical route was the exposure variable. Adjusted linear, Poisson, logistic, and Cox regressions were used. A subanalysis on lateral suspension and sacrocolpopexy was also performed.

### Results

Of 583 women, 84 (14.4%) had LPS, 283 (48.5%) RAS, 216 (37.1%) TVS. Among RAS cases, 53.4% were lateral suspensions and 46.5% sacrocolpopexies; for LPS, 61.9% and 38.1%, respectively. Mean operating times were 147.1 (RAS), 160.1 (LPS), and 95.6 (TVS) minutes. Average hospital stay was 1.7 (RAS), 1.3 (LPS), and 2.3

(TVS) days. Complication rates were 3.5%, 8.3%, and 2.3%, respectively; reintervention rates were 4.9%, 3.6%, and 1.9%. Adjusted models showed longer operative times for LPS vs. RAS (+14.4 min, CI +3.9 to +24.8) and shorter for TVS (–72.1 min, CI –85.2 to –59.0). Compared to RAS, LPS had shorter stays (–0.3 days, CI –0.5 to –0.1), while TVS had longer (+0.3 days, CI +0.1 to +0.6). Complications were 2.2 times higher for LPS (CI 0.1–8.2); no difference was found for TVS vs. RAS. Reintervention rates showed no significant group differences.

In subanalysis, no difference in operative time for lateral suspension was observed; LPS showed a nonsignificant trend toward shorter stays (–0.3 days, CI –0.5 to +0.03). For sacrocolpopexy, LPS was longer than RAS (+42.9 min, CI +24.6 to +61.1); no difference in hospital stay emerged.

### Conclusions

RAS and LPS had similar safety and long-term outcomes. LPS was linked to longer operative times – especially for sacrocolpopexy – and more complications, but slightly shorter stays. TVS had shorter operative times but longer hospitalization. Sub-analyses suggest comparable performance for lateral suspension, while LPS sacrocolpopexy may be more time-consuming.



## SINGLE-PORT ROBOTIC FERTILITY-SPARING SURGERY FOR CLEAR CELL OVARIAN CARCINOMA

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### Background/Aim

The standard treatment for early-stage ovarian cancer typically includes comprehensive surgical staging to confirm the diagnosis, remove the tumour, and assess the extent of disease. In young patients with stage IA clear cell ovarian carcinoma desiring fertility preservation, a fertility-sparing approach can be considered, ensuring oncological safety.

According to international guidelines, laparotomy is considered the standard approach for surgical staging. However, minimally invasive surgery may be an alternative in selected patients when performed by highly experienced surgeons.

Minimally invasive techniques, including robotic-assisted laparoscopy, have been increasingly adopted to reduce morbidity while maintaining oncological efficacy. This video aims to show the surgical technique and feasibility of fertility-sparing surgery for early-stage clear cell ovarian carcinoma using an innovative Single-Port robotic platform.

### Methods

We present the case of a 30-year-old patient who underwent Single-Port robotic left unilateral adnexectomy with a diagnosis of clear cell ovarian carcinoma. Subsequently, a fertility-sparing treatment was performed using a single-port robotic approach.

### Results

A 3 cm umbilical incision was performed, and a single-port robotic system was docked. The peritoneal cavity was inspected, confirming no evidence of peritoneal carcinomatosis. A fertility-sparing surgical staging was subsequently completed, including infra-colic omentectomy, pelvic and para-aortic lymphadenectomy, and peritoneal biopsies.

### Conclusions

This video demonstrates the anatomical landmarks and surgical steps of fertility-sparing staging using a Single-Port robotic platform in a patient with early-stage clear cell ovarian carcinoma. The single-port robotic approach is a viable and safe technique in appropriately selected cases of early-stage ovarian cancer, provided it is performed by expert surgeons in specialized oncological centres.



## SINGLE PORT ROBOTIC SURGERY FOR EARLY-STAGE ENDOMETRIAL CANCER: A PILOT STUDY

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### Background

Endometrial cancer (EC) is the second most common gynaecological malignancy worldwide. In early-stage disease, minimally invasive surgery (MIS) plays a pivotal role in this scenario. Robotic assisted surgery (RAS) showed equivalent oncological outcomes compared to laparoscopy while improving learning curves, surgeon comfort and precision.

### Methods

This study describes the feasibility, safety, and perioperative outcomes of RAS for EC using the da Vinci SPT™ system (Intuitive Surgical, Sunnyvale, CA, USA) recently introduced in Europe for gynecologic procedures. 10 consecutive patients were selected to undergo RAS surgical staging with da Vinci SPT™ for early-stage EC. Perioperative outcomes as well as intra and post-operative complications were prospectively recorded. All patients after intensive pre-operative workup consisting in diagnostic hysteroscopy, computed tomography and MRI underwent radical surgery (type A radical hysterectomy, bilateral salpingo-oophorectomy and bilateral sentinel lymph-node (SLN) dissection).

## Results

All patients successfully underwent minimally invasive surgery, only one conversion to open surgery for specimen integrity and retrieval. In 4 cases, unilateral pelvic lymphadenectomy was required due failed SNL detection, three of whom had positive lymph nodes on definitive histologic examination. Median estimated blood loss was 50 mL (range 50–250 mL), and median operative time was 127 minutes (range 116–172 minutes). No major intraoperative complications were reported, and postoperative recovery was uneventful.

## Conclusions

This pilot study, demonstrated the feasibility and high reliability of single-port RAS, showing its potential and representing a promising tool for the minimal invasive management of EC.



## SENTINEL LYMPH NODE MAPPING USING INDOCYANINE GREEN FLUORESCENCE WITH THE HUGO RAS SYSTEM IN ENDOMETRIAL CANCER STAGING: A VIDEO CASE REPORT

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### Background/Aim

Minimally invasive surgery (MIS) is the preferred approach to early-stage endometrial cancer (EC) staging, with robot-assisted surgery (RAS) increasingly adopted due to its benefits for both patients and surgeons. Specific benefits for EC staging include a lower conversion rate and a faster recovery when compared to laparoscopy, especially in obese patients.

These benefits may substantiate the additional costs required for RAS. The Hugo RAS™ system recently enabled the use of indocyanine green (ICG) near-infrared fluorescence (NIRF) with the installation of the TIPCAM®1 RUBINA™, a high-resolution laparoscope for ICG-NIRF imaging. Current ESGO-ESTRO-ESP guidelines support sentinel lymph-node (SLN) biopsy with ICG for staging in low-risk and intermediate-risk EC, and this novel MIS system may be used to further enhance the validity of this approach.

### Methods

We present the case of a 47-year-old woman with grade 1 endometrioid EC who underwent robot-assisted total hysterectomy, bilateral salpingo-oophorectomy, and SLN dissection.

A four-arm robotic configuration was chosen following the “compact bridge” docking configuration. ICG was injected into the cervix for NIRF SLN mapping. A uterine manipulator was used,

as part of an ongoing randomised trial (MANEC).

## Results

Total operative time was 110 minutes. Time at the robotic console was 80 minutes. Docking time was 5 minutes. Estimated blood loss was 50 mL. No intraoperative or postoperative complications were noted. The patient was discharged on postoperative day 2. Final pathology results showed a FIGO stage IA endometrioid endometrial adenocarcinoma. Two SLNs were bilaterally harvested in the obturator fossae, both negative for metastasis.

## Conclusions

This was the world’s first successful use of ICG fluorescence imaging with the Hugo RAS™ system for SLN mapping in EC staging. Prospective and larger studies in the future are necessary to quantify such benefits via a comparison with other robotic systems. The effective integration of ICG fluorescence imaging with the robotic surgical systems serves as an invaluable teaching tool to accelerate the learning curve and to educate young surgeons regarding complex surgical concepts such as SNL biopsy in gynaecological oncology.



## DESMOPLASTIC SMALL ROUND CELL TUMOUR OF PELVIC ORIGIN

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### Introduction

Desmoplastic small round cell tumour (DSRCT) is a rare abdominal tumour. It presents with abdominal distension with widespread metastasis in the peritoneum. Recurrence is common (1).

### Case study

A 20-year-old female presented with an abdominal mass and ascites with normal CA 125, LDH, AFP, & B-HCG. Ultrasonography & CT scan showed two masses, the peritoneum (left hypochondrium) & pelvis around the uterus and bladder with loss of fat plane.

Cystoscopic & colonoscopic biopsy showed no malignancy. Ascitic fluid cytology signaled malignant cells. Biopsy of pelvic mass suggested poorly differentiated carcinoma with cellular positivity of pancytokeratin, EMA, and desmin. Cells were negative for MIC2, WT1, TTF1, CK7, CK20, SALL4, chromogranin, synaptophysin, GATA3, p40, myogenin, inhibin, calretinin, and CD34. There is retention of INI-1 expression.

Cytoreductive surgery was performed. Histopathology supported biopsy findings; cells were negative for DOG1, SMARCA4, and WT1. P53 was positive in 40% of tumour cells. FISH showed t (11,22), suggesting DSRCT with EWSR1 (22q12) translocation.

PET-CT showed liver lesions with abdominal & pelvic

lymphadenopathy. Ewigs sarcoma protocol (metastatic) was started with VAC regimen, 3 weekly up to the 48th week.

VAC Regimen

Vincristine (VCR) 2 mg/sqm (max 2 mg); doxorubicin 75 mg/sqm bolus infusion; actinomycin D: 1.25 mg/sqm (substituted for doxorubicin when a total dose of 375 mg/sqm); & cyclophosphamide 1200 mg/sqm with Mesnex.

After 33 weeks of CT, PET-CT showed clinical remission (CR) in the last chemotherapy week, the 39th week. Pazopanib (TKI) 400 mg/OD was given for 45 days. Whole abdomen radiotherapy was given. After 7 months, follow-up PET-CT showed focal nodules in liver parenchyma and on the liver surface in the peritoneum along with retroperitoneal lymphadenopathy, suggesting progressive disease.

Repeat genetic study showed androgen (AR) gene deletion/ duplication +.

Sarcoma protocol

Ifosfamide 1.8 mg/sqm + etoposide 100 mg/sqm were given for 5 days. Again, oral Topotecan 1mg & Cyclophosphamide 100 mg was given for 5 days. Looking for no radiological improvement, oral Tolozolamide (alkylating agent) 750 mg/sqm = 1000 mg (200mg for 5 days) at bedtime was advised. She is presently on follow-up.

Conclusions

DSRCT should be kept in mind while dealing with young women with widespread disease on presentation. Ovarian DSRCT has a poor prognosis, as seen in this case with recurrence even after a good therapeutic response.



LONG-TERM FOLLOW-UP AFTER LATERAL SUSPENSION FOR ANTERIOR AND APICAL PROLAPSE: A PROSPECTIVE STUDY

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Background

Lateral suspension (LS) is an abdominal prosthetic procedure for apical and anterior prolapse repair, avoiding sacral promontory dissection. LS outcomes are comparable to traditional open sacral colpopexy. However, long-term data remain limited. This study aims to provide long-term outcomes of LS to address this gap.

Materials and Methods

This prospective longitudinal study included patients undergoing

robotic or laparoscopic LS for anterior and apical prolapse between 2014 and 2018, followed until December 2024. Follow-up assessments included anatomical evaluation (Pelvic Organ Prolapse Quantification System, POPQ), quality of life (Prolapse Quality of Life Questionnaire, P-QoL; scores from 0=best to 100 =worst), and patient satisfaction (Patient Global Impression of Improvement, PGI-I; 1=very much better, 7=very much worse). Mesh-related complications and de novo stress urinary incontinence (SUI) were also recorded.

A subgroup analysis was performed on patients with a minimum follow-up of 60 months who remained recurrence-free, providing additional insight into the long-term durability of LS.

Results

A total of 102 women underwent LS, with a median follow-up of 84 months (40.75–96.75). The apical cure rate was 86.3%, the anterior cure rate was 82.4%. De novo posterior defect occurred in 18.6% (19) of cases. Mesh erosion was observed in one patient (0.98%) at six months post-surgery. De novo SUI occurred in another patient (0.98%) after 114 months. The mean PGI-I score was 2.5±1.7, with 57.9% reporting scores of 1–2. In the long-term subgroup (≥60 months, n=63), the median follow-up was 96.0 months (87.0–109.0).

The overall cure rate was 85.7%, with higher apical (93.7%) and anterior (92.1%) cure rates. De novo posterior defect occurred in 9.52% (6) of cases. The mean PGI-I score was 1.9±1.4, with 71.4% reporting scores of 1–2. Long-term P-QoL scores showed a median of 0.0 (0.0–0.0) across all domains. Regarding recurrences notably, 47.8% (11 out of 23) occurred within the first 24 months.

Concerning the 23 recurrences, 11 required surgery (8 before 60 months and 3 after), and 5 patients are awaiting intervention. One patient has used a pessary as conservative therapy since the 24 months after surgery. Five patients declined further surgery.

Conclusions

Extended follow-up confirms LS as an effective, durable procedure. While recurrence persists in the long term (≥60 months), rates remain low. The incidence of de novo posterior defect suggests that LS may not be suitable for the treatment of multicompartmental prolapse. Patient-reported outcomes indicate high satisfaction and improved QoL. Satisfaction rate remains high after 10 years.



FIRST DA VINCI SINGLE PORT SACROCOLPOPEXY FOR MULTICOMPARTMENTAL PELVIC ORGAN PROLAPSE: A COMPLETE SURGICAL VIDEO

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## Background

Pelvic organ prolapse (POP) is a prevalent condition that negatively impacts the quality of life in 3-8% of women, with an 11% lifetime risk of requiring POP-related surgery. Minimally invasive sacrocolpopexy is considered the gold standard for treating apical and multicompartimental prolapse, offering high success rates and a lower risk of recurrence compared to other surgical techniques. Robotic surgery has been shown to have similar safety and effectiveness to laparoscopy for performing these procedures.

## Methods

We present the case of a 72-year-old woman with a symptomatic grade IV pelvic prolapse, classified according to the Half Way System (HWS). The patient also had hypertension and diabetes, a BMI of 25 kg/m<sup>2</sup>, and an ECOG performance status of 0, making her a suitable candidate for surgery. A 2.7 cm umbilical incision was made, and the single-port robotic trocar was successfully positioned. The patient underwent a subtotal hysterectomy with bilateral salpingo-oophorectomy, followed by sacrocolpopexy using a titanized mesh (TiMESH® PMF medical). A detailed video of the surgical procedure is provided.

## Results

The surgery was completed without intra-operative complications and lasted 3 hours, with 2 hours and 30 minutes of console time. Blood loss was minimal. Postoperative recovery was uneventful, with normal bladder function, and the patient was discharged on postoperative day 3. At the first postoperative gynaecological follow-up, the patient presented with a grade I prolapse and significant improvement in POP-related symptoms.

## Conclusions

To the best of our knowledge, this is the first video article in Europe documenting a colposacropexy performed using the new Da Vinci Single Port console. The triangulation achieved by this innovative platform enabled a comfortable and effective surgical approach. Further studies are required to assess the full potential of this platform in performing these types of surgeries.



## DEVELOPMENT OF A REALISTIC PHYSICAL PHANTOM FOR LAPAROSCOPIC AND ROBOTIC ASSISTED SACROCOLPOPEXY TRAINING

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## Background

Robotic-assisted sacrocolpopexy is a complex procedure requiring precise anatomical knowledge, particularly during sacral dissection

where the correct suture site for the surgical mesh must be identified while avoiding damage to surrounding structures. Effective training is crucial, yet no dedicated simulator fully replicates the anatomical complexity of sacrocolpopexy<sup>1,2</sup>.

## Methods

This study presents a novel physical phantom designed to enhance training for laparoscopic and robotic sacrocolpopexy. It consists of two components: a universal base (BBase) and a customisable, partially disposable stratified pad (Sacral Area Pad, SAP). Anatomical structures were segmented from patient CT images and designed in PTC Creo 8 (PTC Inc., Boston, MA, USA). The Basin Base (BBase) is a reusable structural frame that supports the SAP. It consists of a basin-like structure designed to accommodate the SAP and maintains surgical positioning.

The SAP replicates the sacral region's stratified structure, including L5-S1 vertebrae, anterior ligaments, visceral fat, vessels, and ureters. The L5-S1 vertebral surface was 3D-printed in ABS to reproduce cortical and cancellous bone interfaces<sup>3</sup>. Other structures were fabricated using platinum-cured RTV silicones (Smooth-On, Inc.), chosen to mimic biomechanical properties.

The anterior longitudinal ligament was modeled using fabric-reinforced DragonSkin 10 silicone for tensile strength and suturability<sup>4</sup>. Vascular structures required tailored stiffness: arterial walls (1.5–2 mm) were created with DragonSkin Medium, while venous walls (0.8–1 mm) used collapsible EcoFlex 00-1<sup>5,6</sup>. Visceral fat was simulated using DragonSkin, Vaseline oil, and hydrogel, and muscles/peritoneum with EcoFlex 00-10 and DragonSkin Medium. SAP variations allow different vessel positioning and visceral fat thickness, increasing task complexity. A structured breakdown of the robotic sacrocolpopexy procedure was conducted using hierarchical task analysis<sup>2</sup>. This evaluation allowed us to structure the testing and validation phase.

## Results

The simulator was assessed for face and content validity through expert evaluation in a laparoscopic setup. A senior surgeon performed key procedural steps and rated the simulator's realism using a 5-point Likert scale. Preliminary results support the simulator's validity, justifying further evaluation with a larger cohort of expert surgeons (n=5) and subsequent testing with residents to assess its training potential.

## Conclusions

These findings demonstrate the feasibility of a modular, anatomically accurate phantom for sacrocolpopexy training. Future work will focus on expanding anatomical variations, and integrating the phantom into structured educational programs.

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## A CLINICALLY AND TECHNOLOGICALLY PRACTICABLE NAVIGATION SYSTEM FOR ROBOTIC SACROCOLPOPEXY

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### Background

Robot-assisted systems facilitate the performance of complex surgeries that were traditionally conducted through open or laparoscopic approaches. These systems offer significant advantages, including enhanced precision, improved ergonomics, and a reduction in patient complications. However, a notable limitation of these systems is the lack of tactile feedback, which presents challenges in identifying concealed structures, thereby increasing the potential risk of inadvertent damage.

Sacrocolpopexy is a procedure in which this issue is particularly pronounced, as identifying hidden vessels at the mesh anchoring site in patients with a high BMI can be challenging due to the presence of adipose tissue. However, these vessels are visible in the preoperative CT images, thus this information can be used to guide the procedure with Augmented Reality.

### Methods

This study introduces a clinically and technologically practicable navigation system designed for robotic sacrocolpopexy, aimed to address the challenge of identifying hidden vessels at the mesh anchoring site by displaying virtual images consistent with the real endoscopic view. Since surgical robotic systems generally use a stereo-endoscope, it can be directly used to localize fiducial points in the operative field, thus avoiding the need for an external locator. In this way, the hidden structures can be added directly on endoscope images with an Augmented Reality visualisation.

