

Surgical Technique

The Inferior Gluteal Flap - Breast Reconstruction - Anatomic Dissection on a Cadaver

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REZUMAT

Lamboul gluteal inferior - reconstrucția sânelui - disecție anatomică pe cadavru

Sânul reprezintă expresia frumuseții și fertilității din cele mai vechi timpuri. Reconstrucția estetică a sânelui a fost și este o provocare pentru chirurgii plasticieni.

Materiale și metodă: Tehnici microchirurgicale de disecție și transfer liber. Disecția unui cadavru proaspăt de sex feminin, în vârstă de 67 de ani, în vederea recoltării din regiunea fesieră a lamboului gluteal inferior folosind lupe microchirurgicale. Pentru redarea etapelor recoltării lamboului gluteal inferior s-a folosit o cameră digitală performantă.

Rezultatul: Desenarea și recoltarea lamboului gluteal inferior, urmate de închiderea prin sutura a defectului rezultat.

Concluzii: Avantaje și dezavantaje ale utilizării lamboului musculocutaneograsos gluteal inferior pentru reconstrucția sânelui amputat.

Cuvinte cheie: disecție microchirurgicală, cadavru proaspăt, lambou gluteal inferior, reconstrucție sân

ABSTRACT

The breast has been the expression of beauty and fertility since ancient times. The aesthetic reconstruction of the breast is and has been a challenge for plastic surgeons.

Material and method: Microsurgical techniques of dissection and free transfer are commonly used.

During the dissection of one fresh, female cadaver, age 67, a free inferior gluteal flap was taken from gluteal region, using loupe magnification. The dissection preparations were photographed with a high definition camera.

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Result: Delimitating and harvesting the inferior gluteal flap, followed by the closure by suture of the resulting defect.

Conclusions: The advantages and disadvantages of using the inferior gluteal flap for the reconstruction of the amputated breast

Key words: microsurgical dissection, fresh cadaver, inferior gluteal flap, breast reconstruction san

INTRODUCTION

The breast has been the expression of beauty and fertility since ancient times. The aesthetic reconstruction of the breast is and has been a challenge for plastic surgeons. Microsurgical techniques of dissection and free transfer are commonly used.

MATERIALS AND METHODS

During the dissection of one fresh, female cadaver, age 67, a free inferior gluteal flap was taken from gluteal region, using loupe magnification. The dissection preparations were photographed with a high definition camera.

RESULT

The harvesting of the inferior gluteal cutaneous fat-pad flap and the closure of the donor area in layers. Delimitating and harvesting the inferior gluteal flap. The middle of the posterior side of the thigh (halfway between the ischial tuberosity-I and greater trochanteric crest - CG) is marked (Fig. 1).

This is connected to the half-point between the posterior superior iliac spine – S.I.P. and the ischial tuberosity-I, in order to obtain the trajectory of a main branch of the inferior gluteal artery, which contributes to the vascularization of the posterior side of the thigh (Fig. 1).

Only the necessary amount of cutaneous fat tissue for the reconstruction of the breast must be harvested. The harvesting of an exaggerated amount may create a disagreeable deformity of the inferior gluteal donor area. (Fig. 2)

DISCUSSIONS AND CONCLUSIONS

Advantages: (1-6)

1. Most patients have enough tissue for reconstruction available in the gluteal region; it can be used for the unilateral or bilateral, simulta-



Figure 1. The posterior superior iliac spine – SIP, the ischial tuberosity-I, the greater trochanteric crest – CG



Figure 2. The flap is delimited centrally on the inferior gluteal fold, from the greater trochanteric until approximately 4 cm from the medial extremity of the inferior gluteal fold.



Figure 3. The lower extremity of the previously marked flap is incised by scalpel. The incision of the subcutaneous adipose tissue is continued. The deep dissection is continued until the subjacent gluteus maximus muscle is visible.



Figure 4. The incision of the lower extremity of the flap, dissected to the inferior edge of the gluteus maximus. Anchoring wires are used to obtain a better sight of the dissection area.



