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Case Report

Cross-leg flap after free flap failure: a case report

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ABSTRACT

The cross-leg flap is a technique that has been used for a long time to address defects in the distal third of the leg. Currently, the gold standard for these defects is free flap reconstruction. However, the success of microsurgery is not always guaranteed due to a wide range of extrinsic and intrinsic factors. In this study, we present the use of a cross-leg flap as an alternative in the case of free flap failure, performed in the plastic and reconstructive surgery department of the General Hospital of Mexico. The cross-leg flap represents a reliable, simple, and effective alternative when free flaps are not suitable or as a rescue in case of their failure, either due to extrinsic or patient-related causes.

Keywords: Cross-leg flap, Random flap, Free flap

INTRODUCTION

The treatment of defects in the distal third of the leg has evolved over time. In 1854, Hamilton described the cross-leg flap for chronic ulcers. During World War II, it gained popularity for defects in the distal third of the leg with exposure of structures, as documented by Stark in 1952.[1] In 1981, fasciocutaneous flaps were described by Ponten, modifying the cross-leg flap to a width: length ratio of 1:3.[2] Previously, cross-leg flaps had a 1:1 ratio, composed only of skin and subcutaneous tissue. Since the advent of microsurgery from the 1970s, this random flap ceased to be the first choice, and free flaps became the gold standard. However, it continues to be used as an alternative in centers without specialized microsurgery capabilities or for patients who are not candidates for free flaps due to inadequate vessel size or secondary trauma-related damage, as described by Pawan in 2008 in a series of 18 patients.[3] It has also been used as a salvage option in cases of free flap failure, as reported by Contedini and colleagues in 2012.[4]

The cross-leg flap is easy to perform, effective, requires less planning, and has a short surgical time. Like many flaps, it has undergone various modifications over time, such as the cross-leg flap based on the sural artery described in a series of 3 cases by Weihao in 2019.[5] In this study, we describe a case of using the cross-leg flap as an alternative to the failure of a free flap, performed in the plastic and reconstructive surgery department of the General Hospital of Mexico.

CASE REPORT

A 14-year-old male with no significant medical history presented to the plastic and reconstructive surgery department of the General Hospital of Mexico with a bloody area on his right leg due to a surgical site infection following an open fracture of the tibia treated with open reduction and internal fixation one month prior to his evaluation. Physical examination revealed a bloody area with bone exposure in the middle and distal third of the right leg (Figure 1), with limited dorsiflexion of the foot and extension of the toes. The recipient site was prepared with multiple surgical debridements and negative pressure therapy. Subsequently, cutaneous coverage was attempted using a free myofunctional gracilis flap (Figure 2); however, intraoperative flap loss occurred due to venous and arterial thrombosis.

Figure 1: Bloody area in the middle and distal third of the right leg.

Figure 2: Free myofunctional gracilis flap.

Figure 3: Arteriovenous loop.

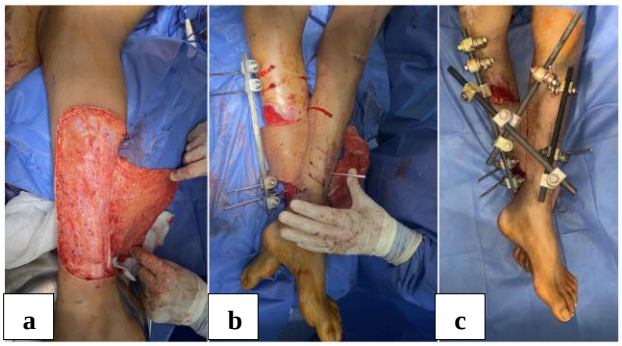

Figure 4: (a) Flap elevation, (b) placement of the flap in its recipient area, and (c) final result.

A decision was made to place an arteriovenous loop (Figure 3) in a second procedure to assess the state of the recipient vessels, resulting in new thrombosis. Therefore, a cross-leg fasciocutaneous flap (Figure 4) was performed without complications a week later. Flap release at four weeks yielded adequate cutaneous coverage without complications (Figure 5).

Figure 5: Flap release at 4 weeks.

DISCUSSION

According to the literature consulted during this case report, it is observed that despite microsurgical flaps being the first choice for lower limb reconstruction, there are still many scenarios where it is not possible to perform such a procedure, necessitating the use of an alternative approach. The cross-leg flap is a simple, reproducible, and effective technique for managing extensive wounds with exposure of deep structures in the lower extremities, as described by Mohamed in 2013.[6] Various modifications have been recently described, including septocutaneous perforator flaps, random pattern flaps, distal or proximal perforator flaps, myocutaneous flaps, or sural artery flaps, creating great versatility depending on the wound and site to be treated, as described by Ravi in 2019.[7] This allows coverage of almost any site on the lower limb with a large surface area. Hence, the importance of continuing with such case reports, which, despite addressing an age-old technique, provides a wide range of management alternatives for the reconstructive surgeon, especially in situations where the first treatment option is not feasible or applicable.

CONCLUSION

The cross-leg flap has been used for many years, with its peak during the Second World War. Currently, it is not the first choice for reconstruction in these types of defects; however, it represents a reliable, simple, and effective alternative when free flaps are not suitable or as a rescue in case of their failure, either due to extrinsic or patient-related causes.

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