

# Robotic uterine transposition for a cervical cancer patient with pelvic micrometastases after conization and pelvic lymphadenectomy

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Uterine transposition was first reported<sup>1</sup> in 2017 as a possible fertility sparing surgery for patients with non-gynecologic cancer who require pelvic radiotherapy. In 2018, it was reported in a patient with cervical cancer.<sup>2</sup> The main concept is that the uterus with the

adnexas can be mobilized away from the radiotherapy field as a flap, using the gonadal vessels as pedicles. The surgery is evolving.<sup>3</sup> The objective of this [video 1](#) is to present the technique using a surgical robotic platform.



**Video 1** Surgery starts with a biopsy of any suspicious area for metastasis. Right round ligament section. Right paravesical space dissection. Opening of the two leaves of the broad ligament and dissection of the right infundibulopelvic ligament. Previous pelvic lymphadenectomy makes it more difficult to dissect the infundibulopelvic ligament. Care must be taken to avoid damaging the ovarian vessels. Suture granulomas. The ovary is detached from the ovarian fossa at this point. Care is taken to avoid grasping the tubes or the infundibulopelvic ligaments in order to avoid damaging them or damaging the vascular supply of the uterus, all of which could harm future fertility. The right gonadal vessels are dissected as cranially as possible. The same steps are repeated on the left side. The uterus is moved posteriorly by manipulation and the vesicouterine septum is dissected. The uterine vessels are coagulated and cut. For stage IA1 tumors, the paracervix is transected just lateral to the cervix as in an extrafacial hysterectomy. Some of the vagina is debrided from the cervix. The vagina is then closed using two layers of absorbable suture. It is important to keep in mind the risk of vaginal cuff dehiscence due to radiation. Double docking is used and the patient is kept in the Trendelenburg position. The invention of the docking allows correct upper abdominal dissection. Lateral to medial dissection of the terminal ileum, cecum, and right colon. The right gonadal vessels are gently dissected cranially, up to the level where the uterine artery crosses the vena cava. The same steps are repeated on the left side. The uterus is mobilized to the upper abdomen. Care must be taken to avoid twisting of the infundibulopelvic ligaments. The cecum, ileum, and omentum are gently moved beneath the arch formed by the infundibulopelvic ligaments. The same is done with the left colon. As the residual cervix was too short to be attached to the umbilical scar, we decided to keep it inside the abdominal cavity. Then 2-0 polypropylene sutures were performed to attach the uterus to the anterior abdominal wall. The round ligaments were fibrotic and short so we did not use them to attach the uterus to the abdominal wall. Using routine laparoscopy, the uterus was detached from the anterior abdominal wall and all adhesions were released. The docking was performed and the uterus positioned back to the pelvis. Dissection of the pelvic adhesions is important to restore anatomy. A vaginal probe is inserted and the vaginal vault is dissected. Care should be taken due to the presence of the bladder vault. The cervix is then debrided removing any fibrotic tissue. The uterus is sutured to the vagina to keep it in place for the placement of a polypropylene cerclage. This suture cannot be too tight to avoid cervical stenosis. The suture of the residual cervix to the vagina is then completed using absorbable sutures. The round ligaments and broad ligaments are reconstructed using polypropylene 3-0 sutures to avoid inflammatory reaction and adhesions. Care must be taken at this point to avoid puncture of the iliac vessels or the gonadal vessels. The broad ligaments are reconstructed on the right side. This is the end of the procedure.

## Video article

A 28-year-old woman with International Federation of Gynecology and Obstetrics stage IA1 squamous cell carcinoma of the cervix, with lymph vascular space invasion, was diagnosed following a loop electrosurgical excisional procedure. Laparoscopic sentinel lymph node dissection associated with a new conization was performed, and the pathological analysis showed lymph node micrometastasis in one lymph node, out of two (one on each side of the pelvis), and no residual tumor at the cervix. The patient then had an open bilateral pelvic lymphadenectomy which found no additional metastases in 20 lymph nodes. The patient refused adjuvant radiotherapy because of the risk of infertility. After multidisciplinary board discussion, she was referred to our center for uterine transposition prior to chemoradiation. Double docking robotic surgery was performed to access the pelvis and superior abdomen. The uterine corpus/cervix, and ovaries were detached from the pelvis and robotically sutured to the anterior upper abdominal wall, after extensive gonadal vessel dissection. Previous pelvic dissection makes gonadal vessel dissection risky. Also, the short residual cervix did not allow for umbilical implantation. Ten days after uterine transposition, external radiotherapy (45 Gy) with concurrent cisplatinbased chemotherapy was delivered to the pelvis. After adjuvant treatment, the uterus and ovaries were robotically repositioned and the residual cervix anastomosed to the vagina. After 20 months of follow-up, the patient has normal menses and hormonal

function. There is no recurrence and the patient has not attempted to get pregnant.

Robotic uterine transposition represents a potential variation to the laparoscopic approach. However, studies to determine its viability, effectiveness, and safety are needed.

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## REFERENCES

- 1 Ribeiro R, Rebolho JC, Tsumanuma FK, *et al.* Uterine transposition: technique and a case report. *Fertil Steril* 2017;108:320–4.
- 2 Baiocchi G, Mantoan H, Chen MJ, *et al.* Uterine transposition after radical trachelectomy. *Gynecol Oncol* 2018;150:387–8.
- 3 Ribeiro R, Baiocchi G, Tsunoda AT, *et al.* Uterine transposition technique: update and review. *Minerva Ginecol* 2019;71:62–71.