Furthermore, this system does not require any intraoperative scan, reducing patient exposure to ionising radiation. Tests of the solution have been performed on a patient specific phantom of pelvic area which included the pelvis with other structures of interest such as aorta, vena cava, iliac veins and arteries and ureters.

### Results

Results were encouraging since the Augmented Reality projection overlapped the underlying structures with good accuracy. The

projection error was measured on two points: one on the left iliac artery and one on right iliac vein, with a mean error of respectively 2.45 mm and 3.79 mm, and a maximum error of 4.54 mm and 8.59 mm.

### Conclusions

The results obtained on a patient-specific phantom demonstrated that the proposed navigation system can accurately project hidden vascular structures onto the endoscopic view, with a projection error within clinically acceptable limits. This suggests that Augmented Reality guidance may effectively support surgeons during robotic sacrocolpopexy, particularly in anatomically challenging cases such as those involving high BMI patients. Future studies will focus on in vivo validation and integration into the surgical workflow to assess its impact on operative outcomes and safety.



## VIDEO DEMONSTRATION OF ROBOTIC RPLND (PARA-AORTIC) BY DOUBLE DOCKING TECHNIQUE

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### Aim

Though Sentinel node mapping is an acceptable alternative, systematic para-aortic lymph node dissection is still recommended in high grade, high risk histologies of endometrial cancer.

We aim at demonstrating the technique of robotic systematic retroperitoneal lymph node dissection up to the level of left renal vein by double docking.

### Material and methods

The procedure was done by da Vinci Xi robotic surgical system. The ports for para-aortic lymph node dissection were a mirror image of standard docking for pelvic surgery and a 15-degree right tilt was given to the patient.

### Results

The patient was 48 years old with history of AUB. Preop evaluation by endometrial biopsy revealed a grade 3 endometrioid adenocarcinoma and PET-CT scan ruled out metastatic disease. The duration of para-aortic LND was 90 minutes and the complete surgery including pelvic part was about 200 minutes. Blood loss was 80 ml. There were no intra-operative complications.

On final histopathology it was a grade 3 endometrioid adenocarcinoma, with less than 50% myoinvasion but with extensive LVSI. Right pelvic nodes (0/16), left pelvic nodes (0/5) and para-aortic lymph nodes (0/29), cytology free. The patient was discharged on 2nd post-operative day and did not have any post-op complications.

### Conclusions

Robotic Para-aortic Lymph node dissection up to the level of left

renal vein is feasible and safe with double docking technique and is especially suited for high risk endometrial cancer patients who opt for minimally invasive technique of surgery.

ID 97

## ROBOTICALLY-TREATED SPONTANEOUS INTERSTITIAL PREGNANCY ON TUBAL STUMP

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To report a rare case of a right interstitial pregnancy spontaneously occurring in a patient who had previously undergone homolateral salpingo-oophorectomy, and to propose possible explanations for the mechanisms involved in the genesis of this rare scenario. A 32-year-old G3P1 female presented to our emergency room with symptoms related to a suspected ectopic interstitial pregnancy managed in another hospital using a conservative pharmacological approach.

After discussing the risks, firstly she underwent a transvaginal ultrasound examination, then a diagnostic hysteroscopy to clarify the unclear ultrasound finding, followed by a successful robot-assisted laparoscopic cornual resection. Hysteroscopy demonstrated an empty uterine cavity, confirming the suspect of pregnancy localisation into the interstitial portion of the tubal stump. Through the robot-assisted laparoscopic approach, all the trophoblastic tissue was removed without causing significant damage to the surrounding myometrium and preserving the patient's fertility. No post-operative complications were recorded.

The robotic approach successfully allowed the cornual resection, with minimal blood loss and optimal suturing of the uterine defect. Although our knowledge is still limited, it is possible that the pregnancy nested in the tubal residue after being properly fertilised into the intact tube. However, it cannot be ruled out that there have been remodeling phenomena of the tubal residue so that it has acquired the ability to intercept the oocyte.

ID 98

## ROBOTIC OVARIAN TRANSPOSITION PRIOR TO PELVIC RADIATION THERAPY IN CERVICAL CANCER PATIENTS

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### Background

Ovarian Transposition is a procedure performed in cervical cancer

patients undergoing pelvic radiation. The aim is to relocate the ovaries outside the radiation field to minimise ovarian failure while maintaining safety and oncological principles. A systematic review encompassing 1377 patient reported an overall ovarian function preservation rate of approximately 61.7 % post ovarian transposition and pelvic radiotherapy<sup>1</sup>.

The extent of damage to ovarian function is closely related to the radiation dose received. Ovarian cells are highly sensitive to ionizing radiation; doses as low as 2 Gy (Gray) can result in up to 50 % oocyte destruction. Higher doses such as 6 Gy are associated with moderate risk of ovarian failure, while doses exceeding 14 Gy can lead to ovarian failure in nearly all patients<sup>2</sup>.

The risk of ovarian metastasis in early-stage cervical cancer varies significantly by histological subtype. In squamous cell carcinoma, the likelihood of ovarian involvement is very low with reported rates around 0.79 %, making ovarian preservation through transposition generally safe and widely accepted for these patients<sup>3</sup>. The Robotic –assisted approach offers enhanced precision and visualisation, facilitating meticulous dissection and transposition.

### Methods

This video demonstrated a standardised five-step robotic ovarian transposition technique:

1. Identification of the ureter and dissection of the posterior leaf of the broad ligament
2. Incision of the peritoneum above the pelvic brim
3. Tunnelling of the peritoneum to create a passage for the ovary
4. Securing the ovary to the abdominal side wall with sutures
5. Placement of surgical clip for easy identification during radiation therapy

### Results

Robotic assisted ovarian transposition was successfully preformed ensuring proper ovarian relocation while preserving vascular supply. The thorough dissection provided excellent visualisation of critical structures, allowing for precise isolation of the ovarian blood supply and secure fixation. No intraoperative or postoperative complication were observed.

### Conclusions

Robotic ovarian transposition is a feasible and effective approach in preserving ovarian function among cervical cancer patient undergoing pelvic radiation. The robotic platform enhances precision, facilitates ureteral identification and ensures optimal ovarian placement.

ID 99

## LENGTH OF HOSPITAL STAY AFTER ENDOMETRIAL CANCER SURGERY: A SINGLE-CENTRE

## RETROSPECTIVE OBSERVATIONAL STUDY

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### Background

The goal of this study was to evaluate the length of hospital stay (LOHS) following endometrial cancer surgery, comparing robotic surgery (RS) and laparoscopy (LPS), analyzing pre-operative, intra-operative, and post-operative factors. Enhanced Recovery After Surgery (ERAS) protocols, which focus on optimising post-surgical recovery, were systematically applied to all patients in the study.

### Methods

A retrospective analysis was performed on 218 patients who underwent surgery for endometrial cancer at our surgical center between January 2019 and December 2024. Of these, 155 patients underwent RS, while 63 patients underwent LPS. The mean age of the cohort was  $64 \pm 10$  years, and mean BMI  $31 \pm 8$ .

The mean LOHS (in hours) was compared using univariate (t-student test) and multivariate analyses (multiple linear regression), based on peri-operative factors including age, operative time (minutes), robotic surgery (yes vs. no), omentectomy (yes vs. no), sentinel lymph node (SLN) biopsy (yes vs. no), and post-operative anemia (yes vs. no). The influence of each variable on LOHS was assessed by the regression coefficient (CR). A 95% confidence interval (CI) was used, with a p-value of  $<0.05$  considered statistically significant.

The ERAS protocol, which emphasizes a multidisciplinary approach, was applied at all stages of hospitalisation: pre-operatively with prehabilitation, intra-operatively with specialised surgical and anesthetic techniques, and post-operatively with early mobilisation and prompt feeding recovery.

### Results

Univariate analysis revealed that LOHS was significantly associated with age, operative time, robotic surgery (mean RS  $44 \pm 22$  vs. LPS  $57 \pm 34$ ), omentectomy, SLN biopsy, and post-operative anemia. Therefore, age, operative time, omentectomy, and post-operative anemia were associated with a lengthened LOHS, while RS and SLN biopsy were associated with a reduced LOHS. However, multivariate analysis identified that operative time and post-operative anemia were associated to significantly lengthen LOHS (CR = 0.09, CI 0.037-0.144,  $p = 0.001$ ; CR = 19.205, CI 6.767-31.643,  $p = 0.003$ , respectively). No significant association was found for age, RS, omentectomy, and SLN biopsy ( $p = 0.376$ ,  $p = 0.390$ ,  $p = 0.483$ ,  $p = 0.333$ , respectively).

### Conclusions

Operative time and post-operative anemia are independent factors associated with longer hospital stays in our study population. The

systematic application of the ERAS protocol contributing to faster discharge after surgery.



## IMPACT OF PERIOPERATIVE FACTORS ON LENGTH OF HOSPITAL STAY IN ROBOTIC SURGERY FOR ENDOMETRIAL CARCINOMA: A RETROSPECTIVE SUBGROUP MULTIVARIATE ANALYSIS

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### Background

The aim of this study was to evaluate the impact of preoperative, intraoperative, and postoperative factors on the length of hospital stay (LOHS) in patients with endometrial carcinoma undergoing robotic surgery (RS). Enhanced Recovery After Surgery (ERAS) protocols, designed to improve post-surgical recovery, were systematically applied to all patients involved in the study.

### Methods

A retrospective analysis of 218 patients who underwent surgery for endometrial cancer between January 2019 and December 2024 at our centre was previously conducted. We performed a subgroup analysis on 155 patients who underwent exclusively robotic surgery (RS).

To assess the impact of various perioperative factors on LOHS, including mean operative time (min); history of previous surgery (yes vs. no); execution of sentinel lymph node biopsy (yes vs. no); use of opioids after surgery (yes vs. no) and postoperative anemia (yes vs. no); a multivariate analysis was performed using a multiple linear regression model. Influence on LOHS of each variable was established by regression coefficient (CR). A 95% confidence interval (CI) was used, and a p-value  $< 0.05$  was considered statistically significant.

### Results

Operative time, use of opioids after surgery and sentinel lymph node biopsy did not significantly affect the length of hospital stay ( $p = 0.113$ ,  $p = 0.121$ ,  $p = 0.197$ , respectively). However, a history of previous surgery and postoperative anemia were found to significantly lengthen the hospital stay (CR = 9.275, CI 0.312-18.238,  $p = 0.043$ ; CR = 15.028, CI 0.512-29.543,  $p = 0.043$ , respectively).

### Conclusions

A history of previous surgery and postoperative anemia are significant factors contributing to prolonged recovery in patients undergoing robotic surgery for endometrial carcinoma. Postoperative correction of anemia contributes to faster and more effective recovery.

## ROBOTIC SENTINEL LYMPH NODE DISSECTION IN ENDOMETRIAL CANCER

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### Introduction

The sentinel lymph node (SLN) is the first node in the lymphatic chain to potentially harbor metastases. If the SLN is negative, the other nodes are also expected to be free of metastasis. The SLN algorithm is a less invasive method that can be used as an alternative to systematic lymphadenectomy in patients with apparently uterine-confined early-stage, low-risk disease when no extrauterine spread is detected on preoperative imaging or intraoperative exploration. Robot-assisted surgery provides enhanced precision and visualisation, making it an optimal approach for SLN dissection.

The aim of this case is to present robotic SLN dissection in a 48-year-old patient diagnosed with endometrioid adenocarcinoma.

### Methods

The patient underwent robotic-assisted laparoscopic bilateral sentinel lymph node dissection before hysterectomy. To facilitate lymphatic mapping, indocyanine green (ICG) was injected into the cervix. The da Vinci robotic surgical system was used to carefully identify and dissect sentinel lymph nodes in the pelvic region. The identified SLNs were excised and sent for pathological examination.

### Results

This case demonstrates the efficacy and reliability of robotic-assisted SLN dissection in endometrial cancer patients. The combination of robotic precision and ICG fluorescence mapping provides a minimally invasive yet oncologically sound approach to lymph node assessment. SLN mapping reduces the need for systematic lymphadenectomy, lowering surgical morbidity while maintaining oncological safety.

### Discussion

SLN biopsy has been reported to have high sensitivity in detecting nodal metastases and significantly reduces postoperative morbidity, including lower extremity lymphedema and nerve damage, compared to systematic pelvic lymph node dissection. Another advantage of the SLN algorithm is the ability to detect low-volume metastases that may not be identified with routine H&E staining through the use of ultrastaging.

The ESMO-ESGO-ESTRO (2020) guidelines recommend SLN biopsy as an alternative to lymphadenectomy for nodal staging in early-stage EC.

The robotic approach allowed for precise dissection and minimised

surgical morbidity. Further studies are needed to establish standardised protocols and long-term outcomes of robotic SLN mapping.

## CLINICAL FACTORS ASSOCIATED WITH FAILED SENTINEL NODE DISSECTION IN ENDOMETRIAL CANCER: A SINGLE-CENTRE EXPERIENCE

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### Background

Sentinel lymph node (SLN) mapping has emerged as a minimally invasive and increasingly preferred technique for staging endometrial cancer, offering reduced morbidity compared to full lymphadenectomy. However, SLN mapping fails in approximately 15-20% of cases, which may compromise accurate staging and treatment planning.

### Aim

To identify clinical factors associated with unsuccessful SLN dissection in patients undergoing surgery for endometrial cancer.

### Methods

A retrospective review was conducted on patients with endometrial cancer who underwent SLN mapping with Memorial Sloane Kettering algorithm via robotic-assisted hysterectomy at The Royal Marsden Hospital between 2015 and 2025. Data collected included patient demographics, tumour characteristics, body mass index (BMI), prior surgical history, tracer technique, and intraoperative findings. SLN mapping was considered successful if at least one sentinel node was identified. Logistic regression analysis was used to determine independent predictors of mapping failure.

### Results

A total of 938 patients underwent robotic hysterectomy for endometrial cancer during the study period. SLN mapping was unsuccessful in 42 cases (4.2%). The mean patient age was 68 years, with a mean BMI of 36; 74.5% had a BMI >30, and 94% had significant comorbidities. Advanced-stage disease (FIGO stage III–IV) was observed in 23.7% of patients.

In 24 cases (57.1%), SLN dissection was abandoned intraoperatively. The most common reasons were intolerance to the Trendelenburg position (46.2%), equipment failure (15.4%), advanced disease (15.4%), and conversion to laparotomy (11.5%). On multivariate regression analysis, significant comorbidities were independently associated with SLN abandonment ( $p = 0.0005$ ).

In the remaining 18 cases (42.9%), bilateral mapping failed despite attempted dissection. Key intraoperative factors associated with mapping failure included the presence of a large fibroid uterus (37.5%), indocyanine green (ICG) spillage (31.2%), and extensive

pelvic adhesions (18.7%). On multivariate analysis, a large fibroid uterus was a significant predictor of failed mapping ( $p = 0.003$ ).

## Conclusions

SLN dissection failure in endometrial cancer was significantly associated with patient comorbidities and the presence of a large fibroid uterus. Recognition of these risk factors may assist in preoperative counselling and guide surgical planning to improve mapping success rates.



## STEP-BY-STEP ROBOTIC SACROHYSTEROPEXY IN PELVIC ORGAN PROLAPSE

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### Background/Aim

In the surgical management of uterine prolapse, uterus-preserving techniques are increasingly being favored over traditional hysterectomy due to their anatomical and functional benefits. Among these, robotic sacrohysteropexy stands out for its precision, minimally invasive nature, and potential to reduce complications. In this video, we aim to demonstrate a step-by-step approach to robotic sacrohysteropexy performed in a case of advanced uterine prolapse, highlighting the feasibility and advantages of preserving the uterus.

### Methods

The patient presented with a symptomatic stage IV uterine prolapse without urinary incontinence. A robotic sacrohysteropexy was planned and performed using a T-shaped polypropylene mesh. The mesh was secured to the anterior and posterior aspects of the uterocervical junction and then anchored to the sacral promontory, aiming to restore apical support and reduce the risk of anterior compartment recurrence. Tunneling was used to pass the mesh arms without compromising the uterine blood supply, and the peritoneum was closed over the mesh to minimize the risk of erosion.

### Results

The surgery was completed without complications. No dissection of the bladder or broad ligaments was required, which reduced the risk of intraoperative injury. The use of a bifurcated polypropylene mesh allowed for effective suspension of the uterus while maintaining anatomical integrity. Postoperative follow-up at 12 months revealed no recurrence of prolapse, mesh-related complications, or new-onset urinary symptoms. The patient reported a satisfactory functional outcome.

## Conclusions

Robotic sacrohysteropexy is a safe and effective minimally invasive procedure for the treatment of advanced uterine prolapse. Uterine

preservation avoids unnecessary hysterectomy and maintains pelvic floor dynamics. This video illustrates a simplified, reproducible surgical technique and supports the growing preference for uterus-sparing approaches in pelvic reconstructive surgery.



## THE USE OF MECHANICAL BOWEL PREPARATION IN ROBOTIC GYNAECOLOGICAL SURGERY

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### Background/Aim

Mechanical bowel preparation (MBP) prior to open, laparoscopic or vaginal surgery has been traditionally used in gynecology, as well as other surgical specialties. However its use seems to influence the rates of perioperative events and complications. The purpose of this study is to investigate the necessity of preoperative MBP before robotic gynaecological surgery.

### Methods

Review of literature.

### Results

The theoretical benefits of MBP include easier bowel manipulation and better visualisation. On the other hand, as it has been demonstrated in studies of patients undergoing robotic urologic surgery, the adverse effects are largely associated with electrolyte disturbances, an increased length of stay, decreased patient satisfaction and higher incidence of prolonged ileus. Studies in patients treated under the ERAS protocol have suggested that MBP is possibly doing more harm than good.

So far, few literature exists on the use of MBP in patients undergoing robotic gynaecological surgery. Systematic reviews have failed to demonstrate a benefit in open, laparoscopic and vaginal gynaecological surgery in terms of reducing operative time and better operative field exposure. These factors suggest that, respectively, patients undergoing robotic gynaecological surgery may not require bowel preparation. However it may be considered in patients who are at a higher risk for potential bowel injury, such as patients with multiple previous abdominal surgeries with the potential for adhesions.

## Conclusions

Further research needs to be conducted, to demonstrate whether there is a need for systematic use of mechanical bowel preparation in robotic gynaecological surgery. Previously published data across specialties and surgical routes, highlight that the elimination of MBP does not have a negative impact on perioperative outcomes.

## ENHANCED RECOVERY AFTER SURGERY (ERAS) IN ROBOTIC GYNAECOLOGICAL SURGERY

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### Background/Aim

Enhanced Recovery After Surgery (ERAS) protocols have gained widespread recognition as they improve surgical outcomes and minimize recovery times. In the context of robotic gynaecological surgery, the use of ERAS may prove particularly significant, as it is associated with quicker recovery, reduced complication rates, and enhanced patient satisfaction. The purpose of this study is to investigate the impact of implementing the ERAS protocol in robotic gynaecological surgery.

