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Multidisciplinary Approach to Resection of Deeply Infiltrative Endometriosis Using the Robotic Platform

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Objective:

To describe a multidisciplinary approach for resection of deeply infiltrative endometriosis using the robotic platform.

Design:

A technical video showing a step-by-step approach for resection of deeply infiltrative endometriosis. (Canadian Task Force classification level III). IRB approval was not required for this study.

Setting:

There is considerable involvement of bowel and bladder by deeply infiltrative endometriosis. [1-3] The need for operative procedures involving multiple organs while performing a complete resection is common.

The benefits of minimally invasive surgery for gynecological pathology have been documented in numerous studies. Patients had fewer medical and surgical complications postoperatively, better cosmesis and quality of life. [4-6] We believe that deeply infiltrative endometriosis does not preclude patients from having a minimally invasive resection procedure. In this video, we describe how the robotic platform was utilized for a **seamless** transition between surgical specialties including gynecology, colorectal, and urology to ensure complete resection of endometriosis lesions involving multiple organs.

Patient:

A 47-year-old with a four-year history of severe pelvic pain, dysuria, dyspareunia, dyschezia, and dysmenorrhea failing multiple medical therapies presented to our clinic to discuss surgical options. After thorough counseling, the decision was made to proceed with definitive surgical management. Postoperatively the patient was admitted for two days of postoperative inpatient care. After meeting all immediate postoperative milestones, she was discharged with an indwelling Foley catheter to follow-up in the clinic with all three surgical specialties. At the 1-week interval, she was seen by the Urology team, where her indwelling catheter was removed after a cystoscopy was

performed documenting adequate healing. Two weeks postoperatively the patient was seen by the Gynecology and Colorectal teams and was noted to be healing adequately from the procedure. Her six-week visit was also unremarkable. She kept following with the gynecology team for her yearly well-woman exams and has been symptom-free for two years after surgery. She is kept on daily Norethindrone to minimize recurrence.

Interventions:

A pelvic preoperative pelvic MRI showed bladder endometriosis and extensive rectovaginal endometriosis. We describe the multidisciplinary approach used for surgery and the procedures done by each specialty.

Urology:

A cystoscopy was performed preoperatively to assess for full thickness erosions and the location of those lesions in that event. The urology team also reviewed the MRI images with the radiology team, and the endometriosis lesions were suspected to be close to the bladder trigone, keeping in mind that this finding could be overestimated given that the bladder was deflated at the time the imaging was obtained. Accordingly, At the time of surgery, the decision was made to proceed with cystoscopy and ureteral stents placement as a prophylactic measure. An intentional cystotomy and resection of the bladder section involved with endometriosis were performed followed by watertight closure. The trigone area of the bladder was not involved, and ureteral reimplantation was not needed in this case.

Gynecology:

The Gynecology team operated second and performed and extensive dissection of the retroperitoneal space with the development of the para-rectal and para-vesical spaces.

They also ligated the uterine artery at its origin, followed by dissection of the utero-vesical space effectively reflecting the bladder off of the lower uterine segment. At this point, they proceeded with a total hysterectomy, and the specimen was removed from the pelvis through the vaginal cuff.

Colorectal:

Preoperatively the colorectal surgeon ordered a colonoscopy to determine if full thickness erosions are present and reviewed the MRI images with the radiology team. Based on the MRI and colonoscopy, all patients are counseled and consented for the possibility of a Low Anterior Resection (LAR) and loop ileostomy to protect the anastomosis.

Based on the understanding that colorectal and gynecologic surgery have a different approach when dissecting the pararectal space at our institution, a discussion between the two teams is initiated at the multidisciplinary session for surgery planning. In the case we present, the colorectal surgeon opted for the removal of the uterus before his dissection was initiated given that he dissects this space presacrally and not retroperitoneally like the GYN counterpart. He would also benefit from the extra space for dissection with the uterus out of the pelvis.

The colorectal part of the case was initiated by mobilization of the rectum and dissecting the obliterated recto-vaginal space. The presacral space was then opened followed by mobilization of the rectosigmoid from its attachment. The case was concluded with full transection and re-anastomosis of the rectum section involved with endometriosis. The specimen was also removed from the pelvis through the vaginal cuff.

Main outcome measures:

Complete resection of deeply infiltrative endometriosis spanning beyond the scope of one surgical specialty.

Results:

No immediate intraoperative, perioperative, or long-term complications from surgery. Complete resolution of endometriosis symptoms.

Conclusion:

We encourage collaborative care for planning and performing comprehensive and safe resection of deeply infiltrative endometriosis.

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