Vaginal reconstruction after pelvic exenteration with a vertical deep inferior epigastric perforator flap in 10 steps

ABSTRACT
Pelvic exenteration is a radical and challenging surgery requiring a functional reconstruction after pelvic organ resection and, to date, it remains the only treatment with curative intent in selected cases of gynecological cancer relapse previously treated with radiotherapy. Organ replacement including vaginal reconstruction has evolved parallel to the refinement of surgical resection and represents a major goal. The advantages of vaginal reconstruction after pelvic exenteration include anatomical and functional reconstruction which would optionally allow sexual intercourse, better patients’ quality of life, self-esteem, and body image, and lower long-term postoperative complications related to ‘empty pelvis syndrome’. Among the different techniques described for vaginal reconstruction, the vertical rectus abdominis myocutaneous (VRAM) flap represents the most commonly employed technique due to its surgical simplicity and the low rate of immediate postoperative complications. The main constraint of this technique is related to fascia and muscle harvesting, which can compromise the abdominal wall integrity in the long term. The deep inferior epigastric perforator (DIEP) flap was described for vaginal reconstruction as a technique which allowed the sparing of the muscle and the fascia from the abdominal wall, hence, reducing the rate of donor site complications. In addition, this technique does not require vascular anastomoses and, therefore, the risk of thrombosis is low. In this video, vaginal reconstruction with the DIEP flap has been standardized in the 10 following steps:

Step 1: Patient selection
Step 2: Preoperative doppler perforator identification
Step 3: Midline incision
Step 4: Perforator artery dissection
Step 5: Skin flap harvesting
Step 6: Anterior rectus abdominis muscle fascia opening
Step 7: Transmuscular flap transposition
Step 8: Inferior epigastric artery skeletonization
Step 9: Flap conformation for vaginal reconstruction

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Step 10: Postoperative care

The sequences correspond to different patients who underwent an anterior or total pelvic exenteration followed by complex pelvic and urinary reconstruction for gynecologic malignancies.

To summarize, the DIEP pedicled flap for vaginal reconstruction represents a good alternative to the VRAM flap since it minimizes donor site complications and its elasticity is higher. However, DIEP harvesting demands a long training and high-level surgical skills, requiring a multidisciplinary surgical team including oncologic reconstructive surgeons.

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