### Methods

Review of literature.

### Results

Robotic-assisted surgeries are suitable for the implementation of ERAS principles, as both innovative approaches aim to reduce surgical stress and enhance postoperative results. The ERAS protocol involves preoperative, intraoperative and postoperative measures that aim at minimising stress on the body and promoting faster recovery. The use of robotic surgery, as it causes less tissue damage, is associated with reduced postoperative pain, blood loss, and length of stay, in line with the ERAS goal of accelerating recovery.

Recent data from a randomised controlled trial demonstrated that the combination of ERAS and robotic gynaecological surgery improves patient outcomes, shortens hospital stays and enhances postoperative recovery without increasing complications versus the traditional recovery pathway. A study among patients who underwent robotic radical hysterectomy in a tertiary hospital which implements the ERAS protocol found that it was safe to discharge patients even <12 hours after surgery and this approach led to shorter duration for urinary catheter required and less voiding difficulty after long-term follow up compared to the group of patients discharged after 12 hours. Even when a bowel operation is required in the context of gynecologic surgery, the implementation of ERAS leads to shortened hospital stay, stable postoperative morbidity, and less readmissions.

### Conclusions

The integration of ERAS protocols into robotic gynaecological surgery is a promising approach for improving patient outcomes. As further studies supporting its efficacy emerge, ERAS may become the standard of care in robotic gynecological surgery.

## NERVE-SPARING RADICAL HYSTERECTOMY USING THE DA VINCI ROBOTIC SYSTEM: ANATOMICAL LANDMARKS, KEY STEPS, AND ADVANTAGES

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### Background

Radical hysterectomy for cervical cancer can inadvertently damage pelvic autonomic nerves, causing postoperative urinary, bowel, and sexual dysfunction. Nerve-sparing techniques were developed to mitigate these effects by preserving the pelvic autonomic nervous system (hypogastric nerves, pelvic splanchnic nerves, and the inferior hypogastric plexus). The da Vinci robotic system offers a minimally invasive platform with 3D magnification and precise instrument control, well-suited for the delicate dissection needed to spare these nerves.

### Aim

To review the anatomical landmarks, key operative steps, and advantages of the nerve-sparing technique in robotic radical hysterectomy, illustrating how robotics enables precise identification and protection of pelvic autonomic nerves. This overview aims to educate surgeons and encourage exchange of best practices in robotic gynaecological oncology.

### Methods

We reviewed relevant literature on pelvic autonomic anatomy and nerve-sparing radical hysterectomy using robotics. Key anatomical landmarks and operative steps were compiled, and the role of the robotic platform in facilitating meticulous nerve-sparing dissection is described.

### Results

**Anatomical Landmarks & Technique:** Pelvic autonomic nerves (hypogastric and pelvic splanchnic nerves) run through the lateral parametrial tissue adjacent to the cervix. Vascular landmarks such as the inferior vesical vessels help identify the pelvic splanchnic nerves within the cardinal ligament. The nerve-sparing approach involves early uterine artery ligation and creation of paravesical and pararectal spaces to expose the nerve pathways. The uterosacral and cardinal ligaments are then divided in an avascular plane, preserving the underlying nerve fibers; in the anterior parametrium, careful division of the vesicouterine ligament protects bladder innervation.

**Robotic Advantages:** The da Vinci system's high-definition 3D view and wristed instruments enable precise, tremor-free dissection of pelvic tissue planes. This augmented precision helps surgeons distinguish and preserve delicate nerve structures, reducing the risk of postoperative neurologic sequelae like voiding dysfunction. Robotic ergonomics also improve surgeon comfort and allow the assistant to share the magnified view, facilitating training.

Importantly, adopting nerve-sparing techniques robotically does not compromise cancer control.

## Conclusions

Robotic nerve-sparing radical hysterectomy combines oncologic efficacy with the quality-of-life benefits of autonomic nerve preservation. The robotic system's superior visualisation and dexterity allow consistent identification and preservation of pelvic nerves, minimising functional morbidity without sacrificing cancer control. This educational overview of key anatomy and technique aims to promote wider adoption of nerve-sparing robotic practices and improve surgical training and patient outcomes in gynaecological oncology.

ID 107

## ROBOT-ASSISTED TLH FOR FIBROID UTERUS: VAGINAL COLD-KNIFE MORCELLATION TECHNIQUE

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### Background

Large uterine fibroids are a common cause of heavy menstrual bleeding, pelvic pressure, and bladder dysfunction in perimenopausal individuals. In symptomatic patients, hysterectomy is often the definitive treatment. Robotic-assisted total laparoscopic hysterectomy (TLH) with bilateral salpingo-oophorectomy (BSO) provides a minimally invasive alternative with reduced blood loss and faster recovery.

### Methods

We present the case of a 54-year-old nulliparous, perimenopausal patient with multiple fibroids, menorrhagia, urinary incontinence, and constipation. MRI revealed submucous, intramural, and subserous fibroids, with the largest measuring 12 cm and an overall uterine size of 22 × 18 × 14 cm. Endometrial biopsy demonstrated a disordered endometrium but no malignancy. The patient underwent robotic TLH/BSO with vaginal cold knife morcellation. Estimated blood loss was 35 mL, and the patient was discharged the following day.

### Results

Postoperatively, all bladder and bowel symptoms resolved. The uterine specimen weighed 1.2 kg. No surgical complications were noted, and the patient had an uneventful recovery.

### Conclusions

Robotic TLH/BSO is a safe and effective option for managing symptomatic fibroids, even in cases with large uterine volumes. This case highlights the role of minimally invasive surgery for improving patient outcomes with minimal blood loss and expedited recovery.

ID 108

## ROBOTIC MODIFIED RADICAL HYSTERECTOMY FOR AN CERVICAL FIBROID IN A PATIENT WITH SIGNIFICANT COMORBIDITIES

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### Background/Aim

Cervical fibroids are uncommon representing <1% of all leiomyoma. This case report discusses the management of a 56-year-old patient, para 4, with a history of two previous caesarean sections, presenting with a 6 cm enlarging cervical vascular mass. Initially suspected to be cervical cancer, the mass was evaluated through the local gynae oncology multidisciplinary team meeting. The patient had multiple co-morbidities including a BMI of 60 which reduced to 45 after bariatric surgery and GLP1-receptor agonist therapy as well as a history of pulmonary embolism treated with apixaban, and small vessel vasculitic disease. Here we show the surgical approach and perioperative outcomes of a robotic-assisted modified radical hysterectomy.

### Methods

The patient underwent MRI and CT imaging, which suggested an enlarging postmenopausal cervical fibroid. Given the symptomatology, including significant bladder symptoms and pelvic pain, and the failure of prior endometrial biopsy to provide a conclusive diagnosis, a decision was made for robotic-assisted modified radical hysterectomy with bilateral salpingo-oophorectomy. The surgical procedure was performed using a minimally invasive robotic approach in view of her co-morbidities to optimise recovery and minimise surgical morbidity.

### Results

The patient had a successful robotic procedure with no intraoperative complications. The patient tolerated the procedure well and was discharged 18 hours postoperatively. Histopathological analysis confirmed a benign cervical fibroid with atrophic endometrial changes.

### Conclusions

This case highlights the utility of robotic-assisted surgery in complex gynaecological cases, particularly in patients with multiple comorbidities. The robotic approach facilitated a safe and efficient modified radical hysterectomy, leading to rapid postoperative recovery.

ID 109

## TISSUE DAMAGE - INFLAMMATORY MARKERS IN ROBOTIC VS LAPAROSCOPIC HYSTERECTOMY FOR ENDOMETRIAL CANCER

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## Background/Aim

The benefits of robotic versus conventional laparoscopy for women undergoing hysterectomy is still a debatable subject. There are plenty of factors that need to be taken under consideration such as hospital stay, operating time, blood loss, immunologic response and cost. This review aims to focus on two parameters, tissue damage and inflammatory response.

## Methods

Three different randomised control trials comparing inflammatory and tissue damage markers after laparoscopic vs robotic hysterectomy were analysed. This paper focuses on specific markers such as CRP, WBC, IL-6, Cortisol and CK due to their increased significance in assessing a post-op patient for most surgeons. The levels of these markers were obtained from blood samples taken from the patients at two hours and at twenty-four hours pre-operatively and respectively at 24h, 48h and 1 week post-operatively. In all trials the da Vinci<sup>TM</sup> surgical system was used.

## Results

In all 3 trials, no change was noted in the concentrations of the investigated biomarkers pre-operatively. However, starting from day 1 several changes were observed. A significant increase in leukocyte count was observed post-operatively for both robotic and laparoscopic surgery, although levels of WBC within the first 48h in robotic approach were slightly decreased compared to laparoscopic and returned to normal on the 3<sup>rd</sup> post op day as expected.

The same transience was also observed in IL-6 and cortisol levels which also returned to baseline withing the initial 24h post-surgery. Similarly, CRP levels reverted to baseline within the first 2 days following the operation. CK levels, in relation to tissue damage were evaluated in 2 out of three trials, showing a significantly higher level of CK after abdominal hysterectomy compared to both laparoscopic and robotic methods. Difference in CK levels comparing robotic and conventional laparoscopy was not that remarkable, despite the fact a slight decrease was observed in robotic approach. Damage to the musculature is more extensive in abdominal approach than for the robotic and laparoscopic surgery.

## Conclusions

This presentation shows the dynamic changes of tissue and inflammatory markers between robotic and conventional laparoscopy. Although the variation in these markers were transient, it seems like less tissue damage and inflammation is

observed in robotic surgery. That may lead to better patient-reported health-related quality of life in the future. It should be noted that more studies should be conducted to obtain more conclusive results on that matter.



## RETROSPECTIVE COHORT ANALYSIS ON ROBOTIC-ASSISTED LAPAROSCOPIC MYOMECTOMY VS. CONVENTIONAL LAPAROSCOPY: EXPERIENCE FROM A TERTIARY CENTRE IN SOUTHERN ITALY

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## Background

Uterine fibroids are benign tumours originating from the proliferation of smooth muscle cells within the uterine wall and represent the most prevalent non-cancerous tumours affecting women. This study aimed to compare robotic-assisted laparoscopic myomectomy (RALM) with laparoscopic myomectomy (LM) in terms of operative times, intraoperative estimated blood loss, pre- and posthaemoglobin levels drop, and length of hospital stay.

## Methods

From December 2022 to March 2025, we retrospectively collected data on 75 patients who underwent RALM with the da Vinci Xi surgical system (Intuitive Surgical, USA) compared to those who underwent LM in the Gynaecological Unit of DAI Materno-Infantile of Azienda Ospedaliera Universitaria Federico II in Naples, Italy. All patients aged between 34 and 49 years old and a clinical and ultrasonographic and/or MRI diagnosis of intramural/subserous uterine fibroids (FIGO 3-6 Leiomyoma Subclassification System) (single or multiple fibroids) with symptoms such as menorrhagia and/or pelvic pain.

Exclusion criteria were age > 50 years old, oncological disease, high anaesthetic risk (ASA 3-4), fibroid size larger than 10 cm that did not allow removal through MIS (mini-invasive surgery), significantly enlarged uterus reaching the transverse umbilical line and ongoing pregnancy. Data on peri-operative outcomes, including operative time for myomectomy (OTM), overall operative time (OOT), intraoperative estimated blood loss (EBL), pre- and postoperative haemoglobin levels, and length of hospital stay were analysed.

## Results

The OTM in the presence of > 5 myomas was 59 [52-65] vs 69 min [61-96] ( $p < 0.001$ ) for RALM and LM groups, respectively.

Moreover, also in presence of  $\leq 5$  myomas, a difference was observed in the RALM group 48[43-55] compared to the LM group 53[50-61] min ( $p = 0.07$ ). The OOT was also statistically significant for Group A compared to Group B (83[65-93] vs 72[56-110] min,

$p < 0.001$ ). There were no significant differences between the two groups in terms of pre- and post-operative haemoglobin levels and EBL ( $p = 0.178$ ). Group A demonstrated a notably shorter hospital stay 1.2 [1–2] days compared to Group B 2.9 [3–3.75] days ( $p = 0.007$ ).

## Conclusions

Our study suggests potential advantages of RALM over LM in terms of reduced operative times and shorter hospital stays. The standardised approach and extensive surgical experience likely contributed to the favourable outcomes of RALM. However, further randomised multi-institutional studies with larger cohorts are warranted to validate our findings and elucidate the broader implications of robotic surgery in gynaecological practice.



## RECTUS SHEATH BLOCK: A PROMISING ANESTHETIC METHOD FOR ROBOTIC HYSTERECTOMY

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### Background/Aim

Rectus sheath block is an analgesic technique where anesthetics are administered between the rectus abdominis muscle and its posterior sheath using a needle under ultrasound guidance. It works by blocking the anterior cutaneous branches of the thoracic spinal nerves (T7-T12). Current literature already proves its efficacy in reducing post-operative pain in laparoscopic procedures. This review evaluates the analgesic potential of ultrasound guided RSB in patients undergoing robotic hysterectomy.

## Methods

We reviewed the literature using keywords such as, rectus sheath block and robotic hysterectomy or any other procedure. Most of the trials referred to prostate robotic laparoscopy. We analysed the data trying to examine if RSB could have a place in robotic gynaecology. In most trials, 20 ml bupivacaine 0,25% was used. Post-op recovery of the patients was assessed with Visual Analog Scale pain score and opioid requirement 1,3,6,12,24 h after operation.

## Results

In all trials, no RSB related anesthetic complications occurred such as nerve injury, hematoma, infection or peritoneal puncture. Different post-op protocols were used in the reviewed trials with different analgesic drugs being administered in each case.

Although, it seems evident that RSB followed with ERAS protocols

is the most effective choice on reducing post-op complications.

Patients with RSB had decreased VAS pain scores and opioid usage, showing improved postoperative analgesia. The RSB significantly decreased the opioid usage in the first 24 h after the operation. It should also be noted, that RSB doesn't seem to decrease visceral pain while being more potent in abdominal pain, probably due to its nature.

## Conclusions

While optimal analgesic strategy of robotic surgery remains a hot topic, we tried to determine if RSB can be part of standardized anesthetic protocols in robotic gynaecology. Current literature advocates for the integration of RSB in an analgesic protocol. This could potentially decrease opioid consumption while ensuring effective pain management. It should also be noted that more studies, with more standardised parameters should be conducted to obtain a conclusion.



## EARLY ROBOTIC REPAIR OF BLADDER INJURY POST-HYSTERECTOMY: CASE REPORTS AND MANAGEMENT INSIGHTS

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### Objective

This abstract presents two cases of early robotic-assisted repair of bladder injuries following hysterectomy. The primary focus is on the early intervention performed approximately 20 days post-surgery, challenging the conventional timeline for repair, usually conducted 2-3 months after the initial operation.

### Background

Patients exhibited symptoms of urinary leakage via the vagina roughly two weeks post-hysterectomy. Initial conservative treatments were unsuccessful in both cases. Standard practice involves allowing inflammatory conditions to resolve before attempting surgical closure of defects.

### Methods

Both patients underwent initial antibiotic therapy, and DJ stents were placed in both ureters. Indocyanine Green (ICG) was administered to visualise ureteral pathways at the beginning of the procedure. A robotic-assisted laparoscopic approach was utilized to access and prepare the vaginal stump, identify the bladder defect, and execute

repairs. The vaginal stump and bladder defect were sutured, followed by the placement of a Foley catheter in the bladder for 14 days and DJ stents for 1 month.

## Results

At a two-month follow-up, neither patient exhibited urinary tract functional disturbances, indicating a successful early intervention.

## Conclusions

These cases suggest that with appropriate initial management, early surgical intervention for bladder injuries can be feasible and effective, potentially offering a quicker resolution and recovery time compared to traditional methods. Further studies are warranted to explore and validate these findings in larger cohorts.



## ROBOTIC-ASSISTED SURGERY FOR AN INTRAMYOMETRIAL CYSTIC TUMOUR

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### Introduction

A 32-year-old patient was referred for surgical treatment due to a recurrent cystic intramyometrial mass of the uterus. This cystic structure had been laparoscopically excised at another clinic two years prior, with subsequent closure of the myometrium. The etiology remains largely unclear, though a myometrial injury during a failed intrauterine device (IUD) insertion years ago in the presence of a retroverted uterus is conceivable. Given the patient's upcoming fertility treatment, robotic-assisted surgery was indicated.

### Diagnosis

Sonographic evaluation revealed a space-occupying lesion measuring approximately 25 mm × 40 mm with thinning of the adjacent myometrium. MRI confirmed the intramyometrial finding without evidence of malignancy.

### Therapy

After patient positioning and disinfection, incisions were made and the standard trocar placement for the DaVinci Xi system performed. Upon exposure of the surgical field, the expected bulging of the anterior uterine wall was observed. Careful longitudinal dissection of the myometrium followed, with subsequent cavity opening, leading to the release of clear fluid.

The cyst wall was resected in small increments and submitted for histopathological analysis. The defect was then closed using a barbed suture (V-Loc 2-0). U-sutures were employed to approximate the deeper myometrial layers, followed by a continuous full-thickness suture for the upper myometrial layers.

The serosa was adapted using a V-Loc 3-0 suture. Finally, lavage was performed, instruments were removed, and the procedure

was completed. Estimated blood loss was 60 ml.

## Conclusions

Robotic-assisted minimally invasive surgery allowed a tissue-sparing complete resection of the cystic structure with excellent anatomical reconstruction of the myometrium. The patient was discharged on postoperative day 2 in a pain-controlled condition and 18 months later, gave birth to a healthy baby via cesarean section.



## FEASIBILITY AND CLINICAL UTILITY OF TWO-STEP PELVIC AND PARA-AORTIC SENTINEL LYMPH NODE MAPPING USING THE DA VINCI XI SYSTEM IN EARLY-STAGE ENDOMETRIAL CANCER

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The objective of the study is to evaluate the feasibility and diagnostic accuracy of two-step pelvic and para-aortic sentinel lymph node mapping in early-stage endometrial carcinoma. Moreover, the study aims to validate the clinical applicability of the da Vinci Xi robotic system for robotic-assisted staging laparoscopic procedures.

A 70-year-old woman presenting with postmenopausal bleeding was diagnosed with endometrial cancer via dilatation and curettage, with pathological confirmation of clear cell carcinoma. Preoperative imaging revealed no evidence of lymph node involvement or distant metastasis. At the outset of the operation, both salpinges were clamped near the fimbrial end to minimize the risk of tumor spillage.

To identify isolated para-aortic sentinel lymphatic pathways, 3 cc of indocyanine green (ICG) was injected into the bilateral cornual regions. Following para-aortic sentinel lymph node biopsy, an additional 2 cc of ICG was injected at the 3 and 9 o'clock positions of the cervix to facilitate pelvic sentinel lymph node mapping. Pelvic sentinel lymph nodes were selectively excised based on ICG-guided lymphatic channels.

