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SURGICAL TECHNIQUE

Step-by-step nerve-preserving mesorectal excision in the female

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Introduction

The goal of infra-peritoneal rectal resection for cancer is complete mesorectal excision (the mesorectum corresponds to the inferior rectal ligament for anatomists) and the rectal visceral fascia that envelops the mesorectum (''extra-fascial'' excision); this allows lymphadenectomy of the inferior mesenteric lymphatic drainage system. If the proper plane of dissection is respected, this guarantees preservation of genito-urinary function by sparing the autonomic innervation of the detrusor muscles, the smooth muscle urethral sphincter, the glandular and smooth muscle components of the vaginal wall, and the erectile bodies (corpus cavernosum and corpus spongiosum). While the oncologic goal of surgery is complete removal of all tumoral tissues, it is also important to spare the nerves, in women as well as in men. There is risk of nerve injury throughout the procedure. Dissection must be guided by the planes of the peri-rectal fascia, the so-called ''nerve-guardians'' of the pelvis.

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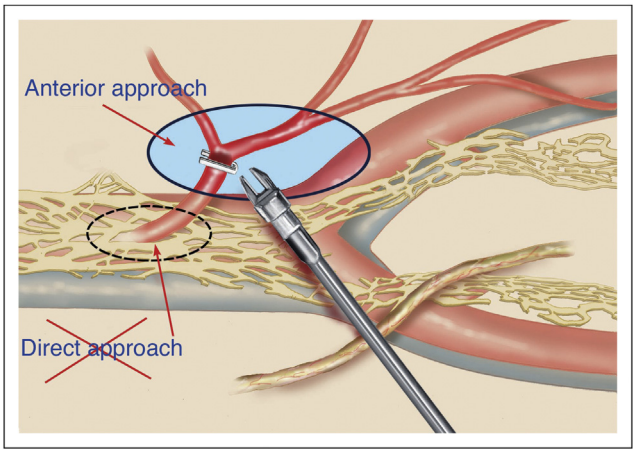
1 Inferior mesenteric lymphadenectomy: preservation of the inferior mesenteric plexus

The sigmoid colon is drawn vertically and anteriorly, tenting up the inferior mesentery artery (IMA). The posterior parietal peritoneum is incised in front of the right common iliac artery, a constant landmark, even in the obese patient. The incision is pursued from below upward, parallel to the aorta. The IMA should then be ligated 1.5 cm from its origin, thus preserving the nerve fibers of the inferior mesenteric plexus that lie on the anterior aspect of the aorta.
Danger: incision of the peritoneum just below the origin of the IMA puts you in direct contact with the abdominal aorta, which increases the risk of dividing or injuring the nerves during pre-aortic dissection.



2 Retro-rectal dissection: preservation of the superior hypogastric plexus and the hypogastric nerves

The peritoneal incision is continued distally down to the junction between the mesosigmoid and mesorectum. The retro-rectal space is entered at the level of the sacral promontory in the plane that separates the pre-hypogastric plexus behind from the hypogastric nerves (HN) in the rectal visceral fascia, in front. Dissection begins in the bifurcation at the origin of the HN and continues downward along the midline, then laterally. The correct plane is when dissection stays in front of, not within, the alveolar tissue that separates the two conjunctive tissue planes, so not to dissect behind the HN. At the level of S4, the rectal visceral leaf and the posterior parietal presacral leaf join to form the recto-sacral ligament, the division of which opens the terminal part of the posterior dissection of the lower rectum, exposing the levator muscles.
Dangers:

- one should not try to dissect and control the nerve structures as if they were somatic nerves: the autonomous nerves can be seen by transparency but should remain distant from the plane of dissection behind the fascia that covers them;
- beware of dissection behind the presacral fascia, which endangers both the HN and the presacral veins.