Figure 5. The extension of the incision of the tegument and the subcutaneous tissue on the middle of the posterior side of the thigh, to identify a main branch of the inferior gluteal vascular system, which contributes to the vascularization of the posterior side of the thigh. The vessels (the artery and the vein) are accompanied by the posterior femoral nerve of the thigh. The inferior gluteal vessels (their posterior branches) are ligated and sectioned at the inferior edge of the flap. The longer vessels are sectioned because their tensing will indicate their retrograde trajectory.



Figure 6. The main branch of the inferior gluteal vessels (the artery and the vein), which pass the gluteus maximus at its inferior edge.



Figure 7. The extension of the inferior gluteal vessels, accompanied by the posterior femoral nerve of the thigh, enter the posterior side of the gluteus maximus.



Figure 8. The dissection and separation of the inferior epigastric vessels (their posterior extension) from the posterior cutaneous femoral nerve.

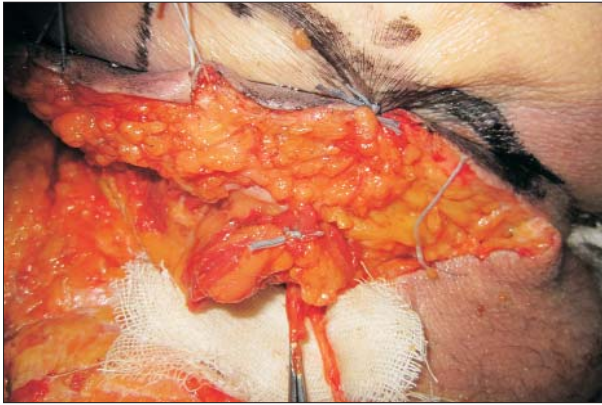


Figure 9. The retrograde trajectory of the main branches (the artery, accompanied by the vein) of the inferior gluteal vessels on the posterior side of the gluteus maximus is followed until these branches arise from the inferior gluteal vessels. By the tensing up of the branches of inferior gluteal vessels (accompanied by the posterior cutaneous femoral nerve), their trajectory is identified, avoiding their accidental injury during the retrograde dissection.



Figure 10. The posterior side of the inferior gluteal flap is dissected in the area between the gluteus minimus muscle and the subjacent muscles. A portion of the gluteus minimus muscle will be lifted along with the superjacent cutaneous fat-pad flap, to protect the vascular pedicle and its musculocutaneous perforators.

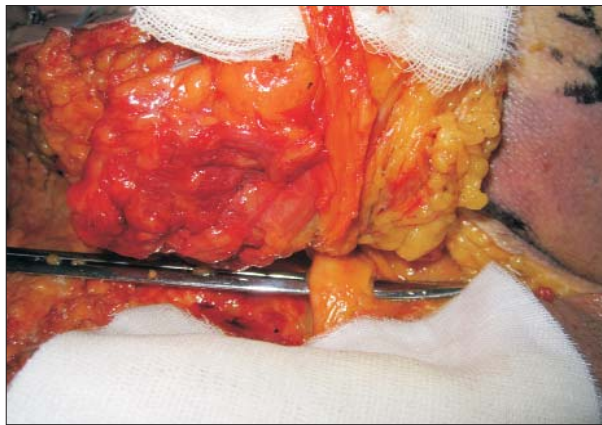


Figure 11. The dissection is continued to preserve the sciatic nerve (identified and exposed in the dissection area's profundity) and to prevent its accidental injury. The inferior gluteal vessels (their extension) are identified, along with the posterior cutaneous femoral nerve that accompanies them on the posterior side of the gluteus maximus muscle (according to the size of the dissection and its progressive lifting).



Figure 12. The incision of the superior edge of the flap is continued along the previously made markings. The lateral extremities of the flap are dissected and lifted. The tensing of the branches of the inferior gluteal vessels (previously sectioned and ligated) allow us to identify their retrograde trajectory.



Figure 13. The inferior gluteal cutaneous fat-pad flap, dissected and partially lifted along with a portion of the gluteus maximus muscle, which carries the vascular pedicle on its posterior side.