A type A hysterectomy was performed, and the uterus was removed using an endo-bag to prevent spillage. Final pathology revealed no residual carcinoma. The patient was discharged on postoperative day 3 without any surgical complications.

At present, there is no evidence of recurrence, with a progression-free interval of six months.

Two-step pelvic and para-aortic sentinel lymph node mapping performed via staging laparoscopy using the da Vinci Xi robotic system appears to be an optimal approach, offering technical ease, a reduced risk of lymphadenectomy-related complications, and potential benefits in minimising locoregional metastasis.

## PATTERNS OF LIVER METASTASIS IN OVARIAN CANCER

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### Background

In ovarian cancer, liver is involved by two mechanisms; liver parenchymal invasion (LPI) from perihepatic peritoneal metastasis (FIGO stage III) and hematogenous spread (FIGO stage IV) with second one having shorter survival.

### Methods

A case was retrieved from hospital records and analysed.

### Results

Case history- A 37 year old female presented with loss of appetite & abdominal distension. CA 125 was 1888.5 IU/L. MRI showed bulky ovaries, ascites, lymphadenopathy, nodules on omentum & liver surface with right pleural effusion. Ascitic fluid Cytology & US guided FNAC of omental nodule confirmed Adenocarcinoma. Considering Ovarian Carcinoma, 3# TP regimen was followed by cytoreductive surgery, followed by 3# TP regimen. After 4 months, investigations showed progressive disease. Oral metronomic therapy with oral CE (cyclophosphamide and etoposide for 1-5 days, every 21 days) was given.

After 2 cycles the response was poor with PS-2 & CA 125 3830 IU/L. CECT showed progressive disease. Gemcitabin + Cisplatin (GC) regimen was started with D1, D15 plans. This was being tolerated well. Post CT#2; Grade 2 thrombocytopenia resulted in to Gemcitabin dose reduction further. POST 3# GC regimen no response was seen. Weekly Paclitaxol was advised. As a last option, in case of no response after 2, BSC regimen (Paclitaxel + Carboplatin + Bevacizumab) remains an option.

### Conclusions

This case had pleural as well as hepatic involvement. Resection of pleural & hepatic nodule was done. During surgery, with LPI, 1–2 cm resection margin & with liver portal lymph node metastasis, skeletonisation is emphasised, not just lymph node dissection.

## ROBOTIC APPROACH TO BOWEL ENDOMETRIOSIS: IVF OUTCOMES

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### Background

Endometriosis-related infertility presents a dilemma when

choosing the appropriate therapy: surgery or IVF? The risks of surgery and its potential damage to ovarian reserve must be weighed up against the complications associated with the persistence of the endometriosis during ART (Assisted Reproductive Therapy).

### Objective

The aim of this study was to determine the impact of robotic surgery on ART outcomes and clinical pregnancy rates (cPRs) in different endometriosis phenotypes and after IVF failure.

### Design

This was a retrospective observational cohort study of 126 endometriosis patients undergoing 212 IVF/ICSI cycles from January 2011 to December 2024 at the IVF Center of Pisa. Patients were classified on the basis of endometriosis phenotype, and also according to whether they had previously undergone ART or robotic surgery followed by ART. Patients with no previous surgery were classified as affected by: ovarian endometrioma (OMA) and deep infiltrating endometriosis with or without associated endometrioma (DIE ± OMA). Operated patients were classified as: OMA surgery or DIE ± OMA surgery.

### Results

cPRs in the OMA group (first-line IVF) and in the OMA surgery group were 37% and 39% respectively. cPRs in the DIE ± OMA group (first-line IVF) and in the DIE ± OMA surgery group were 21% and 57% respectively. All patients who underwent robotic-assisted surgery after first-line IVF failure achieved pregnancy ( $p=0.003$ ).

### Conclusions

First-line robotic-assisted laparoscopy surgery in infertile patients with OMA does not improve chances of pregnancy. First-line surgery seems to be a good option for infertile patients with DIE. After IVF failure, robotic surgery should be considered.

## SIMPLE HYSTERECTOMY IN ENDOMETRIAL CANCER: A SINGLE CENTRE EXPERIENCE

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### Aim of the study

Comparing robot assisted laparoscopic versus laparoscopic simple hysterectomy in endometrial cancer.

### Methods

We retrospectively analyzed the length of stay (LOS) (days), operating times (minutes), blood transfusions (%) and estimated blood loss (mL) in 57 patients with endometrial cancer who underwent robot assisted laparoscopic simple hysterectomy between

01th January to 31st December 2024 in Multidisciplinary Robotic Center in Pisa. The demonstration of safety and effectiveness for the specific procedure discussed in this material was based on evaluation of the device (Da Vinci Xi/X, Intuitive Surgical, Inc) as a surgical tool and did not include evaluation of outcomes related to the treatment of cancer (overall survival, disease-free survival, local recurrence) or treatment of the patient's underlying disease/condition.

Results

In the analysed population, robot assisted laparoscopic simple hysterectomy has proven to be associated with a shorter LOS, less estimated blood loss and transfusion during hospitalisation. On the other hand laparoscopic surgery (LAP) turned out to be associated with lower operating times.

Conclusions

In our experience, robot assisted laparoscopic simple hysterectomy in endometrial cancer is nowadays a valid and safe surgical technique compared to open surgery and traditional laparoscopic surgery.



ROBOT-ASSISTED VERSUS OPEN MYOMECTOMY. A COMPARATIVE SINGLE-CENTRE EXPERIENCE

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Introduction

Uterine fibroids are common among premenopausal women, with a prevalence of 40–80%. Surgery is indicated for symptoms like menometrorrhagia, pelvic pain, infertility, medical therapy failure, or based on fibroid size, number, and location. Open surgery has long been the gold standard, but robotic myomectomy (RM) has gained popularity for its precision, dexterity, and ergonomic advantages.

Although formal guidelines for RM are lacking due to limited evidence, it is increasingly used. Retrospective studies suggest RM is safe, effective, and may reduce blood loss, complications, and hospital stay. This study aimed to compare intra- and perioperative outcomes between laparotomic and robot-assisted myomectomy.

Materials and Methods

We retrospectively analysed 106 consecutive patients who underwent conservative myomectomy for uterine fibromatosis at our centre between January 2022 and March 2025. All procedures were performed by a single surgeon experienced in both surgical

approaches. The outcomes evaluated included operative time (OT, minutes), number of fibroids removed, blood loss (EBL, ml), and length of hospital stay (LOS, days). Results are expressed in median and Interquartile Range (IQR).

Results

Of the 106 patients included in the analysis, 70 (66%) underwent open conservative myomectomy, while 36 (34%) underwent the procedure using RM. The overall OT was 85 minutes (65–100), with a statistically significant difference in favor of the open technique [70(57.5–87.5) vs. 106(87.25–127.5) minutes,  $p<0.0001$ ]. There was no significant difference in the number of fibroids removed between groups [3(1.5–4) vs. 2(1–4),  $p=0.68$ ]. Similarly, EBL did not differ significantly, although a trend toward lower EBL was observed in the robotic group [150(100–250) vs. 100(77.5–187.5) ml,  $p=0.15$ ]. The robotic approach was significantly associated with a shorter LOS, with a median of 1 day (IQR 1–1) compared to 2 days (IQR 1–2) in the open group ( $p=0.035$ ).

Conclusions

In our experience, the robotic approach proved comparable to the gold standard in terms of the number of fibroids removed and EBL. A clear advantage of the robotic technique was observed for LOS, while OT resulted significantly shorter in the open group. According to the literature, minimally invasive approaches are associated with lower EBL but longer OT. These findings may have been influenced by the retrospective, single-center nature of the study, as well as by the inclusion of docking and undocking times in the robotic group—steps often performed by trainees. Further prospective studies with larger populations are needed to validate these results.



VASCULAR COMPLICATION DURING SENTINEL LYMPH NODE REMOVAL IN ENDOMETRIAL CANCER SURGERY

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This video abstract presents the case of a patient operated for endometrial adenocarcinoma. The surgery was total hysterectomy, bilateral salpingo-oophorectomy and removal of the sentinel lymph node bilaterally. During the surgery there was a vascular complication, with injury to the external iliac artery and its subsequent repair. In conclusion, the abstract shows the possibility of quickly and effectively repairing vascular lesions thanks to robotic surgery.



3D IMAGING RECONSTRUCTION AND

## LAPAROSCOPIC ROBOTIC SURGERY APPROACH TO DISSEMINATED PERITONEAL LEIOMYOMATOSIS

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### Background

Disseminated peritoneal leiomyomatosis is a benign condition, defined as the presence of multiple peritoneal nodules of various sizes composed of bland smooth muscle cell. This video article aims to explore the combined approach of 3D imaging reconstruction and laparoscopic robotic surgery for disseminated peritoneal leiomyomatosis, focusing on the advantages offered by robotic surgery, including reduced tremor, enhanced precision in confined spaces, decreased operating time and uterine surface incisions.

### Methods

A case study of a 43-year-old nulliparous infertile woman with multiple symptomatic uterine myomas is presented. Robotic surgery was chosen due to the widespread localization of peritoneal leiomyomatosis associated with uterine myomatosis. 3D imaging reconstruction technology was utilized for preoperative and intraoperative planning, accurately determining the location, size, and volume of the fibroids through MRI imaging.

### Results

Robotically assisted laparoscopic surgery successfully validated the preoperative 3D reconstruction findings. Multiple intraperitoneal fibroids were visualized and removed. 3D imaging reconstruction technology guided the surgeon in real-time, facilitating rapid localization of myomas and adjustment of the surgical strategy. The procedure resulted in the removal of 15 fibroids, with minimal blood loss (250 mL) and a total operative time of 120 minutes.

### Conclusions

The combined approach of 3D imaging reconstruction and laparoscopic robotic surgery provides several advantages for disseminated peritoneal leiomyomatosis management, guaranty the patient to have a procedure effective as a classic open myomectomy while maintaining the advantages of a minimally invasive technique. 3D imaging reconstruction technology overcomes limitations associated with robotic surgery, compensating for the lack of depth perception and haptic feedback.

The accurate virtual landmark of the uterus and fibroids aids surgeons in efficient and effective surgery, reducing the time required for fibroid localization. Further research is needed to fully evaluate the clinical impact of this promising technology.

ID 121

## MODIFIED ROBOTIC DAVYDOV: PERITONEAL PULL-THROUGH TECHNIQUE IN MRKH PATIENT

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### Background

Mayer Rokitansky Kuster Hauser syndrome (MRKH) is one of the most common congenital malformations of the female genital system<sup>1</sup>. A number of vaginoplasty procedures have been described for patients with MRKH<sup>2</sup>.

The Modified Davydov procedure is a common surgical approach for neovagina creation for MRKH patients. The peritoneal pull through vaginoplasty technique has been shown to have good short and long term outcomes<sup>3</sup>.

### Aim

This video demonstrates a step wise approach for conducting a modified davydov procedure using a peritoneal pull through technique with the DaVinci Xi Robot.

### Methods

The Robotic Modified Davydov using the peritoneal pull through technique is comprised of:

**Step 1:** Definition of Anatomy.

**Step 2:** Creation of a U shaped incision on the blind vaginal pouch between the bladder and rectum and dissection to the apex of the vaginal pouch to create the neovagina.

**Step 3:** Creation of Peritoneal grafts in the supravescical pouch and in the pouch of douglas is done to form the neovagina, with extensive dissection of Pelvic side walls for tension free anastomosis.

**Step 4:** The apex of the neovaginal space is divided.

**Step 5:** The peritoneal flaps are pulled the neovagina opening and sutured to the vaginal introitus. Care is taken to keep the peritoneal flaps well vascularised by ensuring continuation with parent site.

**Step 6:** The apex of the neovagina is created by suturing the supravescical and suprarectal peritoneum, after target neovaginal length is achieved. The uterine buds are incorporated into the neovagina for added structural vaginal support.

### Results

This technique has demonstrated excellent results over a period of 1 year of follow-up with preservation of length and calibre of the neovagina. The peritoneal lining of the neovagina now resembles normal vagina due to the change in histology to stratified squamous epithelium.

### Conclusions

Patient has an excellent vaginal function with no obliteration of the neovagina or prolapse. Incorporation of uterine buds added structural support to the neovagina apex. Ovaries are easily accessible for future ovum retrieval

## EXTREME ROBOTIC PARA-AORTIC LYMPHADENECTOMY IN LIVE SURGERY

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### Background/Aim

Robotic surgery offers the most advanced technology to safely and effectively perform highly complex procedures, such as lymph node debulking in para-aortic lymphadenectomy.

### Methods

We present a live surgery case performed during a national course at the Lux Med Oncology Hospital in Warsaw, Poland, where, for the first time in the country, a dual-console robotic procedure was conducted by two invited surgeons from the University Hospital of Bellvitge (Barcelona, Spain).

### Results

A 63-year-old patient with a clear cell endometrial carcinoma and locally advanced nodal disease involving pelvic and para-aortic lymph nodes up to the level of the renal vessels. Nodal involvement extended en bloc to the anterior wall of the aorta, both anterior and posterior walls of the inferior vena cava, nodes in contact with the left renal vein and right renal artery, and enlarged left latero-aortic lymph nodes. A complete para-aortic and bilateral pelvic lymphadenectomy, hysterectomy, and bilateral salpingo-oophorectomy were successfully performed robotically in 240 minutes. The patient was discharged six days later without postoperative complications.

### Conclusions

Robotic surgery enables highly complex procedures to be performed in a familiar environment, thanks to the consistent use of the same surgical platform. Moreover, the development of telesurgery could become a reality due to the continuous advancements in robotic technology.

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### Background

Deep infiltrating endometriosis (DIE) is the most severe form of endometriosis, characterized by the extension of lesions beyond the peritoneum, frequently involving the bowel, urinary tract, and pelvic nerves. It's chronic inflammatory nature can lead to fibrotic distortion with subsequent loss of normal organ function. Surgical management involves excision of diseased tissue, followed by reconstruction aimed at restoring physiological function. The extent of radical excision must be finely balanced with the ultimate goal of functional restoration of the apparatus involved.

Robotic-assisted surgery has become a valuable tool in managing complex DIE due to its superior visualization, precision, and dexterity in anatomically restricted areas. It allows for radical disease excision while facilitating organ-preserving reconstruction, particularly within multidisciplinary settings.

### Case Presentation-Surgical Procedure

We present a case of DIE resulting in impaired kidney and bowel function, requiring a collaborative surgical approach. Preoperative workup included colonoscopy and ureteroscopy to map disease extent and identify healthy tissue for subsequent reconstruction.

After multidisciplinary planning, the patient underwent robotic-assisted radical excision of endometriosis with segmental bowel and ureteric reimplantation. Reconstruction included a primary rectal anastomosis and uretero-cystostomy. The procedure was performed using the Da Vinci robotic system with a five-port configuration for optimal pelvic access and the multi-surgeon access. Intraoperative strategies addressed extensive fibrosis, careful dissection, and preservation of vital structures. Techniques for achieving clear margins and managing complex pelvic anatomy are highlighted, along with effective coordination among the different surgical subspecialties during the reconstructive phase.

### Conclusions

This case illustrates the effectiveness of robotic-assisted surgery in managing advanced endometriosis with dual goals of disease excision and functional restoration. Enhanced visualization and precision aid in overcoming surgical challenges, while a multidisciplinary approach ensures comprehensive care. The strategies, technical insights, and collaborative principles demonstrated can guide surgeons in handling similarly complex cases and advancing robotic expertise in endometriosis surgery.

## INNOVATIONS IN ROBOTIC-ASSISTED EXCISION OF DEEP INFILTRATING ENDOMETRIOSIS: WHEN EXCISION MEETS RECONSTRUCTION

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## ROBOTIC-ASSISTED SURGERY IN THE MANAGEMENT OF COMPLEX GYNAECOLOGICAL SURGERY: EXCISION OF A RUDIMENTARY UTERINE HORN

## Background

Müllerian duct anomalies (MDAs), including the hemiuterus, are rare congenital malformations that can cause burdensome clinical symptoms in the adolescent female, such as hematometra, pelvic pain, dysmenorrhea and infertility. The surgical excision of a non-communicating uterine horn is a key treatment option to alleviate symptoms of pain, dysfunctional uterine bleeding and reduce pregnancy miscarriage.

Robotics-assisted surgery (RAS) offers a minimally invasive approach that enhances surgical precision and improves outcomes. We showcase a surgical video for the excision of a hemiuterus using a robotic-assisted technique in a 22 year old female. We focus on the pre-operative planning, we illustrate salient preoperative imaging through use of MRI and 3-dimensional ultrasound technique. We focus on the surgical challenges in management of complex gynaecology pathology.

## Case Presentation

A 22-year-old female with chronic pelvic pain, dysmenorrhea, and recurrent miscarriages was diagnosed with a non-communicating rudimentary uterine horn through pelvic MRI and ultrasound. After multidisciplinary evaluation, robotic-assisted excision of the hemiuterus was planned. This video illustrates the key steps and technical details of the robotic surgical procedure.

## Surgical Procedure

The procedure was performed using the Da Vinci robotic system with a four-port setup. The video highlights the initial adhesiolysis, necessary due to extensive endometriotic lesions, followed by the meticulous dissection of the rudimentary uterine horn from surrounding structures.

The enhanced 3D visualisation provided by the robotic system allowed precise identification of anatomical landmarks, and the dexterity of the robotic instruments facilitated safe and effective excision of the hemiuterus. Hemostasis was secured, and the specimen was removed via a mini-laparotomy incision. The video emphasizes the technical nuances that are critical for successful resection and minimising intraoperative complications.

## Results and Conclusions

The total operative time was 480 minutes with blood loss of 350 mls and no intraoperative complications. The patient's postoperative recovery was uneventful, with discharge on postoperative day 3. At 3 months follow-up, the patient reported complete relief of pelvic pain and dysmenorrhea. The histopathology confirmed the diagnosis of a non-communicating rudimentary uterine horn. The patient reported no adverse outcomes at a 3 month follow-up.

## A 9-YEAR ANALYSIS OF ROBOTIC-ASSISTED SURGERY IN PATIENTS WITH A BODY MASS INDEX OVER 50 WITH ENDOMETRIAL CARCINOMA

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## Background/Aim

Robotic-assisted laparoscopic surgery is a viable treatment option for patients with a body mass index (BMI) over 50 in endometrial malignancy, and can provide a safe curative modality. Over the past decade, our centre has performed robotic-assisted surgery for this unique cohort of patients.

The aim of this study was to evaluate the peri-operative outcomes, oncologic safety, and learning curve associated with these procedure over a nine-year period.

## Methods

We conducted a retrospective comparative case series of 49 patients who underwent robotic-assisted laparoscopic surgery at the Royal Marsden Hospital, London, between July 2013 and December 2022. The inclusion criteria were BMI > 50, and a diagnosis of endometrial carcinoma or atypical hyperplasia. Patient characteristics and surgical outcomes were analysed.

