

Myxoid liposarcoma resection and reconstruction with a pedicled gracilis muscle flap. A case report

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Case Report

Plastic Surgery



Background:

The pedicled gracilis muscle flap is a commonly used flap in reconstructive surgery. Its vascular pedicle originates from the medial circumflex femoral artery, branch of the profunda femoris artery or occasionally originates for the profunda femoris itself and can be reliably found in the septum between adductor magnus and adductor longus muscle. Its applications vary from pedicled to free and has a broad range of indications, such as regional reconstruction of lower abdomen, pubis, groin, perineum, ischium, including functional anal sphincter and vaginal reconstruction, and distant reconstruction for head & neck, including functional reconstruction for facial reanimation, as well as for upper & lower extremity, including functional reconstruction for muscle loss.

Muculocutaneous flaps are classified based on the Mathes-Nahai description according to the vascular pedicles that each muscle group contains. Thus, type 1 involves one vascular pedicle, type 2 involves 1 dominant and 1 minor pedicle, and type 3 involves two dominant pedicles, type 4 involves segmental pedicles and type 5 a dominant pedicle with several segmentals, thus taking into account that the gracilis muscle belongs to type II, being ideal for reconstructive surgery.

We present the case of a 75-year-old male with a local recurrence of a myxoid liposarcoma involving the inguinal región, the right lateral region of the penis, and the region of the right hemiscrotum. Patient underwent surgery to perform myxoid liposarcoma resection and reconstruction with a Pedicled gracilis muscle flap with adequate evolution in a period of 3 months.

Keywords: Mixoid liposarcoma, gracilis flap, groin reconstruction.

The first flaps of record date back to 600 BC when Sushruta Samita utilized local-regional flaps for nasal reconstruction. While a graft lives off of the nutrients from a wound bed, a flap is harvested with its own blood supply. Orticochea first described the gracilis flap as a pedicled myocutaneous flap in 1972. His work was expanded upon, and in 1972 Harri published a series of free gracilis flaps for various soft tissue injuries. Since then, the gracilis muscle flap has become one of the “workhorse” flaps for reconstructive surgeons. Because of its reliable pedicle, versatile nature, and low donor site morbidity, the gracilis flap can be utilized for an array of soft tissue defects.¹

The pedicled gracilis muscle flap is a commonly used flap in reconstructive surgery. Its vascular pedicle originates from the medial circumflex femoral artery, branch of the deep femoral artery or occasionally originates for the profunda femoris itself and can be reliably found in the septum between adductor magnus and adductor longus muscle. Its applications vary from pedicled to free and has a broad range of indications, such as regional reconstruction of

lower abdomen, pubis, groin, perineum, ischium, including functional anal sphincter and vaginal reconstruction, and distant reconstruction for head & neck, including functional reconstruction for facial reanimation, as well as for upper & lower extremity, including functional reconstruction for muscle loss.²

The gracilis muscle is easy to locate and prepare as a flap; It can be brought to the genital region and cover the testicles. It is an easily reproducible reconstruction technique and does not require microsurgical tactics. The donor site of this muscle flap presents little morbidity since the gracilis muscle is not essential for walking or adduction.³

Case report

A 75-year-old male who has a history of hypertension currently under control with a radical orchiectomy in 2022 secondary to myxoid liposarcoma. His condition began in 2017 with a tumor in the right testicle with an increase in its volume. A radical orchiectomy was performed in

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Figure 1. Local recurrence of liposarcoma.

December 2022 with an apparently favorable evolution.

The histopathology report was obtained which reported High-grade paratesticular malignant spindle cell neoplasm with histological image compatible with testicular liposarcoma with partial atrophy without neoplastic infiltration, surgical border with tumor

A Contrasted Tomography is shown which reports lung parenchyma with the presence of subsolid and calcified subpleural nodules.

During the patient's follow-up, local recurrence of the tumor was observed in October 2023, so the patient went to the oncosurgery service to dictate therapeutic conduct (figure 1).



