The superomedial thigh flap in scrotal reconstruction: Technical steps to improve cosmetic results

Ayat Allah Oufkir¹,², Mohammed Fadl Tazi²,³, Mohammed Noureddine El Amine El Alami¹,²
Departments of ¹ENT and Plastic Surgery, ²Urology, Hassan II Hospital University of Fes, ³Anatomy Laboratory, Faculty of Medicine and Pharmacy of Fes, Sidi Mohammed Ben Abdellah University, Morocco

ABSTRACT

The superomedial thigh flap is a reliable and easy method for scrotal reconstruction described in 1980 and infrequently reported in the literature since its description. We used it for four patients presenting scrotal defects after Fournier’s gangrene with some technical modifications to improve the esthetic results and to facilitate the closure of the donor area. We describe the technical steps and the results.

Key words: Scrotal reconstruction, flap, Fournier’s gangrene, thigh

INTRODUCTION

The supero-medial thigh flap was described in 1980 by Hirschowitz¹ for the reconstruction of anterior perineal defects after tumor excision, infection or lymphedema surgery. We used this flap with some modifications for perineo-scrotal reconstruction in four patients after Fournier’s gangrene. We describe the technical steps for better cosmetic results.

Surgical technique

With the patient in the lithotomy position, the outlines of the flap are marked. The shape of the flap is roughly rectangular, located on the upper medial thigh, adjacent to the defect with an anterior pedicle that overlies the adductor longus muscle. The width of the flap corresponds to the height of the defect. From the inferolateral border of the defect, the incision is carried as an arc along the lower edge of the thigh as the inferior border of the flap. The caudal border of the flap is parallel to the cranial edge. Up to 10 × 8 cm tissue can be transferred on each thigh. A ‘Z plasty’ is marked to close the donor area defect [Figure 1].

After debridement of the defect, the flap is elevated in the subcutaneous plane distally, until the gracilis and the adductor longus muscles, where the elevation must be subfascial, preserving the maximum large perforating vessels at the base of the flap. The flap is then rotated. Two to three deep dermis sutures with ‘0’ Vicryl are placed in the center of the flap to fix it to adductor longus and gracilis insertions on the pubis. This creates the inguinal fold [Figure 2].

For reconstruction of the whole scrotum, we use two flaps that are sutured in the midline. This suture, thanks to the rotation movement, produces a saclike form for the tests [Figure 3]. The donor area has a triangular defect in postero-inferior region which is closed by the transposition of a triangular flap from the posterior thigh in the manner of a Z plasty [Figure 1]. The elevation of this flap is performed in the subcutaneous plane. Suction drainage is not necessary.

Analgesics and antibiotics are used in the postoperative period. Early mobilization is encouraged and no anticoagulation is needed if no risk factors are identified.

RESULTS

We used the supero-medial thigh skin flap according to the technique described above in four patients presenting with scrotal defects after Fournier’s gangrene. The mean age
was 39 years and only one patient was diabetic. The mean surface of the defect was 97 cm². Seven flaps were used and in one case, a grafted gracilis muscle flap was used to protect a urethral mucosal defect. The mean operative duration was 70 minutes. There were no complications and the viability of the flaps was excellent even in the diabetic patient. Sensations on the neoscrotum, as assessed by a Weber test, were near normal.

**DISCUSSION**

Reconstruction of the scrotum is essential not only for cosmetic reasons but also for functional and psychological reasons. Many authors use split skin grafts for this purpose. While this thin cover helps keep the testicle temperature low and may aid spermatogenesis,[2] the free skin graft does not take if the testes have been stripped of the tunica vaginalis, and when the graft take is satisfactory, it commonly undergoes contraction.[3] The cosmetic results are less acceptable and lead to a lack of protection and increased vulnerability.[3] On the other hand, the use of bulky flaps elevates the local temperature and impairs spermatogenesis.[4,5] Debulking of such flaps has been proposed and has a good impact on testicular function.[6] For these reasons, the superomedial thigh flap using the thin skin of the inner proximal thigh seems to be a good choice for scrotal coverage, except in obese patients. Wang et al used skin grafts for young patients who wished to remain fertile and flap reconstruction for older patients and after Fournier’s gangrene because of the excellent aesthetic result and satisfactory sexual function.[2]

This flap was described by Hirshowitz as a probable arterial flap with good vascular support from three main sources: a) the deep external pudendal artery; b) anterior branch of the obturator artery and c) the mid femoral circumflex artery.[1] Since this initial report, only four authors[3,7,10] have described its use in the English literature, mostly for scrotal reconstruction after Fournier’s gangrene. Matti and Crawford[10] used it for urethral reconstruction in epispadias and hypospadias. All authors used the conventional technique of Hirshowitz and confirmed the reliability of the flap and the quality of the transferred tissue, but the cosmetic results remain “reasonable”[3,8,9] since the neoscrotum does not have any skin folds. Lee et al.[7] obtained a very good appearance when they used two small supero-medial thigh flaps (5 × 7 cm) for a scrotal defect that spared about one third of the scrotal skin. We believe it was an extensive mobilization of the scrotal residual skin more than a scrotal reconstruction by the thigh flaps.

We modified the design and movement of the flap from a transposition to a rotation flap. Rotation moves the tissue to the area where it is most needed, the central part of the scrotum, and makes closure of the donor area easier. This rotation produces a triangular donor defect that can be closed by an opposite rotation flap or a transposition flap. We choose the transposition in a Z plasty manner to obtain better redistribution of excess skin on the posterior border of the flap. In the original technique of Hirshowitz, the donor area is closed directly if there is sufficient skin laxity (it is rarely possible in young patients) or a skin graft is applied. The creation of the inguinal folds is accomplished by deep

**Figure 1:** (a) The design of a right supero-medial thigh flap for a scrotal defect with a right test exposure (blue line). The discontinued red line corresponds to the design of the Z plasty for the closure of the donor area. (b) The design of bilateral supero-medial thigh flaps for the reconstruction of the whole scrotum (blue lines). The two asymmetric Z plasties for closure of the donor areas are marked with red lines.
dermal sutures to the muscle origin on the pubis. The result is consistent as can be seen in Figure 4. Use of the flap ensures virtual normal sensation since both the genital branch of the genitofemoral nerve and the ilioinguinal nerve are likely to be preserved.[1]

With these modifications, the cosmetic result is better with a natural appearance of the neoscrotum and no distortion created by closure of the donor area in the upper medial thigh. There is no reduction in the vascular flow, no sensory loss and the procedure is simple.

Like other authors [3,7,8] we believe that the supero-medial thigh flap is a good option for scrotal reconstruction in Fournier’s gangrene. It’s as easy and time consuming as a skin graft with a much better appearance, and easier than the fascio-cutaneous, muscle, musculocutaneous or perforator flaps used by many authors with a better quality of transferred tissue (thin, pliable and above all sensate).

CONCLUSION

The supero-medial thigh skin flap is an easy, safe and sensate flap that permits coverage of the entire scrotum in infectious or post tumor excision defects. Our modifications permit a better cosmetic result.

REFERENCES


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