## Results

The mean BMI of the cohort was 56 kg/m<sup>2</sup> (SD=4). The primary indication for surgery was uterine cancer in 40 patients (82%) and atypical hyperplasia in 9 patients (18%), and most were early stage (93% stage I or II). Significant improvements were observed in key operative parameters over time. Median console time was significantly reduced from 112 minutes (range: 59–145) in the early cohort to 65 minutes (range: 31–420) in the later cohort (p=0.009). Estimated blood loss also decreased from a median of 200 mL (range: 100–1000) to 100 mL (range: 50–1000) (p=0.002). Median length of stay was 2 days, with 90% overall survival in the cohort.

## Conclusions

Robotic-assisted surgery is a safe and effective approach for patients with a BMI >50 kg/m<sup>2</sup> in endometrial malignancy. Our findings demonstrate a learning curve, with significant improvements in surgical efficiency and median blood loss over time. These results highlight the importance of surgical experience in optimising outcomes for this group of patients undergoing robotic gynaecological surgery.

## ROBOTIC SECONDARY CYTOREDUCTIVE SURGERY: A PERSONALIZED SURGICAL APPROACH FOR A

## TRIPLE-SITE OVARIAN CANCER RECURRENCE

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### Background

The role of secondary cytoreductive surgery (SCS) in recurrent ovarian cancer (ROC) has been increased in recent years.

Randomised prospective trials have shown a survival advantage in case of complete gross resection. In this context, minimally invasive surgery (MIS) has taken on a significant role, especially in cases of single and oligometastatic recurrence. The aim of this video is to describe the feasibility of a robotic triple-site approach for SCS in ROC.

### Methods

A case of oligometastatic platinum-sensitive ovarian cancer recurrence in a woman in her 40s is presented. Preoperative computed and emission tomography scans detected three sites of recurrence: a right cardiophrenic lymph node, a nodule at the hepatic hilum between the head of the pancreas and the hepatic artery, and interaortocaval lymphadenopathy below the left renal vein. After a preoperative 3D-reconstruction, a robotic SCS was performed in three anatomical regions.

### Results

Complete cytoreduction was achieved. The operation time was 200 min and the estimated blood loss were 100 ml. The patient underwent extensive adhesiolysis because of previous surgery. No intraoperative complications occurred. The histological examination confirmed the metastatic involvement of the three lesions.

### Conclusions

Robotic approach can be considered in selected patients with extrapelvic ovarian cancer recurrence, even in different anatomical sites, in oncological centres with a multidisciplinary team of expert surgeons. Patient selection and preoperative 3D reconstruction are crucial for the surgical planning.



## IDENTIFICATION OF THE SENTINEL LYMPH NODE WITH INDOCYANINE GREEN IN ROBOTIC SURGERY: ANALYSIS OF RISK FACTORS FOR PROCEDURE FAILURE

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Endometrial cancer is one of the most common gynecological malignancies, with early-stage disease often presenting

a favorable prognosis. Sentinel lymph node biopsy (SLNB) has emerged as the gold standard for lymph node staging in these patients, offering a less invasive alternative to traditional pelvic lymphadenectomy. Robot-assisted surgery, coupled with the use of indocyanine green (ICG) for sentinel lymph node identification, has further improved the precision and efficacy of this procedure.

### Objective

Sentinel lymph node biopsy represents the gold standard for assessing lymph nodes in early-stage endometrial cancer. A success rate of sentinel lymph node identification between 62.1% and 92% has been described for this technique. The objective of the study is to identify the risk factors for procedure failure in robot-assisted surgery.

### Materials and Methods

We conducted a retrospective analysis of 236 patients with a biopsy diagnosis of endometrial cancer who underwent robot-assisted laparoscopic surgery and sentinel lymph node identification using intracervical injection of indocyanine green between March 2017 and December 2024. Cases of failed tracking of the unilateral or bilateral sentinel lymph node were considered as a failure of tracking. In failed cases, the following were considered: patient characteristics (BMI, age, previous abdominal surgery, previous pelvic diseases), disease characteristics (histology, grade, myometrial invasion, lymphovascular space invasion, presence of lymph node metastases), and surgeon experience.

### Results

The sentinel lymph node identification rate was 82%. After multivariate analysis, lymphovascular space invasion ( $p=0.002$ ), myometrial invasion ( $p=0.036$ ), and surgeon experience ( $p<0.001$ ) were identified as independent risk factors for tracking failure. Obesity, age, previous pelvic surgery, and previous pelvic diseases were not associated with an increased risk of failure.

### Conclusions

Surgeon experience, myometrial invasion, and lymphovascular space invasion are independent risk factors for sentinel lymph node tracking failure in robotic surgery. Patient characteristics are not risk factors.



## EXPANDING SURGICAL EFFICIENCY FOR GYNECOLOGICAL SURGERY WITH A SINGLE ROBOTIC CONSOLE: THE VALUE OF THE SURGICAL TEAM AND ROBOTIC TECHNOLOGY IN MAXIMIZING EFFICIENCY ON INTENSIVE SURGICAL DAYS: A COMPREHENSIVE ANALYSIS

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## Introduction

To assess real-world surgical efficiency metrics and complication profiles across 275 robotic gynecologic surgeries, expanding on previous analyses, and offering an updated time-performance model based on operative workflow, case volume, and intraoperative timing.

## Methods

We performed a retrospective observational study analysing 275 robotic procedures conducted by a single surgeon between 2018–2025 using the da Vinci Xi system. Data extracted from structured case logs and intraoperative time-tracking sheets included anesthesia induction, docking, console time, undocking, and total OR occupancy. Patients were stratified into case-day groups (1–6 surgeries/day) and surgical order (S1–S6).

Complication and readmission rates were also recorded. ANOVA and time-correlation analyses were used to evaluate performance trends, workflow fatigue, and efficiency ratios.

## Results

Efficiency improved with surgical repetition throughout the day: preparation time decreased from 16.6 min in early cases to 13.7 min in late ones, and docking remained consistently efficient (mean: 228 sec). A high correlation ( $r = 0.99$ ) was observed between docked time and console time. The 4-case day cohort achieved the highest efficiency ratio (0.81). In total, postoperative complications were recorded in 2.0% of patients, with a reoperation rate of 1.6%. Notably, initial cases of the day (S1) were longer in duration, while mid-sequence surgeries were more time-efficient and predictable.

## Conclusions

Robotic gynaecological surgery demonstrates scalable time efficiency, especially in high-volume workflows. Optimisation occurs via improved team synchronisation, reduced variability, and shorter transition times throughout the day. The updated dataset strengthens the concept of a "Robotic Time Machine," guiding surgical scheduling and enhancing operative throughput in robotic programs.



**RESCORE: DEVELOPMENT OF AN AI-BASED ROBOTIC EFFICIENCY SURGICAL SCORE FOR PREOPERATIVE PLANNING AND INTRAOPERATIVE OPTIMISATION IN GYNAECOLOGICAL ROBOTIC SURGERY**

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## Introduction

Optimising operating room efficiency while maintaining surgical safety is a critical goal in robotic gynaecological surgery. We present the development and implementation of the Robotic Efficiency Surgical Score (REScore), an AI-compatible predictive tool designed to stratify case complexity preoperatively and enhance intraoperative decision-making, in order to create and validate a multidomain scoring system that predicts operative time, flags high-risk cases, and optimises surgical scheduling using structured preoperative data.

## Methods

A retrospective analysis of 275 robotic gynaecological procedures was performed. Variables were grouped into four domains:

- Patient Complexity Factors:** Age, BMI, ASA score, comorbidities, prior surgeries.
- Disease & Oncologic Risk Factors:** Diagnosis, FIGO stage, tumour grade, SLN status.
- Surgical Procedure Factors:** Type of surgery, uterine size, concurrent procedures.
- Operational Factors:** Surgeon experience, time of day, case order.

Each factor was assigned a weighted score. The total REScore was normalised to a 0–100 scale. A Python-based Google Colab tool was developed to automate calculation and visualisation, enabling REScore-based case sequencing.

## Results

Initial validation demonstrated strong correlation between REScore and operative time ( $R^2 = 0.74$ ). High REScore values were predictive of longer console time and higher intraoperative resource demands. Integration of the REScore into surgical planning allowed for optimised case sequencing, reduced time variability, and improved preoperative team readiness.

## Conclusions

REScore is a novel, scalable tool that brings AI into the surgical planning process. It has the potential to revolutionize how robotic gynaecological surgeries are scheduled, performed, and analysed. Ongoing prospective validation aims to correlate REScore with complications, blood loss, and conversion rates, while real-time intraoperative adjustments and machine learning integration are under development.



**LAPAROSCOPIC VERSUS ROBOT-ASSISTED SACROCOLPOPEXY: A SYSTEMATIC REVIEW AND**

## META ANALYSIS

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### Background

Pelvic organ prolapse (POP) can affect ≈30% of women, with a 11-19% lifetime surgical risk. Currently, laparoscopic sacrocolpopexy (LSC) is considered the gold standard procedure for POP. Although robot-assisted sacrocolpopexy (RASC) has been widely alternatively used, concerns persist regarding its effectiveness, safety, and cost-efficiency vs. LSC. Our aim is to provide a comprehensive and updated assessment of clinical practice by comparing clinical and economic outcomes of these two techniques through a systematic review and meta-analysis.

### Methods

We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. We systematically searched Pubmed, Scopus, ISI Web of Science, EMBASE, and COCHRANE from inception to 30/03/2025. The search terms were slightly modified for each database and included (robot\*) AND (laparoscop\*) AND ("sacrocolpopexy" OR "sacral colpopexy" OR "colposacropepy").

After removing duplicates, two authors (AF and MB) independently screened 1.025 articles. Studies were eligible for title/abstract screening if published in English in peer-reviewed journals, assessed at least one clinical or economic outcome related to robotic surgery, and included a minimum of five patients per procedure. A training phase on 20 abstracts was performed until 80% consensus was reached, as per the Cochrane Handbook. After extracting the relevant information, one reviewer (MB) will assess the quality of studies using the The Cochrane Collaboration risk of bias tool for randomised controlled trials and the Johanna Briggs Institute instrument for the other studies. Any uncertainties regarding a study's assessment were resolved through discussion with a second reviewer (AF). Publication bias will be assessed both visually, using a funnel plot, and statistically, using Egger's test.

### Preliminary Results

A total of 1.997 articles were retrieved from the databases, and 1.025 were selected for title/abstract screening after duplicate removal. Approximately 60% of studies have been screened at present, with an inclusion rate of 8% (n=48). Of the studies selected so far, 64% (n=32) are included only for the review, and 36% (n=18) also for the meta-analysis.

### Conclusions

Compared to previous reviews, this study incorporates all available evidence on RASC to provide a more comprehensive evaluation. The inclusion of non-randomised studies in the meta-analysis

offers a real-world perspective on clinical outcomes, which can differ from those observed in the controlled settings of randomised clinical trials. The extended time horizon further strengthens the analysis, as outcomes for newer procedures are often influenced by the surgeon's learning curve and the robotic surgical system has still been spreading in several centres.



## STANDARD OPERATING PROCEDURES IN AN EMERGENCY DE-DOCKING IN ROBOT-ASSISTED SURGERY: ARE WE FULLY PREPARED?

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### Background

Robot-assisted surgery has revolutionised surgical procedures by providing surgical precision, less blood loss and early recovery. However, emergencies requiring rapid de-docking of the robotic system can present significant challenges. This retrospective study reviews the standard operating procedures (SOPs) for emergency scenarios during robot-assisted surgeries, analysing whether current protocols adequately prepare theatre team to know their role how to handle uncontrolled bleeding, cardiac arrests or system failure.

### Methods

A retrospective analysis of robotically assisted surgery in a single institution was conducted between January 2022 to December 2024 focusing on emergency de-docking. This was required in four cases. There were two (50%) vascular injuries leading to; one controlled bleeding and one uncontrolled bleeding and two cases (50%) related to irrecoverable faults (one system overheating and one electricity failure). Data was collected on the frequency of emergency de-docking events, the time taken for de-docking, and the protocols followed. In-depth interviews with surgeons, bedside assistant, and theatre staff were conducted to assess knowledge gaps and challenges related to existing SOPs.

### Results

The study found that while SOPs for emergency de-docking were in place at this hospital, there were significant variations in protocol adherence, with delays in de-docking during emergency cases. Key factors contributing to these delays included lack of real-time communication, insufficient training on emergency procedures, lack of knowledge of system troubleshooting and the lack of available instrument inside theatre to deal with haemorrhage. Additionally, expressed uncertainty regarding specific de-docking steps.

### Conclusions

Emergency de-docking protocols in robot-assisted surgery are not uniformly implemented, and the variability in training and procedural adherence can compromise patient safety. This study highlights the

need for standardised, comprehensive SOPs and regular emergency simulation training to ensure that surgical teams are fully prepared for de-docking emergencies. Future research should focus on developing and testing enhanced training programs and real-time support systems to improve SOP adherence and response times.

ID 140

## RETROSPECTIVE STUDY ON THE IMPACT OF PATIENT POSITIONING IN MULTI-SPECIALTY ROBOTICALLY ASSISTED PELVIC EXENTERATION: A NURSE'S EXPERIENCE

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### Background

The supine with legs-up position plays a pivotal role in Pelvic Exenteration, whether conducted through open or minimally invasive surgical techniques. In robotically assisted pelvic exenteration, where the abdominal team operates via the console and the perineal team works between the legs while the patient cart remains docked, coordinating these efforts in a confined surgical space presents significant challenges. This positioning is crucial for ensuring both teams can operate effectively and safely in a multi-disciplinary setting while the is still docked.

### Objectives

The objective of this study was to assess the effectiveness of the supine with legs-up patient positioning in facilitating a safe and efficient multi-specialty robotic-assisted pelvic exenteration.

### Methods

This retrospective study from January 2015 to October 2023 all robotically assisted pelvic exenteration involving multi-disciplinary teams from colorectal, urology, plastic surgery, and gynaecology. Patient positioning, surgical workflow, and team coordination were reviewed, with a focus on the challenges and solutions related to maintaining a safe operating field for both teams.

### Results

The supine with legs-up positioning for 16 cases (6 or 37.5% gynaecology; 9 or 56.25% colorectal and 1 or 6.25% converted to open related to poor ventilation) all requiring urology and plastic reconstruction were found to allow simultaneous operation by the abdominal and perineal teams.

However, several challenges related to team coordination, positioning adjustments, and the robotic docking process were noted. Successful navigation of these challenges was contingent upon effective communication and adaptability within the surgical team to work simultaneously in a confined space.

## Conclusions

The supine with legs-up position in robotically assisted pelvic exenteration, aimed at accommodating a multi-disciplinary surgical approach, is achievable. Nevertheless, it demands close teamwork, continuous learning, and ongoing adjustments to ensure an optimal and safe surgical field. Further studies are recommended to refine techniques for improving patient positioning and enhancing surgical team collaboration while working simultaneously in a confined space when the robot arms are still docked.

ID 141

## ROBOTIC RESECTION OF DEEP INFILTRATING ENDOMETRIOSIS WITH RESTORATION OF ANATOMY

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The surgical management of deep infiltrating endometriosis (DIE) presents significant challenges due to the complexity of the disease's involvement with surrounding structures.

This video demonstrates the use of robotic-assisted surgery in the resection of DIE, in a 27-year-old patient with dysmenorrhea, dyspareunia, dyschezia and infertility. MRI studies revealed deep infiltrating endometriosis, with fibrotic scarring in the pouch of Douglas which tethered both ovaries and rectosigmoid colon, deep invasive serosal disease in the anterior rectosigmoid and possible involvement of the right upper rectovaginal septum. The patient underwent robotic resection of the lesions along with bilateral salpingectomy due to hydrosalpinges, had an uneventful postoperative course and was discharged on day 1.

The robotic approach can be of great benefit in complicated cases, allowing the dissection of deeply infiltrated tissue while preserving vital structures.

ID 142

## ROBOTIC BILATERAL ENDOMETRIOMAS – KISSING OVARIES EN BLOC RESECTION POST HYSTERECTOMY

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We present the case of a 47-year-old patient with a history of hysterectomy for obstetrical reasons who presented with pelvic pain. Ultrasound studies revealed cystic formations on both ovaries resembling to endometriomas with a kissing ovaries sign. Robotic resection of the adnexa was performed. This video presentation shows the step-by-step procedure of adhesiolysis and en bloc

resection of adnexa.

Robotically assisted surgery allows for better results in patients where adhesions are anticipated, such as patients with a history of pelvic operations and/or with endometriotic lesions. The perception of depth, improved ergonomics and smaller learning curve in comparison to laparoscopy renders robotically assisted surgery a great ally to the surgical arsenal.



## CHALLENGING 15 ROBOTIC MYOMECTOMY AND UTERUS RESTORATION

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Uterine fibroids are among the most common benign tumors affecting women of reproductive age. Traditional open surgical approaches for myoma resection can be invasive, requiring longer recovery times and leading to potential complications.

Laparoscopic resection is minimally invasive but can be a technically demanding procedure, especially when myomas are of large size or multiple. In recent years, robotic-assisted surgery has emerged as a promising technique that combines the precision of robotics with the benefits of minimally invasive procedures.

This video demonstrates the step-by-step process of robotic multiple myomectomy, in a nulliparous 40-year-old woman with a history of an open myomectomy and desire to procreate. Magnetic resonance imaging showed multiple myomas up to 6.5 cm.

The specimen measured 30 x 17 x 3 cm and weighed 529gr. The postoperative course was uneventful, laboratory studies showed a 7.6% decrease in hematocrit (39.9% to 32.3%), and the patient was discharged on day 1.

Robotic myomectomy is a feasible option in patients with previous abdominal surgeries and multiple myomas of a large combined size, offering a minimally invasive procedure that optimizes surgical results and improves quality of life for patients.



## WHEN ENDOMETRIOSIS HITS DEEP: A NOVEL CASE OF URETERONEOCYSTOSTOMY IN A CASE OF DEEP INFILTRATING ENDOMETRIOSIS : INNOVATIVE SURGICAL APPROACH

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### Introduction

Endometriosis is a gynaecological condition characterised by ectopic implantation of endometrium like tissue. While pelvic endometriosis is a common variety, in certain rare cases urinary tract involvement may be coexistent, especially in cases of deep infiltrating endometriosis.

Clinical picture may vary from asymptomatic presentation to hematuria to renal failure arising from obstruction of the ureter. Urinary tract involvement is a very rare but serious form of infiltrating endometriosis because of the risk of urinary tract obstruction and loss of renal function. Here we present a surgical demonstration of laparoscopic ureteral reimplantation in a case of deep infiltrating endometriosis with silent right sided hydronephrosis.

### Case report

We present a unique case of a 40-year-old female with history of one caesarean section. Patient had complaints of severe dysmenorrhea and chronic pelvic pain for past two years which was non-responsive to medical management, including levonorgestrel intrauterine device. She had no bowel or bladder disturbances.

