



Combined Use of Anterolateral Thigh and Gluteal Fold Flaps for Complex Groin Reconstruction

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Summary: We present a case of an epithelioid sarcoma of the right groin in which wide resection resulted in a complex groin defect involving the full thickness of the abdominal wall and the perineum. We reconstructed the defect using a combination of pedicled anterolateral thigh (ALT) flap and gluteal fold flap. The functional and aesthetic results were satisfactory. The ALT flap with a robust iliotibial tract is the flap of choice for abdominal wall reconstruction; however, the area covered by the skin island of the flap is restricted because the skin island is tethered to the iliotibial tract. In such cases, a gluteal fold flap is ideal for an ALT flap. Therefore, using a combination of a pedicled ALT flap and a gluteal fold flap could be a reliable option for the reconstruction of a complex groin defect. (*Plast Reconstr Surg Glob Open* 2015;3:e541; doi: 10.1097/GOX.0000000000000525; Published online 20 October 2015.)

The reconstruction of complex groin defects is a challenging issue because of the high complication rate and the adjacency of vital structures, such as the femoral vessels, femoral nerve, abdominal wall, and perineum.^{1,2} Suitable flap selection, therefore, is imperative to secure wound closure and good functional results in the management of complex groin defects. In particular, the pedicled anterolateral thigh (ALT) flap is the workhorse flap for abdominal wall reconstruction.^{3,4} The robust iliotibial tract can be incorporated into the flap so as to restore abdominal wall integrity to prevent herniation and bulging. However, if the skin defect is extensive, coverage by an ALT flap alone may be insufficient. To our knowledge, no recon-

structive strategy has been established for such a complex defect.

Here, we present a case of a groin epithelioid sarcoma in which wide resection resulted in a complex groin defect involving the full thickness of the abdominal wall and the perineum. We were able to successfully reconstruct the defect with a combination of a pedicled ALT flap and a gluteal fold flap.

CASE REPORT

A 64-year-old woman presented with a painless mass in her right groin. The mass was resected at another hospital and it was histologically diagnosed as a proximal-type epithelioid sarcoma. She was referred to our hospital for further treatment. Preoperatively, the location of dominant perforator and vascular pedicle of ALT flap was assessed with color Doppler ultrasonography in the same posture as the actual surgery.

After placing the patient in the lithotomy position under general anesthesia, en bloc resection of the residual tumor with a wide curative margin was performed. The size of the soft tissue defect involving the perineum was 19 × 13 cm and that of the full-thickness abdominal wall defect was 18 × 10 cm (Fig. 1). An 11 × 5-cm gluteal fold flap was harvested

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from her right buttock (Fig. 2). The flap was transposed to the right perineal defect. Subsequently, a 17×7.5-cm pedicled ALT flap with a 20×10-cm iliotibial tract was designed eccentrically on her right thigh. The flap was elevated based on a septocutaneous perforator, without harvesting the vastus lateralis muscle. The elevated flap was transposed to the groin defect through the tunnel beneath the rectus femoris muscle, the sartorius muscle, and the inguinal ligament. The vascularized iliotibial tract was inset, placed in an intraperitoneal position, and sutured robustly to the respective remnants of the rectus sheath and the external oblique muscle (Fig. 3). The residual skin defect was reconstructed with the skin island of the ALT flap. Both donor sites of the flaps were closed primarily.

Minor wound dehiscence occurred between the gluteal fold flap and the labial wall. However, with conservative therapy, the dehiscence healed well 1 month after the operation. After 14 months of follow-up, the patient has remained disease free without functional impairment and herniation (Fig. 4).

DISCUSSION

The main objective of full-thickness abdominal wall reconstruction is to restore the musculofascial continuity of the abdomen so as to support abdominal contents without herniation. Several pedicled flaps, such as rectus abdominis,¹ tensor fasciae latae,⁵ external oblique,⁶ and ALT flaps,^{1,3,4} have been used for this purpose, depending on the defect size and location. Among these pedicled flaps, the ALT flap has been the preferred method, especially for lower abdominal wall defects.¹ The major advantage of the ALT flap is the presence of a robust and vascularized iliotibial tract, which minimizes the risk of herniation and obviates the use of synthetic materials.³

The extension of the skin defect to the perineal region was the most difficult issue related to reconstruction in the present case. This type of defect could not be covered solely with an ALT flap because the mobility of the skin island of the flap is quite limited. When the ALT flap is used for abdominal wall reconstruction, the skin island is tethered to the iliotibial tract because they cannot be separated from



Fig. 1. Intraoperative appearance after the resection of right groin epithelioid sarcoma.

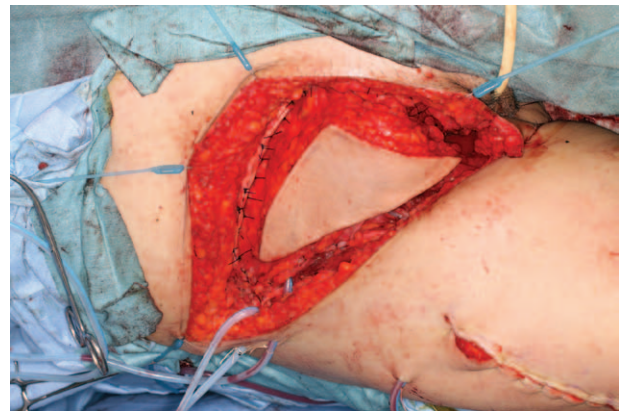


Fig. 3. Intraoperative appearance after abdominal wall reconstruction with the iliotibial tract attached to the anterolateral thigh flap.



Fig. 2. Design of the gluteal fold flap.



Fig. 4. Appearance at 9 months after the operation.

each other. We solved this problem by adding another flap to reconstruct the perineal soft tissue defect.

In the present case, we used a gluteal fold flap in combination with an ALT flap. The gluteal fold flap is the flap of choice for perineal reconstruction, especially after radical vulvectomy. This flap can be harvested with relatively fewer technical difficulties, and it offers other advantages including appropriate thickness of tissue for perineal coverage, acceptable sensory recovery, anatomical recontouring of the perineum, and inconspicuous donor-site scar. In addition, the gluteal fold flap has several suitable properties for use as a companion of the ALT flap. First, the donor site of a gluteal fold flap can undergo primary closure even if a large ALT flap is harvested simultaneously. Because of the opposite orientations of the ALT flap, which is longitudinal to the limb axis, and the gluteal fold flap, which is transverse to the limb axis, the closures of the donor sites do not interfere with each other and can be achieved without undue tension. Other alternatives for perineal reconstruction, such as the posterior thigh flap and the gracilis musculocutaneous flap, are usually longitudinally oriented and unsuitable for use in combination with the ALT flap. Second, both gluteal fold flap and ALT flap can be elevated with the patient in the lithotomy position, thus precluding positional change during the reconstruction.

The combined use of a pedicled ALT flap and bilateral gluteal fold flaps has been reported previously in the reconstruction of a pelvic-perineal defect.⁷ However, to our knowledge, the use of this combination for a complex groin defect including the abdominal wall has not been reported yet. In the present case, we were able to achieve satisfactory functional and aesthetic results. This combination could be a reliable option in the reconstruction for complex groin defect.

CONCLUSIONS

We reported the case of successful reconstruction of a complex groin defect involving the full thickness of the abdominal wall and the perineum with the combined use of a pedicled ALT flap and a gluteal fold flap. This combination could be a reliable option for the reconstruction of complex groin defects.

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