Pedicle TRAM Flap Breast Reconstruction

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Indications

1. To reconstruct the breast following total mastectomy
2. Desire to have autologous tissue
3. To improve the contour of the anterior abdominal wall

Essential Steps

1. Consider preoperative imaging with CTA or MRA if high risk or if with previous abdominal incisions.
2. The author preference is to use the ipsilateral flap; however, the contralateral flap is also acceptable.
3. A muscle-sparing pedicle TRAM flap or a full-width pedicle TRAM can be performed.
4. Patients must be informed about the risks and benefits of these procedures.
5. Consider VTE prophylaxis.

Preoperative Markings

1. Mark the ASIS, vertical midline, and proposed upper and lower abdominal incisions.
2. Consider delineation of the usual course of the deep inferior epigastric artery and vein on the abdominal wall.
3. Mark the inframammary fold and sternal midline.

Intraoperative Details

1. Place the patient in the supine position.
2. General anesthesia, Foley catheter, and pneumatic compressions.
3. Prep and drape the patient.
4. Incise upper abdominal skin and undermine to xiphoid process.
5. Partially flex the patient and delineate the location of the lower abdominal incision.
6. Begin flap elevation in a lateral to medial direction preserving an island of perforators.
7. Include a segment of the rectus abdominis muscle (MS-1 or MS-2) or the entire width of the rectus abdominis muscle (MS-0) with the adipocutaneous flap.
8. Create a communicating subcutaneous tunnel between the abdominal and breast compartment.
9. Incise the inferior aspect of the rectus abdominis muscle.

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10. Elevate and tunnel the TRAM flap into the breast space.
11. Shape and inset the TRAM flap.
12. Repair the anterior rectus sheet with or without surgical mesh.
13. Close the layers of the anterior abdominal wall.

Postoperative Care

1. Control blood pressure and pain.
2. The patient is seen in every 4 h for the first 24 h to monitor the flap.
3. Advance diet and begin ambulation on postoperative day 1.
4. Dressings are usually removed on postoperative day 2.
5. Patient may shower on postoperative day 3.

Possible Complications

1. Bleeding
2. Infection
3. Scar
4. Flap failure
5. Abdominal bulge/hernia
6. Delayed healing
7. Asymmetry
8. Seroma
9. Infection
10. Poor cosmetic result
11. Further surgery

Operative Dictation

Diagnosis: Acquired absence of breast status post unilateral mastectomy

Procedure: Immediate unilateral breast reconstruction with a pedicle TRAM flap

Indications

This is a middle-age woman with unilateral breast cancer. She has decided to have a unilateral skin-sparing mastectomy and immediate reconstruction with a pedicle TRAM flap. She has been informed of the risks and benefits of this operation that include but are not limited to bleeding, infection, scar, total flap failure, partial flap failure, fat necrosis, abdominal bulge or hernia, seroma, delayed healing, asymmetry, poor cosmetic result, and further surgery. She understands the risks and wishes to proceed.

Description of the Procedure

Following informed consent, the patient was marked in the holding area. The markings included the skin-sparing mastectomy and the abdominal donor site. The anterior superior iliac spine was palpated and marked bilaterally. The midline of the chest and abdomen was delineated. A line was drawn from the upper edge of the umbilicus to the ASIS marks bilaterally. The inferior extent of the flap was approximated and delineated.

The patient was then transported to the operating room and placed in the supine position under general endotracheal anesthesia. Foley was inserted, pneumatic compression garments were applied, and intravenous antibiotics were administered. The patient was prepped and draped in the usual sterile fashion. The mastectomy was performed by the general surgeon and will be dictated separately by them. When I entered the room, there was an acquired absence of the breast. The mastectomy specimens were approximately 650 g each. The patient was re-prepped and draped and new surgical instruments were obtained.