Sonography incidentally detected a bladder nodule at the vesico-ureteric junction (VUJ) with gross right sided hydronephrosis with likely neoplastic origin. Magnetic resonance imaging (MRI) confirmed the lesion as an endometriotic implant with Grade 3 right sided hydronephrosis.

Pre-operative cystourethroscopy displayed a bladder mucosal nodule in close proximity to the right ureteral orifice. Patient underwent total laparoscopic hysterectomy with right sided salpingo-oophorectomy with excision of pelvic endometriotic implants followed by a cystotomy and excision of the nodule involving the right VUJ and terminal 2 cm of the ureter and creation of a ureteroneocystostomy. Ureteroneocystostomy could be performed by direct ureteral reimplantation and a psoas hitch procedure was not required as tension free anastomoses could be achieved due to adequate mobilization of the bladder and ureter.

After four days of post-operative monitoring, patient was discharged with a zero pain score. At three month follow up, sonography showed resolution of hydronephrosis with no urinary complaints and repeat cystourethroscopy displayed a patent and functional reimplanted ureteric orifice.

### Conclusions

Endometriosis is a complex disease that challenges a gynaecologist. Due to its varied presentation, we must be vigilant for urinary tract endometriosis especially in females with silent hydronephrosis. Appropriate treatment plan and surgeon's expertise play a pivotal role in achieving a good clinical outcome in such rare cases of infiltrating endometriosis.

## ROBOTIC SURGERY FOR DEEP INFILTRATIVE ENDOMETRIOSIS

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Deep infiltrative endometriosis surgery is a complex surgery which involves multi organ injury risk. Robotic surgery helps to improve visualisation of ureter, hypogastric nerves and other important neurovascular bundles which usually invaded by the disease. In this case 42 years old women with chronic pelvic pain operated by robotic surgery. Preoperative imaging modalities detected deep nodules on both uterosacral ligaments in touch with hypogastric nerves bilaterally.

Adenomyosis and deep nodules on bladder also complicates the case. In the surgery, first bilateral uterin arteries are ligated and bilateral ureterolysis by medial route have been done. After major anatomic areas created, like medial and lateral pararektal areas, disease resected over hypogastric nerves. And surgery ended by hysterectomy and unilateral salpingoopherectomy. Patient discharged at 3.day and very well with normal urinary function at first followup visit.

## DEVELOPING THE FUTURE ROBOTIC SURGEON: SIMULATION, PRACTICE, AND PROGRESSION

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Gynaecologists have been amongst the last surgical specialties to adopt robotic innovation in surgery, yet the pace of integration is now accelerating rapidly. Most gynaecology centres in the UK now offer robotic-assisted surgical modalities and in 2024, it established it's first gynaecology resident doctor training module.

The demand has therefore never been greater for structured and accessible training for the early-career gynaecology surgeon. We present an overview of how the early-career gynaecology surgeon can effectively advance their robotic training and keep pace with the rapidly progressing robotic surgical sector.

Foundations to robotic training start with e-learning and simulation-based modules in order to develop sound knowledge on robotic systems, instrumentation, troubleshooting, and procedural workflows. When combined with high-fidelity virtual simulators, such as the da Vinci SimNow, resident doctors can practise psychomotor skills, develop dexterity, and receive objective feedback in a risk-free environment. This self-directed

learning fosters early familiarisation with robotic platforms and enables benchmarking of skill acquisition. We illustrate how the resident doctor can monitor their skills over time via the feedback application.

Wet-lab training using porcine models and cadaveric workshops offer valuable anatomical realism and procedural practise in a safe environment under expert supervision. We touch upon ethical considerations and limitations encountered here.

To bridge the gap between simulation-based surgery and independent operative performance, a key advancement has been the use of the dual-console robotic system. This technology allows trainees and mentors to operate collaboratively, enabling seamless transition of control, guided manoeuvres, and immediate correction during live procedures. We explore the limitations resident doctors can encounter at this stage.

We discuss the importance of institutional support, mentorship, and credentialing pathways in robotic training. The establishment of structured robotic curricula, including modular progression and skills assessment, is essential to ensure uniform standards of proficiency across training programs. We navigate the current training accreditations available and how the young surgeon can embrace these in a streamlined manner.

We address the further challenges and constraints the early-surgeon may encounter and how these can be tackled; such as financial, ethical and logistical.

In conclusion, robotic training for the young robotic surgeon is step-wise, beginning with virtual and e-learning tools, progressing through to wet lab and cadaveric experience, and culminating in supervised live surgery with dual-console mentorship. Through streamlined use of the various educational platforms and accrediting boards, we can accelerate robotic competence and ensure effective integration of robotic surgery into future gynaecological practice.

## ROBOTIC ISTMIC MYOMECTOMY

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A 43 years old women with heavy menstrual bleeding was operated for FIGO type1 5x4 cm myoma uteri. Patient has 3 C/S in the past medical history. Patient also requested for bilateral tubal ligation. First, bladder flap is created. After longitudinal incision is made over myoma, myoma pens was used to make traction and countertraction. Then barbed suture is used for closure the defect. Robotic surgery is very effective for the myomas with challenging

locations. Operation time is 70 minutes with 10 cc bleeding. Patient discharged at 2nd day of hospitalisation.

ID 148

ROBOTIC HYSTERECTOMY FOR THE MYOMA EXTENDING PARAMETRIUM

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A 42-year-old woman with pelvic pain was admitted to our outpatient clinic. An ultrasound evaluation revealed a giant (7x8 cm) FIGO type 6 myoma uteri extending to the right parametrium. Due to the challenging location of the myoma, a robotic hysterectomy was planned. First, the paravesical and pararectal fossae were created, and right ureterolysis up to the bladder was performed. After completing the ureterolysis, the hysterectomy was performed safely. With the excellent hand-wrist technology of the robotic arms, robotic surgery is very useful for myoma surgery in challenging locations.

ID 149

SINGLE-PORT ROBOTIC SURGERY FEASIBILITY IN GYNAECOLOGICAL ONCOLOGY: REFERRAL CENTRE EXPERIENCE

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Introduction

Single-port robotic surgery is an emerging technology in Europe, offering potential benefits for minimally invasive gynaecological procedures. However, its application in gynaecological oncology is still limited, with few studies addressing its feasibility, safety, and technical challenges. This study aims to prospectively assess the feasibility and safety of single-port robotic surgery for gynaecological oncology at a referral centre.

Methods

We included all consecutive patients undergoing single-port robotic surgery between July 1, 2024, and March 1, 2025, at the Division of Gynaecological Surgery, European Institute of Oncology (Milan, Italy). All procedures were performed by a

two-surgeon team.

Results

Thirty-six patients, with a median age of 58 years (range 27–84) and a median BMI of 25.0 kg/m<sup>2</sup> (IQR 18.0–32.3), underwent single-port robotic surgery. Twenty patients (55.6%) had suspected or confirmed uterine cancer; fifteen (41.7%) had suspected or confirmed ovarian cancer; and one patient (2.8%) underwent risk-reduction surgery. Surgical staging was performed in 22 cases (61.1%). The median operative time was 140 minutes (IQR 61–255), with a median estimated blood loss of 50 mL (IQR 10–200).

In all procedures, the endoscope was positioned at the 6 o'clock position to optimize triangulation and achieve effective upward traction. No conversions to laparotomy or the use of additional assistant ports were required, and no intraoperative complications occurred. Within 30 days postoperatively, two patients (5.6%) developed pelvic abscesses, both of which were managed with minimally invasive treatment. The median follow-up time was 41 days (IQR 1-166).

Conclusions

Single-port robotic surgery is a feasible and safe approach for selected gynaecological oncology procedures, offering potential benefits in recovery and cosmetic outcomes. The consistent placement of the endoscope at the 6 o'clock position proved to be technically effective and reproducible, facilitating surgical exposure and instrumentation.

This adaptation may be a valuable strategy to support the broader implementation of single-port techniques in gynaecological oncology.

ID 150

ON THE ROLE OF HAPTIC FEEDBACK FOR THE ENHANCEMENT OF ROBOT-ASSISTED SURGERY IN GYNAECOLOGY

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Background/Aim

Robotics-enabled minimally invasive surgery is the gold standard for sacrocolpopexy, a surgical procedure for treating pelvic organ prolapse that requires the identification of anatomical landmarks while ensuring safe interactions.

To this aim, including haptic feedback would be extremely beneficial. Our study presents an innovative framework for incorporating haptic

feedback into the robotic system for gynecological surgery.

## Methods

We developed a robotic telepalpation platform with a haptic interface that controls a robotic manipulator, enabling real-time interaction with silicone specimens replicating gynecological anatomy and providing feedback on tissue interaction. The goal is to develop a system for surgical training and pave the way for clinical adoption. The framework integrates a deep learning-based tissue classification model with advanced haptic feedback technology. It distinguishes between tissue types and creates Forbidden Region Virtual Fixtures around risk areas, which trigger specific tactile sensations when the tool approaches these critical regions, thus alerting the surgeon and helping to prevent inadvertent damage.

A specialised control algorithm—Time-Domain Passivity Switch Control—ensures smooth, stable feedback, thus providing meaningful haptic feedback while maintaining safety. The system was tested by an expert surgeon remotely controlling the robotic arm with the haptic device while receiving feedback. Data from experiments were collected to analyze the system's effectiveness in terms of classification accuracy, force feedback, and stability.

## Results

Demonstrated the potential of this framework to enhance the surgeon's ability to navigate delicate anatomical structures by providing realistic and dynamic feedback. Notably, the system was able to differentiate between safe and critical zones, with the haptic feedback effectively warning the surgeon of potential risks. The force feedback was adjusted in real time to match the type of tissue encountered, with higher forces rendered in areas of greater risk.

## Conclusions

This work marks a first step toward developing a robotic training setup for sacrocolpopexy, aiming to foster its future clinical translation and integration into current robotics-enabled surgical practices. Although promising, the study acknowledges limitations, such as the need for more data to refine classification accuracy and the loss of force information due to system stability constraints. Future research will focus on evaluating the impact of wearable haptic devices to restore some of the lost force information, which could provide additional sensory cues, further enhancing the surgical experience. In conclusion, by bridging the gap between robotics and tactile feedback, this framework holds significant potential to revolutionise the way surgeries are performed, making them safer, more precise, and intuitive.



## THREE-STEP APPROACH TO COMMON ILIAC AND PARA-AORTIC NODAL RECURRENCE IN

## ENDOMETRIAL CANCER: VASCULAR CONTROL, ULTRASOUND-GUIDED MAPPING, AND NO-TOUCH EN-BLOC RESECTION

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## Background/Aim

In obese patients with nodal recurrence of endometrial cancer, surgical resection presents unique anatomical and technical challenges, especially in the context of complex anatomical areas or previously irradiated fields. This study presents a strategic, safe, and effective three-step robotic approach aimed at improving oncologic outcomes while minimizing intraoperative complications in such difficult cases.

The technique integrates vascular control, image-guided precision, and no-touch en-bloc principles to ensure radical and safe lymphadenectomy in patients with unfavorable surgical conditions.

## Methods

A standardised three-step surgical technique was applied in selected obese patients with common iliac and para-aortic nodal recurrence of endometrial cancer:

**Step 1 – Vascular Control:** Selective distal and proximal control of both arterial and venous vessels, including the common and external iliac arteries and veins, was achieved. Critical neurovascular structures were isolated and dissected free from the metastatic lymph nodes to establish a clear operative field and minimise intraoperative bleeding.

**Step 2 – Ultrasound-Guided Precision Mapping:** Intraoperative ultrasound was utilised to delineate cranial and caudal margins of dissection, identify vascular boundaries such as the renal artery, and enhance anatomical orientation. This real-time guidance allowed for precision-tailored resection in patients with altered anatomy due to obesity or prior treatments.

**Step 3 – No-Touch En-Bloc Resection:** The lymph node package was removed en bloc using gentle traction and pressure on surrounding tissue, without direct manipulation of the metastatic nodes. This no-touch technique aims to reduce the risk of tumour cell spillage and preserve oncologic safety.

## Results

This three-step approach was feasible and reproducible in obese patients with nodal recurrence. It facilitated complete resection with clear margins, excellent vascular control, and minimal intraoperative complications. No major vascular or nerve injuries occurred, and no cases of intraoperative tumour rupture or dissemination were observed.

## Conclusions

The described three-step technique provides a rational, oncologically adequate, and technically safe strategy for managing nodal recurrences in obese endometrial cancer patients, especially in anatomically complex or previously irradiated fields. This robotic approach combines safety, efficacy, and precision, offering a valuable tool for surgeons managing high-risk, challenging cases.

ID 152

## ROBOTIC CLASS C1 RADICAL HYSTERECTOMY: A COMPREHENSIVE ANATOMICAL APPROACH

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### Background/Aim

Robotic Class C1 radical hysterectomy represents an advanced surgical technique designed to optimise oncologic radicality while preserving autonomic pelvic nerve integrity. This approach is particularly relevant in the management of early-stage cervical cancer, where functional outcomes such as urinary and sexual function must be preserved without compromising surgical radicality. The aim of this study is to present a standardised, stepwise robotic technique based on detailed anatomical principles and nerve-sparing dissection.

### Methods

The surgical procedure is structured into seven key steps:

1. Sentinel lymph node (SLN) identification and removal;
2. Systematic pelvic lymphadenectomy (external iliac, obturator, internal iliac/presacral, and common iliac nodes);
3. Exposure of pelvic spaces and identification of critical neural structures for nerve-sparing;
4. Lateral parametrial dissection;
5. Ventral parametrial dissection;
6. Dorsal parametrial dissection;
7. Vaginal protective maneuvers (vaginal manchette and endo-loop).

Robotic instrumentation allows for high-definition visualisation and precise articulation during dissection, particularly in nerve-dense anatomical areas.

### Results

This structured approach has shown excellent feasibility and reproducibility in clinical practice. The systematic exposure of anatomical landmarks facilitates accurate dissection while reducing intraoperative blood loss and the risk of ureteral and nerve injury. Functional outcomes, especially urinary continence and sexual function, are preserved in the majority of patients.

The technique also allows for a comprehensive oncologic resection with negative margins and adequate lymph node yield.

## Conclusions

Robotic Class C1 radical hysterectomy, when executed through a standardised, anatomical, and nerve-sparing strategy, offers an optimal balance between oncological effectiveness and functional preservation. The stepwise approach enhances reproducibility, reduces variability among surgeons, and supports training in advanced gynaecological oncology procedures.

ID 153

## INTERNATIONAL-ENDOMIS STUDY: THE IMPACT OF MINIMALLY INVASIVE SURGERY IN ENDOMETRIAL CANCER STAGING IN THE MOLECULAR ERA

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### Background

Robotic surgery (RS) and laparoscopy (LPS) are considered equivalent in endometrial cancer (EC) staging. Recently, genomic insights and molecular features have enriched the EC classification. However, there is a lack of recent evidence evaluating the effectiveness of minimally invasive techniques for each EC molecular class. This study aims to investigate the impact of surgical route in the era of molecular classification of EC.

### Methods

In this multicentric retrospective study, we included 2212 EC patients who underwent surgical staging by LPS or RS. These two groups were compared according to perioperative metrics, histopathological findings, molecular characteristics, and disease-free survival (DFS). We stratified the study population using immunohistochemistry (IHC) and NGS (next generation sequencing) and examined the influence of surgical approach in four molecular classes of EC: POLE mutated, NSMP/ER+ (o specific molecular profile and estrogen receptor positive), NSMP/ER-(negative), MMRd (Mismatch repair deficient), p53 mutated (p53mut) EC patients.

### Results

The two groups (1253 patients by LPS and 1048 by RS) showed inherent heterogeneity in histopathologic and molecular classification ( $p < 0.05$ ). Multivariate analysis showed that age, p53mut, ER-negativity, and stage significantly influenced DFS, while surgical approach had no effect. Kaplan-Meier survival analysis showed comparable DFS for both surgical approaches in NSMP/ER+, MMRd and p53mut EC patients, but RS presented better DFS rather than LPS in NSMP/ER- EC patients ( $p = 0.039$ ). In this specific molecular group, the two populations differed in BMI, which impacted

significantly in DFS in multivariate analysis ( $p < 0.001$ ).

## Conclusions

In our large retrospective study, we found that RS and LPS have similar efficacy and safety in EC staging according to the modern molecular classification. The difference addressed in the NSMPAER-cohort may be explained by a potential selection bias with a constitutively different BMI as well as ER-negativity pathogenesis between the two approaches. Further research and randomised controlled trials are crucial to assess the real impact of surgical route in molecular classification of EC.

ID 154

## EVOLUTION OF SURGICAL PRACTICES FOR CERVICAL CANCER AFTER THE LACC TRIAL: INSIGHTS FROM A SINGLE REFERRAL CENTRE

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## Introduction

The surgical management of cervical cancer has undergone a major transformation following the results of the LACC trial (Laparoscopic Approach to Cervical Cancer). Many institutions have shifted toward open surgery, leading to a progressive decline in minimally invasive surgery (MIS) use. However, a subset of patients continues to undergo MIS. This study aims to describe the evolution of surgical practice for cervical cancer at a single referral centre following the LACC trial.

## Methods

All patients treated for cervical cancer between January 1, 2010, and December 31, 2024, at the European Institute of Oncology in Milan, Italy, were identified. Patients with FIGO 2018 stage IA1, IA2, IB1, IB2, or IIA1 of any histological subtype who underwent radical hysterectomy (as per Querleu-Morrow's classification) and lymph node staging were included. Patients who received neoadjuvant therapy or underwent conservative treatment were excluded.

## Results

A total of 522 patients were identified: 325 in the pre-LACC period and 197 in the post-LACC period. Open surgery was performed in 117 patients (36%) pre-LACC and in 128 patients (65%) post-LACC. MIS was performed in 208 patients (64%) pre-LACC and in 69 patients (35%) post-LACC. Nearly all MIS

procedures were robot-assisted (274 patients, 99%). All patients who underwent MIS post-LACC had previously undergone conization with negative margins. In the post-LACC period, 8 patients experienced recurrence; none of these had undergone MIS. The median follow-up time for the MIS post-LACC group was 13 months (IQR 7–17).

## Conclusions

This study confirms a shift in surgical approach following the publication of the LACC trial at our institution; it also highlights the critical importance of patient selection in cervical cancer treatment. Although some patients continue to undergo MIS, when properly selected, the recurrence rate remains low. Ongoing trials will further clarify the role of MIS in cervical cancer, helping to define the subset of patients who can benefit from this surgical approach.

ID 155

## ALTERNATIVE STRATEGIES FOR THE RESOLUTION OF COMPLETE MULTI-COMPARTMENT PROLAPSES

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## Background

A 66-year-old female with a history of five spontaneous vaginal deliveries presented with enterocele. In 2021 she underwent surgical treatment involving biological mesh implantation and sacral fixation. Despite the initial surgery, the patient experienced a recurrence of the prolapse. A subsequent robotic-assisted LPS plication of uterosacral ligaments and rectopexy was performed at the University Hospital of Pisa, but prolapse recurred again after six months. A third approach, consisting of robot assisted LPS supracervical hysterectomy with sacral suspension, was proposed.