Figure 2. Wide resection with safety margins of the tumor



Figure 3. Hernioplasty with lichtenstein technique.

In March 2024, a wide resection with safety margins of the tumor was performed, which involved the right lateral region of the penis, the right inguinal region and the region of the right hemiscrotum (figure 2). Subsequently, inguinal hernioplasty was performed with the Lichtenstein technique (figure3), We made an incision in the medial region of the thigh, the septal junction between the gracilis and adductor longus was identified, This space was then entered by retracting the two muscles from each other, and the pedicle to the gracilis was identified, The gracilis muscle-tendon

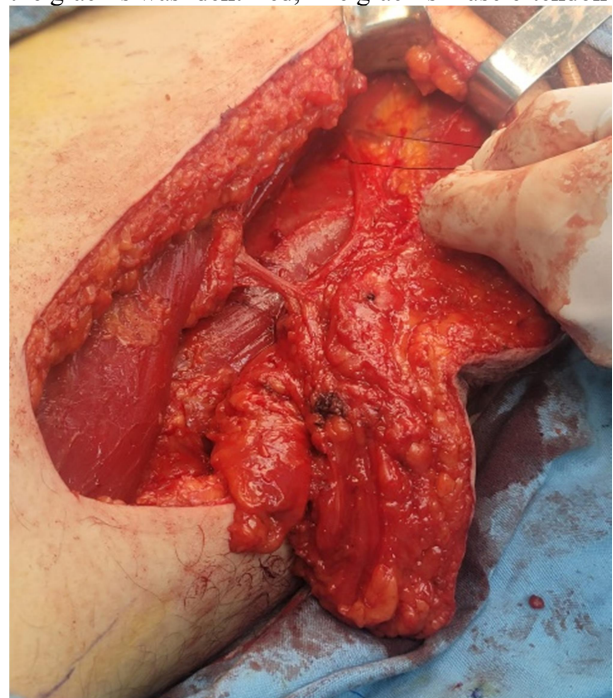


Figure 4. Gracilis muscle separated from the adductor, preserving the dominant pedicle.



Figure 5. The flap is tunneled and positioned appropriately

unit is then divided, and the gracilis muscle is finally separated from the adductor longus and adductor magnus muscles working from a distal to proximal direction. Minor pedicles were ligated with non absorbable suture silk 2-0 (figure 4), The flap is tunneled towards the defect to be covered and



Figure 6. Closure of the wound and a closed drainage

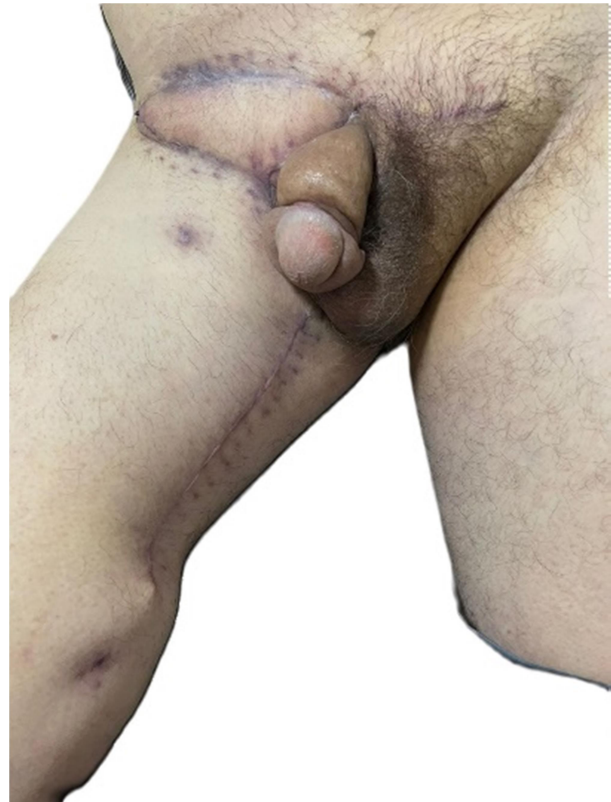


Figure 7. Integral surgical scar after 3 months

positioned appropriately (figure 5), Closure of the wound is done with a non absorbable suture nylon 3-0 and reconstruction with a Pedicled gracilis muscle flap is performed and a closure with a non absorbable suture nylon 3-0, leaving a closed drainage and was discharged after 3 days without having presented any early complications (figure 6).

