

# Fasciocutaneous flap for coverage of tibia exposure.

## A case report

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### Case Report

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### Background:

Surgical wound dehiscence with exposure of internal fixation material is a serious entity, with a poor prognosis of infection. In most cases and in the absence of infection, the alternatives are to provide skin or muscle-cutaneous coverage to the osteosynthesis if the anatomical region allows it, or to remove the osteosynthesis to facilitate healing and skin grafting.

The wounds in the leg represent a reconstructive challenge, especially the more distal they are located, because the skin is located there, with less elasticity and there is a decrease of subcutaneous and muscular tissue surrounding the bones, which causes most of the fractures to be exposed. It is often difficult to close the wounds directly, so it is necessary to use alternatives other than direct closure in order to repair the continuity solution in an adequate manner and provide proper skin coverage.

**Keywords:** Flaps, leg reconstruction.

The exposed tibia fracture represents a surgical emergency that requires debridement, lavage, reduction and stabilization of the bone fragments as soon as possible. In general, primary closure is not recommended in these wounds; however, new surgical techniques and the use of antibiotics have changed this concept (1).

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In the face of osteosynthesis exposure, the risk of infection is known to correlate with the length of time the osteosynthesis is exposed. The posterior skin coverage represents a reconstructive challenge due to the skin of the lower extremity area with less elasticity, decrease of subcutaneous and muscular cellular tissue (1).

The following is a clinical case with exposure of osteosynthesis material after an exposed tibia fracture, which merited management by the plastic surgery service for its posterior coverage.

### Case report

The patient is a 20-year-old male patient, incomplete high school, employed in a factory, with no significant pathological history.

He presented after a motorcycle accident, with high energy impact in the middle third of the leg, presenting exposed fracture of the right tibia with concomitant fracture of the fibula. He was brought to the emergency department where the injury was initially cleaned, with subsequent reduction of the fracture with external fixation. He was kept in hospital and later cerclage of the tibia fracture was performed, with conservative management of the fibula fracture. She was discharged home without complications.

However, 1 month after his discharge he began to show color changes at the level of the wound on the anterior aspect of the leg, with pain, and subsequent tissue necrosis with sero-purulent exudate with exposure of osteosynthesis material.

The patient was assessed by our service for coverage of the lesion, debridement and exhaustive surgical cleaning was performed in surgical time, with exposure of the tibia bone and the cerclage material. Fascial cutaneous flap of rotation of neighboring tissue of the lateral side of the leg is designed, with

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**Figure 1.** After cleaning and debridement, bone and cerclage material exposure can be observed with impossibility of primary closure.

preservation and care of the peroneal nerve. As well as taking and placing a full thickness graft of the right thigh, completing coverage of the lesion.

The patient was kept under surveillance with antibiotic therapy and wound care, and was discharged home with ambulatory revisions and adequate integration of the graft and viability of the flap.



**Figure 2.** A fascio-cutaneous rotational flap is designed and performed on the lateral side of the leg, with partial coverage.



**Figure 3.** Full-thickness graft is taken and placed with full coverage of the lesion.

The image 3 months after the intervention shows adequate coverage and viability of the tissues, with no evidence of necrosis or infection. As well as adequate mobility and functionality of the limb.

### Discussion

Leg wounds represent an enormous challenge at the time of reconstruction, the purpose of which should always be aimed at the functional recovery of the limb.

Currently it is considered that a wound can be closed primarily as long as there is a viable soft tissue that can close without tension, there is no contamination, the patient has received prophylactic antibiotic therapy and the surgical technique is adequate with bone stabilization and within the indicated time.

Performing surgical treatment within the first 6 hours after the trauma. If these conditions are not met, it is recommended to clean and debride every 72 hours until a clean wound is achieved (3).

However, there is always the possibility of wound dehiscence with exposure of the internal fixation material, in most cases and in the absence of infection, the alternatives are to provide cutaneous or





**Figure 4.** Evolution of the lesion 3 months after the procedure, with adequate function and esthetics.

cutaneous muscle coverage to the osteosynthesis if the anatomical region allows it, or the extraction of material to facilitate healing and skin grafting (4).

In our patient the exposure of the material occurred 1 month after the first surgical intervention and its placement, with a lesion in the anterior aspect of the wide leg, with impossibility of direct wound closure, being necessary to use different alternatives to repair the solution of continuity in an adequate manner and provide complete skin coverage (3).

The leg area is a region with less elasticity and decrease of the subcutaneous and muscular tissue surrounding the bones, which causes that most of the fractures are exposed, there are more rigid septa in the muscular compartments, term of arterial vascularization, few connections between the three arterial systems, difficulty of venous return by bipedestation (4).

In our patient, given the size and location of the lesion, it was decided to perform a fasciocutaneous rotation flap, which achieved a partial coverage of the lesion and later was complemented with a full-thickness graft to complete the coverage. Previous exhaustive cleanliness, being essential that the recipient area is completely clean and debrided.

The subsequent evolution and success of the surgery depend on the quality of the tissues, the anatomical area where it is performed, adequate irrigation and adequate infection control. In the case of

our patient, 3 months after the intervention, total coverage of the defect was achieved with acceptable functional and esthetic results.

### Conclusion

The exposure of osteosynthesis material represents a challenge for both the trauma surgeon and the plastic surgeon, involving as a main goal the functional recovery of the limb.

However, a comprehensive evaluation and management, with planning for complete wound coverage, can give adequate aesthetic and functional results.

### Conflicts of interests

There was no conflict of interest during the study, and it was not funded by any organization.

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