However, during surgery, it became evident that optimal sacral fixation could not be achieved due to the altered anatomy from previous surgeries. As a result, a lateral suspension technique was decided as an alternative method for pelvic organ stabilisation.

## Methods

The patient's medical and surgical history was thoroughly reviewed, with particular attention to the previous interventions and their outcomes. Given the failure of sacral suspension techniques, the surgical plan was modified during the procedure to perform a lateral suspension, which aimed to provide adequate fixation and stabilisation of the pelvic organs. This decision was made after careful assessment of the pelvic anatomy and the limitations imposed by the patient's previous surgeries.

## Results

Postoperatively, the patient demonstrated significant improvement in pelvic organ support. There were no signs of prolapse recurrence

during follow-up, and the patient reported a substantial reduction in symptoms. The use of lateral suspension in this complex case of recurrent prolapse, complicated by prior surgical interventions, proved to be a viable and effective alternative. This case underscores the importance of tailoring surgical strategies to the individual patient's anatomy and surgical history. Various therapeutic approaches, including lateral suspension, offer promising outcomes in the management of prolapse, especially in patients with multiple previous interventions.

## Conclusions

This case highlights the challenges of treating recurrent enterocoele and multi-compartment prolapse in patients with a history of multiple pelvic surgeries. The lateral suspension technique provided an effective solution when sacral fixation was not feasible, demonstrating its potential as an alternative in complex cases of prolapse. These findings emphasize the need for individualized surgical strategies and further research to assess the long-term efficacy and safety of lateral suspension in the treatment of recurrent pelvic organ prolapse.



## ROBOTIC ASSISTED VAGINO-VAGINAL ANASTOMOSIS FOR COMPLEX OBSTRUCTIVE MÜLLERIAN DUCT MALFORMATION

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Transverse vaginal septum is a rare congenital malformation of the female genital tract, resulting from incorrect fusion or canalisation of the Müllerian ducts during embryonic development. Its prevalence is 1/30000 and 1/50000 women. This condition is often associated with dysmenorrhea, chronic pelvic pain, hematometra and hematocolpos.

Diagnosis is based on ultrasound and magnetic resonance imaging. Surgical correction is the main treatment and involves removal of the septum and reconstruction of the vaginal tract. Surgery offers a significant advantage in terms of fertility, allowing many patients to achieve pregnancy spontaneously or through ART.

Our case concerns a 26-year-old nulliparous patient who comes to the emergency room for worsening chronic pelvic pain. The patient had already undergone two hematocolpos drainages about 10 years ago, from which time she began taking continuous estrogen-progestin therapy. After a careful study of the patient's anatomy using level II pelvic echoflowmetry and magnetic resonance imaging, it was decided to intervene surgically using robotic surgery under hysteroscopic guidance. An intraoperative

ultrasound check before the surgery itself showed adjacency between the anterior wall of the vaginal septum and the bladder. Subsequently, a hysteroscopy was performed, which showed the absence of a communication tract between the two hemivaginas. Upon introduction of the robotic optics, the patient's uterus was enlarged due to the presence of hematometra.

After sectioning of the uterine round ligaments, the anterior compartment was prepared by caudalizing the bladder after filling with 120 cc of methylene blue and preparing the posterior compartment. Under ultrasound guidance, the vagina was incised in its upper third with a discharge of brown-dark red gelatinous fluid from the uterine cavity. Under hysteroscopic guidance, the uterine cervix and tubal ostia were visualised, and the transverse vaginal septum was removed. Subsequently, a detached stitch vaginovaginal anastomosis was performed and the round ligaments were reconstructed.

Robotic surgery allowed us to perform an extremely precise vaginovaginal anastomosis, hysteroscopy allowed us to correctly identify the anatomical landmarks to perform it. The patient underwent a hysteroscopic check-up after 30 and 90 days with total restoration of normal vaginal anatomy. Our case demonstrates how having performed a correct diagnosis and timely treatment in a level III centre allow the patient to have access to advanced technologies and a multidisciplinary team. This allowed for adequate management, in a short time with the best outcome for the patient. The restoration of the patient's normal vaginal anatomy improved her sexual life and her future reproductive prospects.



## INTERVAL DEBULKING SURGERY BY ROBOTIC APPROACH IN OVARIAN CANCER

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### Background

Ovarian cancer remains one of the most lethal gynaecological malignancies, largely due to its frequent late-stage diagnosis. In such cases, randomised controlled trials have shown that neoadjuvant chemotherapy followed by interval debulking surgery (IDS) and adjuvant chemotherapy provides outcomes comparable to primary cytoreductive surgery. Traditionally, these procedures have been performed via laparotomy.

However, the role of minimally invasive surgery, particularly robotic approaches, remains controversial. The primary objective of this

study was to evaluate the feasibility and outcomes of robotic-assisted IDS in a selected population with advanced ovarian cancer. A secondary objective was to compare this group with a cohort of patients who underwent IDS by laparotomy under the same selection criteria.

## Methods

A prospective observational study was conducted at a single institution. Eligible patients had advanced ovarian cancer and underwent neoadjuvant chemotherapy, showing both a complete serological response (CA125 < 31) and radiologic response (complete or near-complete on PET-CT). These patients subsequently underwent IDS via robotic approach.

Clinicopathological data and survival outcomes were collected. A comparison group of patients who met the same pre-surgical criteria but underwent IDS by laparotomy was retrospectively selected.

## Results

A total of 26 patients underwent robotic IDS. Complete cytoreduction (R0) was achieved in all 26 cases (100%). 21 patients (80.8%) had a complete metabolic response, and 20 (76.9%) had a complete serological response. Mean operative time was 226 minutes, with a hospital stay of 1.62 days. 3 patients (11.5%) experienced minor complications. 12 patients (46.2%) had a CRS 3 score, and 10 (38.5%) had post-surgical stage < III. Median follow-up was 26 months, with 11 recurrences (42.3%). Mean DFS was 35.5 months; mean OS was 54.5 months. The laparotomy cohort (n = 22) had significantly longer hospital stays (6.5 vs. 1.62 days,  $p < 0.001$ ), higher complication rates (6 vs. 3 patients, 27.3% vs. 11.5%,  $p = 0.005$ ), and more severe complications (8 vs. 3 patients, 36.8% vs. 11.5%,  $p = 0.009$ ).

Despite more FIGO IV cases in the robotic group (19 vs. 12), recurrence was higher in the laparotomy group (21 vs. 11 patients, 95.5% vs. 42.3%,  $p = 0.001$ ), possibly due to longer follow-up (46 vs. 26 months). No significant differences were observed in OS (log-rank = 0.492) or DFS (log-rank = 0.171).

## Conclusions

Robotic surgery appears to be a feasible and safe alternative for IDS in selected patients with advanced ovarian cancer, offering perioperative benefits without compromising survival.



**ROBOTIC INTERVAL CYTOREDUCTIVE SURGERY WITH INTRAOPERATIVE HIPEC AFTER NEOADJUVANT CHEMOTHERAPY FOR ADVANCED OVARIAN CANCER: A VIDEO PRESENTATION**

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## Introduction

Interval cytoreductive surgery following neoadjuvant chemotherapy is a well-established approach in the management of advanced ovarian cancer. The addition of hyperthermic intraperitoneal chemotherapy (HIPEC) has shown improved oncological outcomes in selected patients. Robotic surgery is emerging as a feasible minimally invasive option in this setting, although its use in combination with HIPEC remains limited and underreported.

## Objective

To demonstrate the technical feasibility and key aspects of robotic interval cytoreductive surgery combined with intraoperative HIPEC in a patient with high-grade serous ovarian cancer, FIGO stage IIIC, after four cycles of neoadjuvant chemotherapy.

## Materials and Methods

We present a surgical video of a patient who underwent robotic-assisted interval cytoreductive surgery (da Vinci Xi® system), including total hysterectomy, bilateral salpingo-oophorectomy, infracolic omentectomy, and resection of peritoneal implants on the diaphragmatic surface. Intraoperative HIPEC was performed with cisplatin at 41–43°C for 90 minutes. The video highlights critical technical steps, the setup and placement of HIPEC inflow and outflow catheters, robotic ergonomics, and multidisciplinary intraoperative coordination.

## Results

Complete cytoreduction was achieved without conversion to open surgery. The total operative time was 360 minutes including 90 minutes of HIPEC perfusion. The postoperative course was uneventful, with no major complications, and the patient was discharged on postoperative day 3. This case illustrates the feasibility, safety, and potential benefit of this approach in centres with expertise in minimally invasive surgery and multidisciplinary gynaecological oncology care.

## Conclusions

Robotic interval cytoreductive surgery combined with intraoperative HIPEC is an innovative and feasible strategy for selected cases of advanced ovarian cancer. This video demonstrates the key technical steps and may serve as an educational tool for surgical teams aiming to incorporate this approach into their clinical practice.

## Disclosure

No conflict of interest.



**ROBOTIC HYSTERECTOMY AND SENTINEL-LYMPH-NODE-MAPPING FOR**

## ENDOMETRIAL CANCER IN A PATIENT RECEIVING PERITONEAL-DIALYSIS: A CASE REPORT

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### Background

Obesity is a risk factor for end-stage-renal-kidney-disease as well as endometrial cancer.

### Methods

A 46-year-old female patient underwent peritoneal-dialysis since 2021 due to end-stage-renal. D&C confirmed a well-differentiated endometroid adenocarcinoma.

She was scheduled to undergo a robotic-assisted-laparoscopic sentinel-lymph-node-mapping, total hysterectomy and bilateral salpingo-oophorectomy. Prior to surgery, the decision was made to electively plan a post-operative peritoneal-dialysis interruption with transfer to hemodialysis due to risk of dialysate leakage related to surgery. A central line was inserted and a single-intermittent hemodialysis with citrate anticoagulation was performed prior to surgery.

For surgery, 4cc ICG (Indocyanine green) were injected intracervically. The abdominal skin including the area around the peritoneal-dialysis catheter was disinfected like usually, then it was covered with a sterile dressing. A 8-mm port was placed through the umbilical, three additional 8 mm trocars and one 12 mm AirSeal trocar were positioned in a horizontal line. A catheter for peritoneal-dialysis had been placed through the left abdominal wall, no adhesion was found around the peritoneal-dialysis catheter, but there was a small abdominal wall hernia near the catheter entry site.

The peritoneal-dialysis catheter kept slipping into the surgical field, so it was secured with a loop to the ventral abdominal wall during surgery. The omentum was found to be adherent to the umbilicus. Sentinel-lymph-node-mapping was positive for both sides. After opening the peritoneum, the opened peritoneum and retroperitoneum were completely closed by suturing.

### Results

Final histological report confirmed a well-differentiated endometroid adenocarcinoma, FIGO (2023) IA2, pN0(0/3), L0, V0, R0, MSS, P53 wildtype. POLE mutation analysis was omitted.

Due to difficult weaning, the patient was transferred to the intensive care unit and successfully extubated the following day. Her postoperative recovery was uneventful, special attention was given to prevent peritonitis. She was discharged on day four.

A postoperative antibiotic therapy was prescribed for 14 days. She continued intermittent hemodialysis. On day 57 she was restarted on peritoneal-dialysis again and no further hemodialysis was necessary. No infectious, mechanical or wound healing complications were reported during the course of her recovery.

### Conclusions

Peritoneal-dialysis is no contraindication for minimally-invasive surgery in oncologic patients.



## THIRTEEN-YEAR TRENDS IN ROBOTIC SURGERY FOR ENDOMETRIAL AND CERVICAL CANCER AT A REFERRAL CENTRE

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### Background

During the last decade, minimally invasive surgery, particularly robotic-assisted techniques, has been widely implemented in gynaecological oncology. However, its uptake has varied across different gynaecological cancer types and continues to be influenced by evolving clinical evidence. This study aims to evaluate temporal trends in the use of robotic surgery for endometrial and cervical cancer at a high-volume referral cancer centre.

### Methods

We included all consecutive patients undergoing endometrial and cervical cancer robotic surgery between January 1, 2010, and December 31, 2024, at the Division of Gynaecological Surgery, European Institute of Oncology (Milan, Italy). Patients who underwent fertility-sparing surgery were excluded from the analysis. Temporal trends in the percentage of patients receiving interventions were analysed descriptively.

### Results

Between 2010 and 2024, 993 patients with endometrial cancer and 278 with cervical cancer underwent surgery. Among patients with endometrial cancer, the use of robotic surgery increased from 51 cases (51.5%) in 2010 to a peak of 95 cases (77.8%) in 2018. In recent years, robotic surgery uptake remained high, with 72 cases (69.2%) performed in 2024. In cervical cancer, robotic surgery accounted for 32 cases (72.2%) in 2010, peaking at 31 cases (73.8%) in 2017.

Following the publication of the LACC trial, a mark decline was observed, reaching a low of 4 cases (14.2%) in 2021. A modest

increase was noted by 2024, with 14 cases (36.8%).

Conclusions

Robotic surgery has become the predominant surgical approach for endometrial cancer at our centre. Conversely, its use in cervical cancer declined markedly after 2018, reflecting shifts in clinical practice following evolving evidence. This 13-year analysis highlights how pivotal clinical trials can rapidly and significantly influence surgical paradigms in gynaecological oncology.



COVER, TAPE AND TIGHTEN - BETTER COLPOTOMY TECHNIQUE FOR ROBOTIC RADICAL HYSTERECTOMY

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Background

Recent studies like the Laparoscopic Approach to Cervical Cancer (LACC) trial have raised concerns about Minimal Invasive Surgery (MIS) in early-stage cervical cancer. The LACC trial has associated MIS with lower rates of disease-free survival and overall survival compared to open surgery.

Similarly, the Surgical Approach to Cervical Cancer (SHAPE) trial has also reported the increased risks of recurrence and mortality with MIS. These findings suggest that MIS may not be equivalent to open surgery in terms of oncological outcome. Given these concerns, it is crucial to adopt techniques that minimise tumour manipulation and prevent spillage during MIS.

Methods

A 48-year-old P2L2 woman presented with heavy menstrual bleeding. Patient came with complaints of postmenopausal bleeding, cervical biopsy shows moderately differentiated squamous cell carcinoma and MRI revealed a 2x2 cm cervical tumour, without parametrial involvement or lymphadenopathy. After thorough counseling on the oncological risks and different surgical options, the patient underwent robotic-assisted Type-B radical hysterectomy and bilateral pelvic lymphadenectomy. The procedure was without a uterine manipulator, with the colpotomy conducted carefully, avoiding any peritoneal tumour spill.

This video emphasizes the importance of avoiding uterine manipulators. Further, we employ meticulous colpotomy methods to reduce the risk of peritoneal tumor dissemination. Using these strategies, a surgeon may enhance the safety of MIS for cervical cancer patients.

Conclusions

While MIS offers benefits like reduced recovery time, evidence

from recent trials indicates potential compromises with oncological outcomes. In this video, we show that with careful surgical techniques and strategic patient selection, we can optimise both safety and efficacy in MIS treatment of early-stage cervical cancer.



ROBOTIC RADICAL TRACHELECTOMY AS A FERTILITY-SPARING TREATMENT OPTION FOR EARLY STAGE CERVICAL CANCER: A SYSTEMATIC REVIEW OF THE LITERATURE

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Background/Aim

Cervical cancer is a relatively common gynaecological malignancy with increased global awareness of its early prevention. However, available treatment options are usually aggressive with hysterectomy and chemoradiation being the standard of care. With up to 40% of cervical cancer patients being of reproductive age, the fertility-sparing alternative of radical trachelectomy has been steadily gaining ground in recent years. This review aims to examine the role of robotic surgery in the implementation of radical-trachelectomy in patients with early-stage cervical cancer.

Methods

A systematic literature search was performed in the Scopus, Web of science and PubMed databases in accordance with the PRISMA 2020 guidelines. Studies were evaluated for relevance and included in the qualitative synthesis.

Results

Ultimately, 9 eligible studies were identified and included in the qualitative synthesis. The studies spanned from 2009 to 2025 and included 419 women treated with robotic radical trachelectomy, with a median age of 31 (18-42) and BMI of 23.5 (17.0–47.0) across the included studies. The majority of patients were of FIGO stage IB1, with overall range IA1-IB2. With regard to surgical outcomes, median operative time ranged from 254 to 360 minutes, operative blood loss from 62.5 to 300 ml, length of stay from 1 to 8 days and complication rate from 4-38% (all mild, Clavien-Dindo ≤ 2).

Average trachelectomy failure rate (conversion/subsequent hysterectomy and/or chemoradiation) was 14.1%. Cumulative recurrence rate after trachelectomy was 4% within the follow-up duration (49.4 months). Cumulative clinical pregnancy rate after surgery was 77.5% and live birth rate was 69.2%. Data from a single comparative study of robotic versus open radical trachelectomy indicated that robotic surgery was associated with

significantly lower blood loss (62.5 vs 300 ml) and length of hospitalization (1 vs 4 days). Data from comparative studies of robotic versus vaginal approach indicated similar trends with regard to intra-operative blood loss (133 vs 289 ml) and hospital stay (2.3 vs 3.6 days), although less pronounced. No differences were noted with regard to reproductive outcomes.

## Conclusions

Radical trachelectomy is a feasible, relatively safe and effective option for fertility-sparing, early-stage cervical cancer treatment for women with an incomplete family plan. Surgical robotics offer significantly improved control and safety, a fact made evident through the improved surgical outcomes over more conventional options. However, the increased failure and recurrence rates after surgery mandate the application of close, attentive monitoring and long-term vigilance in order to ensure optimal oncological outcomes, in addition to reproductive ones.



## INTRODUCING A NEW APPLICATION OF THE HUGO™ RAS SYSTEM : ICG FLUORESCENCE-GUIDED SENTINEL LYMPH NODE MAPPING IN ENDOMETRIAL CANCER - A CASE SERIES

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## Background

Minimally invasive surgery is the preferred approach for early-stage endometrial cancer (EC) staging, with robotic-assisted surgery (RAS) increasingly adopted due to its advantages for both patients and surgeons. The aim of the study is to report the first cases of surgical staging for apparently early-stage endometrial cancer performed using the HUGO™ RAS system with indocyanine green (ICG) fluorescence imaging for sentinel lymph node (SLN) mapping.

## Materials and Methods

We prospectively recorded demographic, clinical, intra- and postoperative data of all consecutive women who underwent surgical staging for apparently early-stage endometrial cancer, including total hysterectomy, bilateral adnexectomy, and sentinel lymph node (SLN) biopsy, with the Hugo RAS system. Surgical technique was standardized across all cases. A four-robotic-arm configuration was used following the "compact bridge" setting. A fifth 5-mm trocar was placed at Palmer's point, for the bedside's assistant use.

A uterine manipulator was used in one case, as part of an ongoing randomized trial. One mL of indocyanine green dye (2.5 mg/mL) was injected deeply and superficially at 3 and 9 o'clock in the cervix before robotic docking.

