Single-port robotic-assisted transvaginal hysterectomy (vNOTES) in a hostile abdomen

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A patient in her late 70s, G6P6, with a history of surgery for small bowel obstruction due to ventral hernia mesh adhesions and further complicated with a small bowel fistula with need of reoperation presented months after with pelvic pain. CT scan showed a 7.5 cm hypodense mass involving the uterus (thickened endometrium or possibly a cystic or necrotic lesion). MRI of the pelvis showed a large cystic mass in the midline of the pelvis, most characteristic of a hematometra, and a left adnexal mass with a tubular serpiginous shape and signal characteristics of hematosalpinx. CA125 was elevated to 101.7. A pelvic exam revealed a stage II uterine prolapse with severe cervical stenosis.

Aiming to minimize surgical morbidity via an abdominal approach, a vaginal hysterectomy technique via transvaginal natural orifice transluminal endoscopic surgery (NOTES) using a single-port Intuitive robotic platform was offered. The feasibility and safety of this approach were previously described using the (Xi) Intuitive robotic platform. Informed consent was obtained, including permission for off-label use of a single-port robotic-assisted platform, acknowledgment of the limited surgical experience using this approach, and authorization for the procedure to be videoed for academic purposes.

The procedure was initiated with a classical vaginal surgery approach by performing a circumsection of the cervix followed by the opening of the anterior and posterior peritoneum and the transection and ligation of bilateral uterosacral ligaments and cardinal ligaments. A vNOTES port was inserted transvaginally into the peritoneal cavity to create a pneumoperitoneum. The hysterectomy and bilateral salpingo-oophorectomy with lysis of adhesions were performed via transvaginal NOTES using the surgical single-port Intuitive robotic platform. Once the procedure was completed, the colpotomy was closed as in the classical vaginal surgery approach.

The duration of the surgical procedure was 114 min with an estimated blood loss of 20 cc. The final pathology was negative for hyperplasia or malignancy. The postoperative course was unremarkable, with a length of stay of 1 day and a pain score of 0 to 5.

Conclusion: Robotic single-port transvaginal NOTES in patients with a history of complex abdominal surgery is challenging but feasible with the potential of reducing the risk of intestinal and abdominal wall complications that are almost guaranteed via a conventional laparoscopic or laparotomy abdominal approach. The advantages of articulating instrumentation and three-dimensional visualization are especially pivotal in complex transvaginal NOTES surgery.

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