Figure 14. The gluteus maximus muscle is sectioned, and only the portion containing the vascular pedicle is included in the flap. The rest of the gluteus maximus is preserved and will remain in situ.

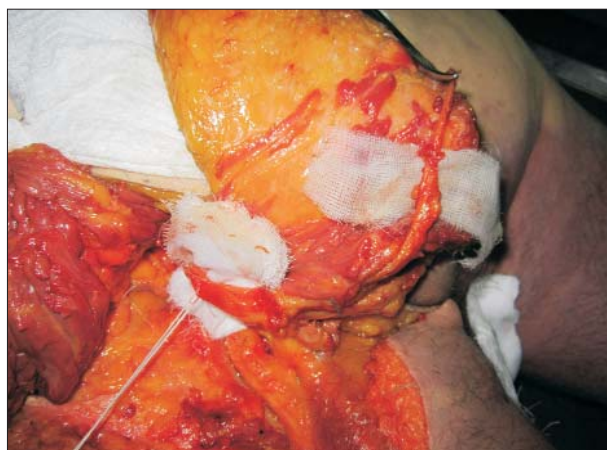


Figure 15. The superior gluteal vessels are identified at the superior edge of the flap. The tensing of the superior gluteal pedicle facilitates its dissection towards its origin (situated in the lower part of the piriformis muscle)

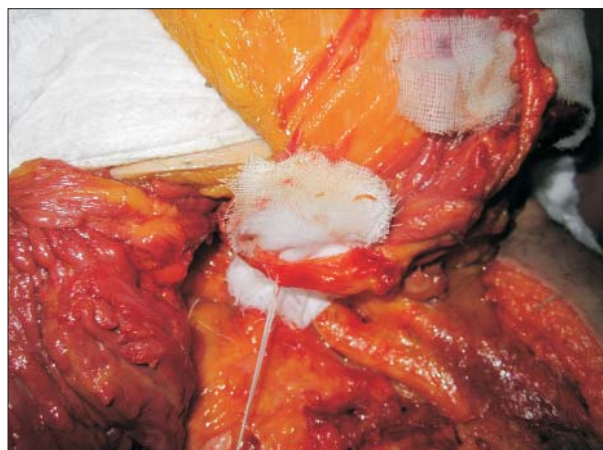


Figure 16. A main vascular branch arises from the inferior gluteal vascular system. It rolls along the posterior side of the gluteus maximus muscle until its inferior edge, then on the posterior side of the thigh, contributing to its vascularization. At the inferior edge of the thigh, this vascular branch has been ligated and sectioned (longer). Through tensing, this distally sectioned vascular branch has served as a guide for the retrograde dissection and the identification of the origin of the inferior gluteal vascular system.

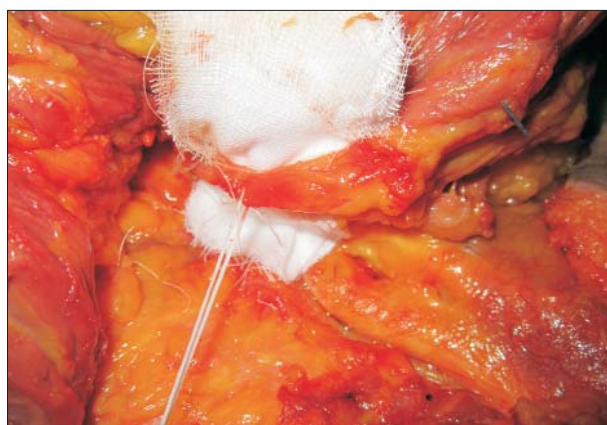


Figure 17. The inferior gluteal artery and the inferior gluteal vein.