## Results

Twenty endometrial cancer patients were treated between January and March 2025 at Fondazione Policlinico Universitario Agostino Gemelli IRCCS. Median age was 56 years (45-79), and the average body mass index was 25 (21-30). SLN biopsy was performed on all patients: 19 patients had bilateral successful detection, one patient had unilateral detection and underwent systematic pelvic lymphadenectomy on the unmapped side. Median operative time was 137 (range 113-228) minutes, and the median docking time was 5 (range 5-12) minutes.

None of the surgical procedures required conversion to laparoscopic or open surgery, and no intraoperative complications were recorded. Median postoperative stay was 2 days (range 1-2). One early postoperative complication was recorded, specifically a urinary tract infection treated with oral antibiotics (Clavien-Dindo Grade I).

## Conclusions

This case series suggests the feasibility of SLN mapping with ICG using the HUGO™ RAS system in EC staging. Our experience demonstrates that this system provides effective visualization of lymphatic channels, enabling SLN identification and dissection. HUGO™ RAS system, including its flexible docking configurations and the integration of the Rubina® lens system, proved surgical precision and workflow efficiency.

The findings from this case support the feasibility of using the platform in minimally invasive gynaecological oncology procedures. However, further studies are necessary to compare its clinical outcomes, efficiency, and cost-effectiveness with other established systems.



## STEP-BY-STEP TYPE C1 ROBOTIC RADICAL HISTERECTOMY

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## Conclusions

- General steps: check for peritoneal carcinomatosis & beginning of retroperitoneal dissection
- Lymphatic staging: SLN
- Development of pelvic avascular spaces
  1. Lateral: Pararectal (lateral & medial), Paravesical (lateral & medial)
  2. Medial: Rectovaginal, Vesicovaginal
- Lateral paracervix resection, identification of main vascular structures and referencing caudal limit of the dissection
- Dorsal paracervix resection
- Ureteral "unroofing" & rolling
- Ventral paracervix resection
- Colpotomy & vaginal closure

## EFFICIENCY IN HIGH INTENSITY ROBOTIC THEATRES: LESSONS FROM A HIGH-VOLUME BENIGN GYNAECOLOGY CENTRE IN THE UK

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### Background

The Chelsea & Westminster Robotic Gynaecology Centre pioneered the high intensity theatre (HIT) robotic operating model with the UK's first benign gynaecology HIT of 24 cases in one weekend in May 2023 followed by a second showcasing 30 robotic hysterectomies in one weekend in September 2024.

### Aim

To share the key principles of running high efficiency operating lists including pre-operative preparation, intraoperative execution and post operative care.

### Methods

Over two weekends (May 2023 and September 2024) nine HIT surgical lists were conducted resulting in completion of successful robotic gynaecology surgery for 54 patients. Procedures performed were of mixed complexities including excision of deep endometriosis, robotic-assisted hysterectomy and salpingo-oophorectomies.

### Results

All 54 cases were successfully completed without intra-operative complication. 57.4% (31/54) of patients were safely discharged same day and 96.3% (52/54) within 24 hours. There were no readmissions. The average case turnaround was 25 minutes. Average operating time was 65 minutes. In the second HIT weekend 23% (7/30) of cases were completed by senior resident doctors.

Key principles include:

- **Pre-operative planning:** Case selection and preparation
- **Inter-case streamlining:** Formula 1 approach
- **Post operative care:** Same day discharge protocol
- **Team morale:** Mindfulness and yoga team warm-up implementation

### Conclusions

The Robotic High Intensity Theatre operating model can be successfully implemented to reduce NHS gynaecology waiting lists by rigorous preoperative planning, optimising teamwork and enhanced recovery protocols.

Many principles of the HIT model can be utilised in day-to-day practice to improve theatre efficiency, without being at the expense of training.

## HUMAN FACTOR ERRORS IN ROBOTIC GYNAECOLOGY SURGERY

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### Introduction

Robotic-assisted surgery (RAS) has advanced surgical precision, reduced blood loss, shortened patient hospital stay and improved surgeon ergonomics. However, like all complex medical systems, robotic surgery is not immune to human error.

The interaction between the surgeon, the robotic system, and the operating environment can introduce unique challenges. Understanding these human factor errors—those mistakes or inefficiencies arising from human interaction with the system—is crucial to maximising patient safety and optimising outcomes. This abstract will explore the types of human factor errors specific to robotic gynaecology and propose strategies to minimise these errors.

### Types of Human Factor Errors in Robotic Surgery

#### • Inadequate Familiarity with the Robotic System

Surgeons may be unfamiliar with the robotic system or fail to fully understand its capabilities, leading to misuse or poor decision-making, particularly in complex cases.

**Solution:** Comprehensive training programs and the use of simulators or augmented reality tools can improve proficiency and ensure surgeons are well prepared for real surgeries.

#### • Miscommunication Among Surgical Team Members

The physical separation of the surgeon and the surgical team during robotic procedures can result in communication breakdowns, impacting coordination and decision-making.

**Solution:** Real-time video feeds, intercom systems, and standardised communication protocols can ensure clear and timely exchanges between team members.

#### • Cognitive Overload and Decision-Making Errors

The complexity and duration of robotic surgery can lead to cognitive overload, leading to errors in decision-making.

**Solution:** Intuitive interfaces, decision support systems powered by AI, and streamlined information flow can reduce cognitive load and support better decision-making.

### Strategies for Reducing Human Factor Errors

#### • Enhanced Training and Simulation

Continuous, comprehensive training using VR and AR simulations

helps surgeons practice real-world scenarios, improving their skill set and readiness.

#### • Standardised Protocols and Checklists

Standardised procedures and checklists ensure that all team members follow critical steps and reduce the likelihood of missed or incorrect actions.

#### • Improved System Usability

Making robotic systems more user-friendly, with intuitive interfaces and voice command capabilities, can help surgeons focus on the patient rather than the technology.

### Conclusions

While human factor errors in robotic gynaecology can impact surgical outcomes and team working, addressing these challenges through continuous training, standardising safety protocols and enhanced communication can significantly reduce risks and improve overall procedure success.



## HYSTERECTOMY + BILATERAL ADNEXECTOMY + BILATERAL SLN DETECTION IN ENDOMETRIAL CANCER WITH DA VINCI SP

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### Background/Aim

Sentinel Lymph Node dissection is nowadays considered a standard of care in Endometrial Cancer. Robotic multiarm platform has been used for this purpose since years. New technologies like the Da Vinci's Single Port platform show different possibilities than the multiarm platform and surgeon needs to relearn how to perform procedures with this different tool. We are presenting a video where surgical staging of Endometrial Cancer was performed with the Da Vinci's Single Port platform.

### Methods

51 years old women presented post-menopausal metrorrhagia. A Endometrial Biopsy was performed and obtained the diagnosis of: Endometrial Endometrioid Adenocarcinoma G1. NSMP.

**US:** Uterus AVF 78 x 38 x 49 mm. Endometrium: 12 mm. Left Ovary: 32 x 15 mm. Right Ovary: 29 x 16mm. No signs associated with myometrial invasion.

**CT:** No lesions compatible with carcinomatosis. No retroperitoneal adenopathies.

### Results

Hysterectomy + bilateral adnexectomy + bilateral Sentinel Lymph Node dissection was performed with the SP Da Vinci's platform.

Surgical procedure last 87 minutes. No intra ni post-operative complications. Patient was discharged the day after surgery.

### Pathological findings:

Endometrial Endometrioid Adenocarcinoma G1 NSMP.

**Tumour size:** 4,5 cm.

**Myometrial invasion:** 6%. No LVI. No MELF. Ovaries negative for malignancy.

**SLN Left:** 0/2. Right: 0/1.

### Conclusions

Surgical staging of Endometrial Cancer with SP Da Vinci's platform is feasible. Although surgeon need to relearn how to perform this technique with this new tool, learning curve seems to be short.



## INTRODUCTION OF "PORT HOPPING" PROCEDURE IN ENDOMETRIAL CANCER ROBOTIC SURGERY – IS IT OBLIGATORY?

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### Background/Aim

Robotic surgery has the shorter learning curve from all surgical technique. At the beginning it is easier to perform hysterectomy using "port hopping" procedure. It means the robotic ports remain in the same locations, but the instruments, including the camera, are docked in different configurations. Thanks to that it becomes easier for doing movements from the left side after changing the order of instruments.

The aim of the study was to compare robotic surgeries in endometrial cancer with or without using „port hopping” procedure.

### Methods

Analysis was based on 89 women with endometrial cancer with mean age 62.95 (range 34.63 - 84.78 ± 9,96) years and mean BMI 30.91 (range 18.44 – 43.93 ± 5.55) kg/m<sup>2</sup>.

In every case hysterectomy with bilateral adnexectomy and bilateral sentinel lymph nodes removal was performed. In the first 40.4% patients (36 patients) during robotic surgery "port hopping" procedure was introduced, which stands for group 1. The ones collected as group 2 were performed without „port hopping" procedures. Statistical analysis was performed using R programming language version 4.1.2 (R Core Team, Vienna, Austria). A p-value <0.05 was considered statistically significant.

## Results

Mean BMI of patients from the group 1 was 29.66 (range 22.31 - 43.33 ± 4.77) kg/m<sup>2</sup> and from the group 2 was 31.77 (range 18.44 - 43.93 ± 5.91) kg/m<sup>2</sup>, respectively. There was no statistical correlation between usage of port hopping, BMI and operation time ( $p > 0.05$ ).

Mean operation time with „port hopping“ lasted 137 (range 90 - 235 ± 22.3) minutes, while 130 (range 80 - 280 ± 22.4) minutes without. There was no statistically significance with time of surgery and using port hopping. Mean blood loss was 59.86 (range 0-1100 ± 181.53) ml and 27.35 (range 5-600 ± 81.52) ml for both groups, respectively. No statistical correlation was observed. Mean gas volume used during surgery was 456.08 (range 98-1109 ± 167.1) dm<sup>3</sup> and 308.64 (range 111-846 ± 154.68) dm<sup>3</sup> for both groups, respectively. In cases where „port hopping“ was used, higher volume of gas was observed ( $p < 0.05$ ).

## Conclusions

„Port hopping“ is used especially at the beginning of starting robotic surgery. Learning curve in robotic surgery is shorter and procedure of „port hopping“ seems to be no longer needed in experienced surgeon.



## UNUSUAL LOCATION OF THE SENTINEL LYMPH NODE IN A PATIENT WITH LOW-GRADE ENDOMETRIAL CANCER

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### Objective

We aimed to present a case of an atypical, asymmetrical sentinel lymph node (SLN) location in a patient who underwent a robotic surgery for a low-grade endometrioid endometrial cancer.

### Methods

We present a stepwise demonstration of the robotic sentinel lymph node dissection.

### Setting

This video reports a case of an intraoperative SLN dissection, performed in a patient with low-grade endometrioid endometrial cancer. The patient was presented with post-menopausal abnormal uterine bleeding and a thickened endometrial lining. A hysteroscopy-guided biopsy confirmed the diagnosis of low-grade endometrioid endometrial. The patient was proposed to surgery, with bilateral SLN biopsy followed by hysterectomy and bilateral salpingo-oophorectomy by robotic surgery.

### Interventions

A robotic surgery was performed; key steps from the surgery were:

1. Cervical injection of indocyanine green (ICG);
2. Identification and biopsy of the left SLN in an external iliac location;
3. The right SLN was not identified neither in external iliac, obturator nor in the common iliac location, a para-aortic location of right SLN was identified and biopsied.
4. After SLN biopsies, hysterectomy and bilateral salpingo-oophorectomy were performed. There were no complications both during the surgery of in the post-operative period.

## Conclusions

Sentinel pathways tend to be symmetrical in the majority of patients, although in about one quarter of all cases they may be asymmetrical. The vast majority of SLNs are mapped to the medial external iliac or obturator locations; however, about 5-10% of patients have SLNs mapped in other locations, which would not be sampled with standard pelvic lymphadenectomy, as in this case. A thorough exploration of these atypical locations or ICG reinjection enables the identification of SLN, thus avoiding the performance of standard pelvic lymphadenectomy.



## ROBOTIC MANAGEMENT OF EXTRAUTERINE ENDOMETRIAL STROMAL SARCOMA IN PARAAORTIC LYMPH NODES

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### Background

Low-grade endometrial stromal sarcoma (LG-ESS) accounts for 1% of uterine cancer with a favorable prognosis. Extrauterine ESS (EU-ESS) is exceedingly uncommon. EU-ESS is presumed to arise from endometriosis, and the most common regions of origin are the ovaries, peritoneum, rectovaginal septum, vagina, and colorectal serosa<sup>1</sup>.

These locations are also in accordance with the distribution of endometriosis. These tumors harbor JAZF1-SUZ12 rearrangement, and slow-growing SUV uptake in PET imaging is unusual<sup>2</sup>. According to the author's knowledge, this is the first case of EU-ESS in lymph nodes characterized by unusual imaging features and surgical technical challenges.

Our aim is to report a case of EU-ESS presenting in left paraaortic lymph nodes as a mass of 6 cm with high SUV uptake in PET-CT and discuss the challenges of robotic surgery.

### Methods

Stepwise demonstration of the technique with a narrative video. Results/ Interventions A 68-year-old, BMI 35.4, woman with a history of hysterectomy for cervical cancer and right hemicolectomy with lymphadenectomy for cecal adenocarcinoma was referred with a slow-growing paraaortic mass of 6.4 x 5 cm located between aorta

and left kidney and a secondary mass of 1.5 x.16 cm. SUV uptake of masses were 15 and 6.25, respectively. Preoperative CT-guided biopsy revealed a solitary fibrous low-grade mesenchymal tumor, JAZF1: SUZ12 rearrangement, and positivity for CD10, ER, PR, and WT-1. A robotic-assisted paraaortic and pelvic lymphadenectomy with bilateral salpingoopherectomy was undertaken. Technical challenges are operating in more than two abdominal quadrants, optics, robotic arm inclination limitation to 90 degrees and deep Trendelenburg. Final pathology was in accordance with LG-ESS in left paraaortic, right pelvic lymph nodes, and left ovary.

## Conclusions

According to the author's knowledge, this is the first case of EU-ESS in lymph nodes characterized by unusual imaging features and surgical technical challenges. Rare cases of endometriosis are reported in lymph nodes<sup>3</sup>, and we speculate if the primary origin of EU-ESS might be an endometriosis-related cancer.

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ID 171

## OPTIMISING ICG INJECTION TECHNIQUE FOR OVARIAN CANCER STAGING

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Optimising ICG injection technique for ovarian cancer staging.

ID 172

## ROBOTIC ASSISTED ETHANOL SCLEROTHERAPY OF AN OVARIAN ENDOMETRIOMA

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### Background

Endometriomas are associated with decreased ovarian reserve and impaired fertility outcomes. The traditional surgical approaches such as cystectomy, often lead to further reductions in ovarian reserve whilst fertility-sparing surgical approaches of drainage only are often associated with an increased risk of recurrence. Ethanol sclerotherapy offers a potential alternative that preserves ovarian function while effectively managing endometriomas.

However, the potential for high-concentration alcohol to leak and cause adhesions in the peritoneum and tubal mucosa remains a concern.

### Aim

To provide a safe robot-assisted technique on how to apply ethanol sclerotherapy for ovarian endometriomas (3 - 10 cm) in patients wishing to preserve their ovarian reserve.

### Methods

99% Ethanol is applied using a French size 14 catheter into the ovarian endometrioma once it is drained for a duration of 15 minutes. The catheter balloon is inflated with 10 ml of normal saline and purse string suture is applied on the ovary around the site of catheter insertion to minimise risk of leakage of ethanol into the abdominal cavity. The pelvic cavity is filled with fluid (saline) in order to minimise the impact of ethanol by dilution if a leakage occurs. Excision of pelvic endometriosis was performed during the same procedure.

### Conclusions

Robotic assisted ethanol sclerotherapy is a safe and efficient approach to effectively reduce the size of endometriomas and alleviate the associated symptoms without significantly compromising the ovarian reserve.

ID 173

## ROBOTIC ISTHMOCOELE RESECTION-REPAIR: A STANDARDISED APPROACH IN A HIGH-VOLUME CENTRE

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### Background

Robotic-assisted surgery (RAS) has the potential to overcome challenges seen in traditional straight-stick laparoscopic isthmocoele resection-repair (Caesarean niche repair). The benefit of a wristed instrument and magnified 3D HD view to delineate the boundaries of the niche, preserving healthy myometrial, could reduce surgical morbidity and operative duration.

### Case

We present our standardised approach to robotic isthmocoele resection-repair in our high-volume robotic gynaecology centre. The da Vinci XI Surgical System (Intuitive Surgical, Sunnyvale CA) is docked and intravesical ICG instillation performed employing FireFly fluorescence imaging to improve visualisation during bladder dissection off the Caesarean niche.

Our approach permits near bloodless surgery and rapid postoperative recovery with satisfactory postoperative imaging appearances of the repaired niche.

Robotic isthmocoele resection-repair is usually recommended in patients with a residual myometrial volume of less than 3 mm and a desire for future fertility. A 2-layer closure is performed once the fibrotic tissue is excised, using a monofilament absorbable suture (2-0 monocryl) to close the deepest layer followed by a barbed absorbable suture (Filbloc) for the outer layer.

Residual myometrial thickness is reassessed using ultrasound sonography on average 12 weeks post-operatively. Patients are reassured and advised to start trying to conceive 3-6 months post repair.

## Conclusions

Robotic assisted isthmocoele resection-repair is a safe and efficient approach which has the potential to improve outcomes by overcoming challenges with traditional laparoscopic surgery.



## VAGINAL COLD KNIFE MORCELLATION TECHNIQUE OF A LARGE FIBROID UTERUS AFTER A ROBOT-ASSISTED TOTAL HYSTERECTOMY

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### Background

Uterine size is one of the determining factors on the feasibility of the minimal access approach. This is because morcellation of a large fibroid uterus after minimal access surgery remains a challenge. There are currently no standardised procedures available to date.

### Aim

To demonstrate the vaginal in-bag cold knife morcellation technique is a simple and reproducible method of sectioning and vaginal retrieval of the bulky uterus.

### Case

We present our standardised approach to vaginal in-bag morcellation of a large fibroid uterus. The da Vinci XI Surgical System (Intuitive Surgical, Sunnyvale CA) was used to perform the total hysterectomy. The Alexis Contained Extraction System was used vaginally to morcellate the uterus using a scalpel under direct vision. The use of the guard protected the bag from sharp instrumentation during the morcellation of the uterus. The uterine size of the patient in the video selected demonstrates a 300 g fibroid uterus in a virgo intact patient. The morcellation operative time was 7.3 minutes. The procedure was completed successfully without any complications.

## Conclusions

The vaginal in-bag cold knife morcellation technique after a total robotic hysterectomy is a feasible, simple, and reproducible method of bulky uterus morcellation through the vaginal orifice.