The patient is followed up for a period of 3 months and is scheduled for outpatient consultation where an integral surgical scar is observed, with adequate vascularization and no evidence of tumor recurrence (figure 7). It is concluded that the Pedicled gracilis muscle flap is a really good alternative to cover large defects adjacent to the donor site.

Discussion

The first flaps of record date back to 600 BC when Sushruta Samita utilized local-regional flaps for nasal reconstruction. While a graft lives off of the nutrients from a wound bed, a flap is harvested with its own blood supply. Orticochea first described the gracilis flap as a pedicled myocutaneous flap in 1972.

His work was expanded upon, and in 1972 Harri published a series of free gracilis flaps for various soft tissue injuries. Since then, the gracilis muscle flap has become one of the “workhorse” flaps for reconstructive surgeons. Because of its reliable pedicle, versatile nature, and low donor site morbidity,

the gracilis flap can be utilized for an array of soft tissue defects.¹

As described by Mathes and Nahai, the gracilis has a Type 2 blood supply, one dominant pedicle with several minor pedicles. Its vascular pedicle originates from the medial circumflex femoral artery. Its applications vary from pedicled to free and has a broad range of indications, such as regional reconstruction of lower abdomen, pubis, groin, perineum, ischium, including functional anal sphincter and vaginal reconstruction, and distant reconstruction for head & neck, including functional reconstruction for facial reanimation, as well as for upper & lower extremity, including functional reconstruction for muscle loss.² The gracilis muscle is easy to locate and prepare as a flap; It can be brought to the genital region and cover the testicles. It is an easily reproducible reconstruction technique and does not require microsurgical tactics. The donor site of this muscle flap presents little morbidity since the gracilis muscle is not essential for walking or adduction.³

In a study published by saulChen, Fu, Chen and Chen (2010) a series of 50 patients reconstructed after Fournier's Gangrene. In 3 patients, the gracilis flap was used to cover testicles, as a musculocutaneous flap, and as a muscle flap associated with a partial skin graft. One of the musculocutaneous flaps presented partial necrosis, while the other 2 patients had a good evolution.⁴

Depending on the indication, the gracilis flap can be used as a local flap based on its arc of rotation for local wound coverage or reconstruction.⁵ With extended harvest techniques the widest aspect of the gracilis muscle rests directly in the femoral triangle. Thus this muscle can fill a fairly large defect. Liberal dissection of both sides of the adductor provides full circumferential view of the gracilis muscle vascular pedicle. If this important step is not completed, pedicle tension and flap ischemia can occur. Gracilis transposition is an effective option to cover exposed vessels or salvage prosthetic graft material. In appropriately selected patients with vascular reconstructions and groin infection, when complete graft removal and extra-anatomic bypass is not an acceptable option, gracilis muscle flap coverage is a viable alternative. The technique is relatively simple, and, in general, any resulting morbidity from gracilis muscle harvest is minimal.⁶ So it is concluded that the

Pedicled gracilis muscle flap is a really good alternative to cover large defects adjacent to the donor site.

Conclusion

The pedicled gracilis muscle flap is an effective option for local wound coverage or

reconstruction, most of surgeons prefer gracilis muscle because of its reliable pedicle, versatile nature, and low donor site morbidity, the gracilis flap can be utilized for an array of soft tissue defects and has a broad range of indications, such as regional reconstruction of lower abdomen, pubis, groin, perineum, ischium, including functional anal sphincter and vaginal reconstruction and it is easy to locate the muscle and prepare the flap in addition to the low morbidity that it presents.

Conflicts of interest

There was not conflict of interest during the case report.

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