The abdominal markings were re-delineated. A #10 scalpel was used to incise the upper abdominal skin. Electrocautery was used to dissect through the fat to the level of the anterior rectus sheath. Hemostasis was achieved using electrocautery. The upper abdominal skin flap was elevated toward the xiphoid process leaving the loose areolar tissue on the fascia intact. A subcutaneous tunnel communicating the abdominal space with the breast space was created on the right and left sides. The tunnel was located along the medial position of the mastectomy pockets. The medial sternal attachments were not violated.

The patient was then flexed approximately 30° and the inferior aspect of the flap was delineated. A #10 scalpel was used to incise the lower

abdominal skin. Electrocautery was used to dissect to the level of the anterior rectus sheath. The superficial inferior epigastric veins were identified and a 3–4 cm segment was preserved with the flap. The midline of the flap was divided. The umbilicus was incised and dissected along its stalk to the base. We then began to elevate the bilateral flaps from a lateral to medial direction using a low-set electrocautery. The loose areolar fascia over the anterior rectus sheath was preserved. The linea semilunaris was identified bilaterally. The dissection continued until the lateral row of perforators was identified. The medial row of perforators were identified and preserved. The fascial island of perforators was delineated circumferentially. Low-set cautery was used to incise the anterior rectus sheath over the rectus abdominis muscle taking care not to injure the perforators. The anterior rectus sheath was incised in a cephalad direction along the midmuscle toward the costal margin. The anterior sheath was elevated off the rectus abdominis muscle medially and laterally. The plane between the rectus abdominis muscle and the posterior rectus sheath was entered, and the course of the deep inferior epigastric artery and vein was palpated and appreciated. A Doppler was used to determine the cephalad course of the superior epigastric artery and vein and marked on the surface of the muscle. The primary source vessel would be included in the muscle segment that would be harvested with the flaps. The caudal aspect of the medial two thirds of the rectus abdominis muscle below the fascial island was divided using electrocautery. The deep inferior epigastric artery and vein were divided bilaterally. A muscle-sparing TRAM flap (MS-1) was then elevated in a cephalad direction preserving the innervated lateral segment of the rectus abdominis muscle. The dissection proceeded to the costal margin. The MS-1 pedicle TRAM flap was tunneled into the ipsilateral breast space bilaterally. The rectus abdominis muscle was inspected to ensure that it was not twisted or kinked. The TRAM flap was positioned such that the cut edge of zone 1 was along the sternal border. The color and capillary refill of the flap were noted throughout the procedure to ensure no venous congestion or arterial occlusion. Arterial and venous bleeding at the cut edges of the flap was noted to ensure good inflow. The patient was flexed about 30° and the TRAM flap was temporarily inset. The visible skin territory was delineated and the periphery of the flap was de-epithelized using scissors. The space was irrigated and hemostasis was ensured. A closed suction drain was inserted. The TRAM flap was permanently inset using dermal and subcuticular monofilament absorbable sutures.

Attention was redirected to the abdomen. The anterior rectus sheath was reapproximated using a 0-gauge monofilament nonabsorbable suture in a figure-of-eight fashion. Both leaflets of the anterior rectus sheath were reapproximated. The degree of tension on the fascial closure was assessed to determine if a reinforcing mesh would be necessary. A second row of suture was placed to further reinforce the closure in a running continuous manner. Contralateral fascial sutures were placed as necessary to balance the abdominal wall and to centralize the umbilicus. The space was irrigated and hemostasis ensured. Two closed suction drains were inserted. The new umbilical position was delineated. Layered closure was completed using a 2-0 absorbable monofilament in Scarpa's layer, 3-0 absorbable monofilament in the dermis, and a 4-0 absorbable monofilament as a subcuticular. The umbilicus was exteriorized at the new site and sutured in place using 3-0 and 4-0 sutures in the dermis and skin, respectively. Appropriate dressings were applied and the suction was applied to the drains. The patient tolerated the operation well without complications; needle and sponge counts were correct.

Suggested Reading

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