The gastrocnemius muscle flap for coverage of soft tissue defect of the proximal third of lower leg

Ingo Schmidt

ABSTRACT

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To the Editor,

Postoperative soft tissue defect with exposure of relevant structures such as bone with or without osteosynthesis plates of the proximal third of lower leg represents a challenging problem. A 57-year-old male presented with a highly comminuted open fracture of the proximal right tibia (Figure 1A). First, the fracture was stabilized by knee joint-bridging external fixation. After four debridements and negative-pressure vacuum assisted closure (VAC) therapies including incorporation of polymethyl methacrylate (PMMA) beads containing gentamycin (Figure 1B), the pre-tibial soft tissue defect could be covered with a medial gastrocnemius muscle flap and additional splitted skin grafts (Figure 1C). Then, the fracture was definitively treated with open reduction and internal fixation (ORIF). After eight weeks of injury, there was uncomplicated fracture and wound healing with complete restoration of knee joint function (Figure 1D–E), and 12 weeks after injury the patient could be mobilized with full weight-bearing on the affected leg.

The use of local flaps for coverage of soft tissue defects of the proximal third of lower leg and knee is an option for treatment in patients who are not willing or healthy enough to undergo free microvascular tissue transplantation, and do not require microsurgical expertise. The use of the gastrocnemius muscle flap is one method of choice for reconstruction [1]. There is only one vasculonervous pedicle for each of both muscle heads composed of a sural artery and one or two veins,

and is classified as type I according to the classification of Mathes and Nahai [2]. It is possible to divide the muscle in two sections longitudinally according to the needs. However, the lateral head has to be rotated around the proximal fibula, therefore, it has a lower rotation angle than the medial head. There is an option to safely harvest a skin paddle overlying the muscle [3]. The gastrocnemius muscle flap is probably one of the safest flap, however, muscle flaps for reconstruction of legs are generally not free of any complications. Neale et al. [4] reported on major and minor complications in 32% of a total of 95 muscle flaps and they agreed that the causes were mainly technical errors, inadequate debridement, use of diseased and traumatized muscle, and unrealistic objectives. When

Figure 1: (A) Posteroanterior radiograph demonstrating highly comminuted fracture of proximal tibia, (B) Clinical photograph showing soft tissue defect at the ventral aspect of proximal tibia with incorporated polymethyl methacrylate beads, (C) Clinical photographs showing the harvest and transposition after skin grafting of the medial gastrocnemius head, (D) Posteroanterior and lateral radiographs demonstrating fracture healing after open reduction and internal fixation, (E) Clinical photographs showing uncomplicated wound healing and complete restoration of knee joint function.

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a gastrocnemius muscle flap is not indicated, the use of random pattern skin transposition flaps is one salvage option [5].

Keywords: Gastrocnemius muscle flap, Proximal third lower leg, Soft tissue defect

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Ingo Schmidt – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

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Conflict of Interest

Author declare no conflict of interest.

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REFERENCES

1. Le Nen D, Hu W, Liot M, Moineau G, Gerard R. Gastrocnemius medial flaps. *Interact Surg* 2007;2(2):118–27.
2. Mathes SJ, Nahai F. Classification of the vascular anatomy of muscles: Experimental and clinical correlation. *Plast Reconstr Surg* 1981 Feb;67(2):177–87.
3. McCraw JB, Fishman JH, Sharzer LA. The versatile gastrocnemius myocutaneous flap. *Plast Reconstr Surg* 1978 Jul;62(1):15–23.
4. Neale HW, Stern PJ, Kreilein JG, Gregory RO, Webster KL. Complications of muscle-flap transposition for traumatic defects of the leg. *Plast Reconstr Surg* 1983 Oct;72(4):512–7.
5. Haroon-Ur-Rashid, Hafeez K, Abbas K. Use of distally based random flap in the management of soft tissue defects in upper two thirds of leg. *J Pak Med Assoc* 2014 Dec;64(12 Suppl 2):S15–8.

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