

Procedure: Robotic radical tumor debulking with complete cytoreduction, modified radical hysterectomy with bilateral salpingo-oophorectomy, extensive pelvic and paraaortic lymph nodes debulking to 1 cm cephalad to renal vessels, ligation of right internal iliac artery, peritoneal biopsies, bladder peritonectomy, partial upper vaginectomy (for benign vaginal cyst) and hand-assisted, partial infra-gastric omentectomy (to rule out peritoneal spread).

Set up:

- Gynecologic Oncologist and Physician Assistant Team: >1200 complex robotic surgeries, >500 robotic lymphadenectomies
- Preoperative Intensivist consultation
- Bowel prep with 2 days of clear liquids before surgery to improve intraoperative exposure
- CT scan of abdomen and pelvis for high grade uterine tumors
- Two large IV accesses and arterial line
- Anesthesia and OR room staff experienced in complex robotic procedure

Equipment:

- Si Da Vinci® Surgical robot
 - Permanent Cautery Hook
 - Precise Bipolar Forceps
 - Cadere Forceps
 - Large Suturecut Needle Driver
- Titan® surgical table: currently split legs position is used for cases > 5 hours long
- Yellofins® Elite Stirrups
- Hem-O-Lok® clips
- Laparoscopic Bulldog clamps
- Endo GIA™ stapler used by assistant
- Laparoscopic vessel sealer used by assistant: Enseal® or Ligasure™
- Vessel loops
- Floseal hemostatic agent
- Codman's surgical strips – “neuropads”
- 5-0 Prolene® suture
- Anchor Tissue Retrieval System – bag for specimen removal

Technique:

- 40 degrees Trendelenburg position
- Docking robot between the legs
- Currently split legs position is used for cases estimated to be > 5 hours long
- IV fluids: goal of less than 1500 mL while in Trendelenburg position for routine cases
- Paraaortic Lymphadenectomy performed at the beginning of surgery, when relaxation is optimal
- Decreasing insufflation pressure (starting at 15 mmHg) but not level of Trendelenburg for difficulty with ventilation

- Five blade laparoscopic fan for difficult paraaortic exposure
- Paddle retractor or second fan via second assistant trocar for the most challenging cases
- Hemostatic agent and 5-0 Prolene suture readily available for paraaortic lymphadenectomy and lymph nodes debulking
- Robotic suturing of perforator and vascular injuries with 5-0 Prolene® suture
- Early Identification of anatomical landmarks and planes
- Establishing three-dimensional anatomy
- Appropriate selection of robotic instruments based on their unique properties
 - Tip of Monopolar cautery hook used for establishing the plane between tumor wrapping around the vessels; heel used for dissection to maintain the surgical plane
 - Blunt scissors might be superior in creating plane between vessels and lymph nodes, while hook by providing countertraction, appears to be safer in pulling lymph nodes away from the vessels
 - Monopolar cautery hook: cautery activated after lifting tissue 1 mm off of vessel
 - Precise Bipolar Forceps (better grasping strength) or Maryland Bipolar Forceps for spreading tissue
- Judicious use of energy
- Persistent use of countertraction and spreading:
 - Micro-spreading with instruments' tips for precise dissection
 - Macro-spreading with entire instruments for development of avascular spaces
- Approaching difficult dissection from many angles
- Control of surrounding blood supply before resection of bulk of the tumor
- Active involvement of assistant
- Vascular technique for large vessels control:
 - Vessel loop or Penrose drain tourniquet provide excellent proximal and distal control of the vessel once its surface is completely dissected
 - Bulldog clamps allow for isolation of vessel injury even when the vessel is only partially exposed; it can also work as tourniquet
 - Make sure before surgery that your Bulldog clamps fit robotic instruments' jaws and your trocars
 - Prograsp™ Forceps might be even better than Cadiere forceps for handling Bulldog clamps due to their superior grasping force
- Frequent removal of tumor via laparoscopic bag to decrease tumor exposure to peritoneal surfaces and limit chances for subsequent peritoneal spread
- For debulking purposes frequently lymph nodes need to be removed from areas not typically dissected during staging procedures: behind iliac vessels, below obturator nerve, medially to internal iliac artery, laterally and caudally to common iliac arteries, presacral area
- Sentinel lymph nodes mapping, especially with superficial and deep injections to map upper and lower paracervical pathways, may help guide lymphadenectomy