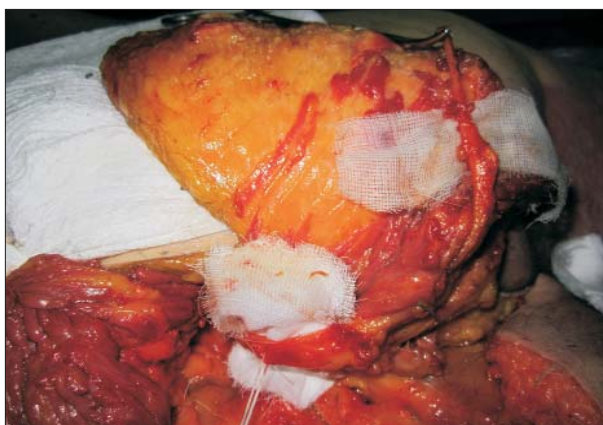


Figure 18. The inferior gluteal flap, anchored only by the inferior gluteal vessels, which perfuse the flap until the preparation of the vessels of the receptor system (preferably internal mammary).



Figure 19. The posterior side of the inferior gluteal cutaneous fat-pad flap, harvested with a muscle sheath which ensures the protection of the inferior gluteal vascular pedicle and its musculocutaneous perforators.



Figure 20. The inferior gluteal vasculonervous pedicle (along with the muscle sheath), containing the inferior gluteal artery, the inferior gluteal vein and the posterior cutaneous femoral nerve (which will be sectioned upon transferring the flap to the receptor area).



Figure 21. The dorsal side of the inferior gluteal flap. The inferior gluteal vascular pedicle and the posterior femoral nerve.



Figure 22. The defect in the donor area resulting from the harvesting of the inferior gluteal flap, the preservation of the gluteus maximus muscle.

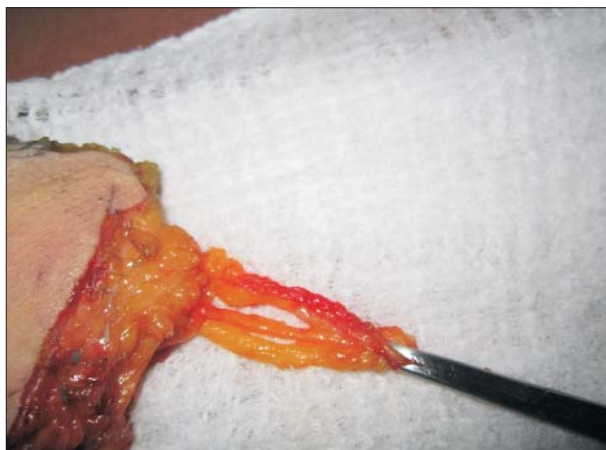


Figure 23. The dorsal side of the harvested flap together with the inferior gluteal artery, the inferior gluteal vein and the posterior femoral nerve.



Figure 24. The closure of the donor area in anatomic layers, with a minimal deformation of the donor area, by masking the scar in the inferior gluteal fold.

- neous or consecutive reconstruction of the breasts (1,6).
2. Although technically difficult to execute, the flap is based on a pedicle much longer than 8-10 cm (2,6).
 3. The inferior gluteal pedicle longer than the superior gluteal pedicle can be anastomosed with the thoracodorsal vessels (more anatomically constant and robust than the internal mammary vessels) (3).
 4. The scar in the donor area is insignificant and masked by the inferior gluteal fold (2).

Disadvantages:

1. The dissection and lifting of the flap is more laborious (1,2,6).
2. It cannot be performed by another operating team at the same time as a mastectomy, because of the patient's position.
3. It's firmer, being less pliable, so the reconstructed breast is more difficult to mold (but the flap softens and rearranges in time, so that the final result is excellent) (1,3), it causes the deformation of the donor area (although it is minimal), visible especially when the patient is wearing tight pants.
4. Postoperative pain, generated by the injury of the sciatic nerve or by its insufficient cover after the harvesting of the gluteal flap (2,4,5,6).
5. In order to lift the inferior gluteal flap, the motor gluteal nerve must be sacrificed, and

occasionally also the posterior cutaneous nerve, and the dissection of the flap performed near the sciatic nerve may cause its injury; all these may cause a painful postoperative syndrome and the weakness of the inferior limb, with a long recovery time; though the scar in the donor area is the least obvious of all the autologous flaps, because of its potential nervous lesions, this is the last resort flap (used for the reconstruction of the breast with autologous tissue) (3,6).

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