

# Treatment Of The Tibia Non-Union With A Free Vascularized Corticoperiosteal Flap From The Medial Femoral Condyle

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## INTRODUCTION

The periosteum of the medial femoral condyle and supracondylar region is supplied by branches of the descending genicular artery and can be harvested as a corticoperiosteal free flap.

## OBJECTIVES

To introduce our series of tibial non-union using the free vascularized corticoperiosteal flap from the medial condyle.

## MATERIAL AND METHODS

Between may 2010 and july 2015 we treated 5 patients: 4 atrophic non-unions of diaphyseal tibia and 1 failed tibiotalar arthrodesis. Average age 61 years old (44-74). Average follow-up of 694 days

In all the cases a surgical debridement of the nonunion was performed with no removal of the metalwork , except in one of the patients. A free vascularized corticoperiosteal flap was harvested from the medial femoral condyle and anastomosed into a termino-terminal manner to the anterior tibial vessels. No skin island was performed. Flap was fixed by trans-osseus sutures.

## RESULTS

Average hospital stay 16.8 days (4-46 days)  
 Average time from first surgery until flap surgery was 432 days. The consolidation rate was 100% with an average radiological consolidation time of 95 days. Overall survival flap rate was 100%. Complications: one patient presented skin suture failure that required negative pressure therapy and skin graft.



We show the vascularization of the medial femoral condyle and the technique of flap harvesting and inseting into the tibia non union

## DISCUSSION

Atrophic nonunions present great difficult to generate new bone due to the poor blood supply.

The classic treatment of nonunions consist of replacing hardware (to a more stable one), but sometimes this does not guarantee a successful outcome (13% failures), as this does not treat the etiological problem, the lack of vascularization.

Skoog and later Finley showed that periostic flap has the capability to create new bone.

Corticoperiosteal flap from medial femoral condyle, has been first described by Doi and Sakai, and has been used to resolve nonunions in scaphoid, tibia, humerus and clavicle. Its vascularization is rather constant: the superomedial genicular artery (present in 100% of the cases, with short pedicle difficult to harvest) and the descendent genicular artery (present in 80% of the cases, with a longer pedicle and easier to harvest). Recently Buerger has published a modification of this flap, in order to harvest chondral graft to scaphoid, lunate and talus reconstruction.

## CONCLUSIONS

The free vascularized corticoperiosteal flap from the medial femoral condyle is an effective treatment in the lower limb non-unions



Patient of 54 yo with atrophic tibia non union. We show the radiological and CT study before the surgery and the outcome after 2.5 months from surgery. The patients was free of pain, and she could return to her daily activities in two months

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