Technique of Fertility Sparing Radical Abdominal Trachelectomy

A laparotomy and a bilateral complete pelvic lymphadenectomy are performed usually via a transverse lower abdominal incision in a similar manner to patients undergoing a radical abdominal hysterectomy. The limits of nodal dissection are the deep circumflex iliac vein caudally and the proximal common iliac artery cephalad. Any suspicious lymph nodes were sent for frozen-section analysis. A fertility-sparing approach should be abandoned if positive lymph nodes were identified. Sentinel lymph node identification is also a reasonable option and may allow for pathologic ultra-staging of these sentinel nodes. The removal of para-aortic nodes is also considered for lesions stage IB1 or greater.

The intent of the radical abdominal trachelectomy is to resect the cervix, upper 1–2 cm of the vagina, parametrium, and paracolpos in a similar manner to a type C radical abdominal hysterectomy but sparing the uterine fundus or corpus (Figure 1-2).

The procedure is begun by developing the paravesical and pararectal spaces and dissecting the bladder caudal to the mid vagina. The round ligaments are divided and large Kelly clamps are placed on the medial round ligaments to manipulate the uterus. Care is taken not to destroy the cornu or the uteroovarian pedicles (Figure 3). The infundibulopelvic ligaments with ovarian blood supply are kept intact. Care is also taken not to injure the fallopian tubes or disrupt the uteroovarian ligament.

The uterine vessels are then ligated and divided at their origin from the hypogastric vessels. The parametria and paracolpos with uterine vessels are mobilized medially with the specimen, and a complete ureterolysis is performed similar to a type C radical abdominal hysterectomy. The resection is carried to the level of the deep uterine vein with care not to injure the pelvic splanchnic and hypogastric nerves. The posterior cul de sac peritoneum is incised and the uterosacral ligament divided; similarly, the parametria and paracolpos are divided. Using a vaginal cylinder (Apple Medical Corporation; Marlborough, MA), the desired length of vaginectomy is performed, and the specimen is completely separated from the vagina (Figure 4) and placed in the mid
pelvis, keeping its attachment to the uteroovarian ligaments. Alternatively a Wertheim clamp can be placed at the desired length of the vagina and the specimen separated (Figure 5).

The lower uterine segment is then estimated (Figure 6), and clamps are placed at the level of the internal os. Using a knife, the radical trachelectomy is completed by separating the fundus from the isthmus or upper endocervix at approximately 5 mm below the level of the internal os, if possible (Figures 7-8).

The uterine fundus with preserved attachments to the uteroovarian ligaments, placed in the superior part of the pelvis, and the specimen, consisting of radical trachelectomy and parametria with suture marking the vaginal cuff at 12 o’clock, is sent for frozen-section evaluation of its endocervical margin. The uterine fundus is inspected and curettage of the endometrial cavity is performed as well as a shave disc margin on the remaining cervical tissue which is sent for frozen–section analysis (Figure 9A). This is performed to ensure that the reconstructed uterus to vagina is disease free. A frozen-section analysis is also obtained on the distal vaginal margin, if clinically indicated (Figure 9B-C).

Figure 5. Alternatively a Wertheim clamp can be placed at the desired length of the vagina and the specimen separated.

Figure 6. Estimating the resection margin of abdominal trachelectomy.

Figure 7 and 8. Clamps are placed at the level of the internal os. Using a knife, the radical trachelectomy is completed by separating the fundus from the isthmus or upper endocervix at approximately 5 mm below the level of the internal os, if possible.

Figure 9A,B,C. (A) Endometrial and upper endocervical curettage as well as a shave margin on the remaining tissue is sent for frozen-section analysis prior to reconstruction. (B) Frozen section is obtained on the endocervical margin. (C) Frozen section is obtained circumferentially on the vaginal cuff if needed.
If all frozen sections tested are benign and at least a 5 mm clear margin is obtained on the endocervical edge, a permanent cerclage with #0 Gore-tex or Ethibond on a free Ferguson needle (knot tied posteriorly) is placed prior to the reconstruction (Figure 10-11). The uterus is reconstructed to the upper vagina with 4-6 #2-0 absorbable sutures (Figures 12-14), or a running continuous absorbable suture. The round ligaments are reconstructed to help avoid uterine retroversion, this will facilitate endometrial sampling during follow-up; in addition, the bladder peritoneum is reconstructed with absorbable sutures to the uterine fundus to restore normal anatomy as much as possible. Standard antibiotic prophylaxis and routine postoperative care is prescribed.

An alternative approach would be to separate the fundus from the cervix prior to the colpotomy, pack the fundus with the intact uteroovarian blood supply in the upper pelvis, place retraction clamps on the cervix, and perform the radical trachelectomy. The role of cystourethroscopy with bilateral temporary ureteral catheterization is optional.

References