

Surgical steps of TROMP technique:

A descriptive video for Total Retroperitoneal en bloc resection Of Multivisceral-Peritoneal packet (TROMP technique) is available under this link: <https://www.youtube.com/watch?v=UkXjSQ7p1SY>

The incision:

1. Incising the abdomen in the midline from the pubic symphysis to the umbilicus if the diagnosis is not already histologically confirmed (diagnostic laparoscopy or biopsy). If the diagnosis is already histologically confirmed, the incision will be extended to the xiphoid process.
2. Dissecting the fat tissue from the rectus fascia (rectus sheath) for about 1 cm lateral from the middle line (linea alba). This manoeuvre facilitates retracting the abdominal wall and closing of the rectus fascia.
3. Incising the rectus fascia at the midline assuring not to injure the underlying parietal peritoneum.
4. By histologically unconfirmed diagnosis, opening a peritoneal window in the midline for approximately 3 to 4 cm to take the biopsies and to evaluate the abdomen. In such cases, we evaluate the infiltration of the small bowel specially the serosa and the

infiltration of the hepatoduodenal ligament. These two locations may be a reason for not achieving a complete tumor resection.

Parietal peritoneomy in upper abdomen:

5. By confirmed diagnosis of ovarian cancer, we keep the parietal peritoneum intact and dissect it using a curved bipolar Metzenbaum scissors (G. F. Mersons Limited, Ethicon Suture Laboratories, Bridgewater, New Jersey, USA) and Mikulicz clamps on the incision edges of the rectus fascia in order to provide traction along the extent of the tissue transection plane.
6. After dissection the parietal peritoneum to the lateral side of the renal capsule bilaterally, triangular ligament of the liver on the right side and on the upper edge of the spleen and to the round ligament at the pelvic inlet bilaterally, the abdominal retractor system could now be used to achieve broad access to the deep parietal peritoneum especially at the diaphragm. We use the Sattler ® Königsee retractor system (Medizintechnik Sattler GmbH, Königsee-Rottenbach, Germany).
7. Developing the dissection in the upper abdomen first at the midline beneath the xiphoid process outlining the centrum tendineum diaphragmatic first right behind the coronary ligament of the liver

and then left exposing the diaphragmatic muscle and the left adrenal gland. The dissection has to be performed carefully at the midline and to the right again exposing the vena cava 3 to 4 cm beneath the xiphoid process.

8. Following the right edge of the vena cava will allow for recognition of the right inferior phrenic vessels and to spare them. One should strip the peritoneum from the right margin of centrum tendineum and dissecting the right triangular ligament of the liver to enter the bare area of the liver. This dissection has to be completed medially and beneath the liver to detach it from the fascia Gerota, adrenal gland, and renal capsule.
9. In the middle of coronary ligament, one should detach the peritoneal reflection from the liver caudally to the hepatic falciform ligament insertion in the liver, which will be cut and ligated. The liver is now completely mobilized and free from peritoneum.
10. Dissecting the peritoneum from the renal capsule and exposing the course of the vena cava may be performed easily and one should proceed to the hepatoduodenal ligament, then from the laterocranial side to the mediocaudal side of the duodenum.

Omentectomy/Splenectomy:

11. Resection of omentum majus should be performed from the greater curvature of the stomach and opening the bursa omentalis.
12. If there is a need to perform splenectomy one should resect the short gastric vessels arriving to the parietal peritoneum dissection plane at the bottom of the left diaphragm. The parietal peritoneum will stay here connected to the gastrocolic and gastrosplenic ligament.
13. Proceeding with the peritonectomy around the spleen and stripping the peritoneum from the left adrenal gland, the tail of the pancreas and the left renal capsule should expose the splenic artery and vein. These will be resected and ligated from the retroperitoneal side under visual control of the pancreatic tail. This peritoneal resection will be continued here at the lower edge of pancreas to the renal hilus.

Peritoneomy in mid abdomen and preparing the retroperitoneal space:

14. The omental cake is then resected from the transverse colon. The resection is performed from the white line of Toldt along the lateral aspect of the ascending and descending colon to the pelvic inlet. This will allow for packing of the entire parietal peritoneum/omentum packet in a surgical towel to place it caudally out of the abdomen.

15. The dissection will be developed medially from the ascending colon to the radix mesentrii. With this manoeuvre; it is possible to pack the bowel in a surgical towel and to mobilize it cranially outside the abdomen and to expose the entire retroperitoneal space and the main vessels.
16. Identification of the ovarian vessels and ureter bilaterally should be performed and the ovarian vessels should be transected at the junction of the inferior cava and left renal vein.
17. Preparing the superior hypogastric plexus and sparing it in the midline of the retroperitoneal space direct above the aortic bifurcation is essential.

Pelvic peritonectomy with resection of the pelvic packet:

18. The round ligament should be transected retroperitoneally and the medial umbilical ligament should be identified and highlighted caudally at the level of uterine artery to recognize the lateral and inferior bladder walls.
19. Dissecting the bladder from uterus and cervix above the level of uterine artery from the medial umbilical ligament is performed next. At this level the bladder is not covered with peritoneum and it will be dissected easily by pushing it ventrally. Stripping the

- peritoneum from the dome of the bladder is then performed from the bottom up.
20. When the bladder is completely stripped from the peritoneum, the peritoneal packet is moved to the later aspect outside the abdomen to be able to expose the anterior and lateral sides of the pelvic packet.
21. The uterine vessels are now easy to identify, cut and ligated as well as the lateral parametrium. Care should be taken to spare the hypogastric nerve and ureter.
22. The anterior vaginal wall should be opened, cutting and ligating the lateral vaginal wall and opening the posterior vaginal wall without incising the Douglas peritoneum. Sacrouterine ligaments are resected and ligated retroperitoneally. Again care has to be taken of not injuring the hypogastric nerves.
23. Next one should dissect the rectosigmoid colon from posterior vaginal wall, directly beneath the deepest point of the pouch of Douglas. If there is no need to perform a rectosegmoid resection, the Douglas pouch peritoneum should be dissected and the whole packet removed.
24. If the resection of rectosigmoid is indicated, the blood supply should be centrally ligated to assure a no-touch isolation. The resection of mesorectum is performed above the level of

hypogastric nerve and the rectosigmoid is resected with a stapler. The entire multivisceral-peritoneal packet should be removed and the vaginal vault closed. A circular stapling device is used to complete the colorectal anastomosis (Intraluminal Stapler 29, Ethicon, Cincinnati, OH) and the multi-visceral peritoneal packet is removed as one specimen (Figure 1).

25. One should then resect any residual tumour from the intestinal mesenterium, omentum minus or hepatic capsule. Performing any other indicated cytoreductive procedures to achieve the complete tumour resection is recommended.
26. If radical lymph node dissection is indicated, it should be performed sparing the superior hypogastric plexus, the lumbar splanchnic nerves and the mesenteric plexus (Figure 2).