



Contents lists available at ScienceDirect

## International Journal of Surgery Case Reports

journal homepage: [www.casereports.com](http://www.casereports.com)

# Treatment of malreduced pilon fracture: A case report and the result in the long-term follow-up



Mehmet Bulent Balioğlu\*, Yunus Emre Akman, Hakan Bahar, Akif Albayrak

Baltalimani Metin Sabanci Bone Diseases Training and Research Hospital, Baltalimani, Istanbul, Turkey

## ARTICLE INFO

### Article history:

Received 25 September 2015  
Received in revised form 5 December 2015  
Accepted 17 December 2015  
Available online 23 December 2015

### Keywords:

Ankle injuries  
Intra-articular fractures  
Osteoarthritis  
Transplantation  
Autologous bone graft

## ABSTRACT

**INTRODUCTION:** The risk for post-traumatic osteoarthritis (POA) following tibial plafond joint trauma has been reported to be as high as 70–75%. In the treatment of more severe joint pathologies, with incongruity and intra-articular defects, internal or external fixations techniques may be required.

**PRESENTATION OF CASE:** We report the orthopedic management of a pilon fracture in a 30-year-old male with malunion and implant failure after initial mal-reduction of the fracture 9-months earlier. Tricortical iliac crest autologous bone grafting (TCG) was used in combination with internal fixation to restore distal tibial articular. The procedure resulted in a pain free ankle, sufficient range of motion for function and patient satisfaction.

**DISCUSSION:** Early surgical intervention and anatomical reduction with appropriate fixation are recommended for intra-articular tibial pilon fractures. Autogenous bone grafting is a reliable treatment option to augment structural stability, bone defects and bone-healing. Indications for bone grafting include delayed union or nonunion, malunion, arthrodesis, limb salvage, and reconstruction of bone voids or defects. The application of TCG in the management of a malreduced tibial plafond fracture has not been described before.

**CONCLUSION:** We performed TCG with internal fixation in order to restore stability, congruency and alignment in a young patient in whom a biological restoration was feasible due to good bone quality. In suitable cases, TCG might provide an alternative to arthrodesis or arthroplasty.

© 2015 The Authors. Published by Elsevier Ltd. on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

The risk for post-traumatic osteoarthritis (POA) following significant joint trauma has been reported to be as high as 11–75%. The incidence of POA is particularly high for intra-articular fractures, such as fractures of the tibial plafond fractures, which are associated with a 70–75% of POA. In fact, intra-articular fractures, including tibial plafond fractures, have been associated with a 20-fold increase in the risk for POA [1–4]. In the treatment of more severe joint pathologies with incongruity and intra-articular defects, internal or external fixations techniques may be required [5]. In cases of non- or mal-union, tricortical iliac crest autologous bone grafting (TCG) may be applied to improve fracture healing. In the current clinical literature, application of TCG in combination with internal fixation has not been described as an option for the treatment of post-traumatic articular defects. Yet, the combination of TCG and internal fixation could be effective in the management of

selected intra-articular fractures, such as restoring the distal joint surfaces following fractures involving the tibial plafond. The aim of our case report was to describe the clinical and radiological results of applying TCG in combination with internal fixation as an alternative treatment to single use of external or internal fixation for intra-articular fractures.

## 2. Presentation of case

A 30-year-old male patient underwent open reduction and internal fixation for a traumatic right pilon fracture at another trauma center. Nine months post-operatively, the patient was referred to our clinic with complaints of persisting ankle pain, swelling and difficulty walking, with no history of neurological disease. The fracture was classified as OTA/AO Type 43-C3 fracture. Pseudarthrosis of the distal tibial metaphysis, implant failure and an intra-articular defect were identified on imaging (Fig. 1A–E). Extraction of the failed implants, joint debridement and application of TCG with internal fixation were performed.

Under general anesthesia, the patient was positioned in a supine position and a tourniquet applied to the thigh. Medial and lateral longitudinal incisions were made. Visual inspection confirmed breakage of the internal fixation material on the lateral side of the

\* Corresponding author at: Bone Diseases Training and Research Hospital, Rumeli Hisari Caddesi No: 62 Baltalimani, Istanbul 34470, Turkey. Fax: +90 212 323 70 82.

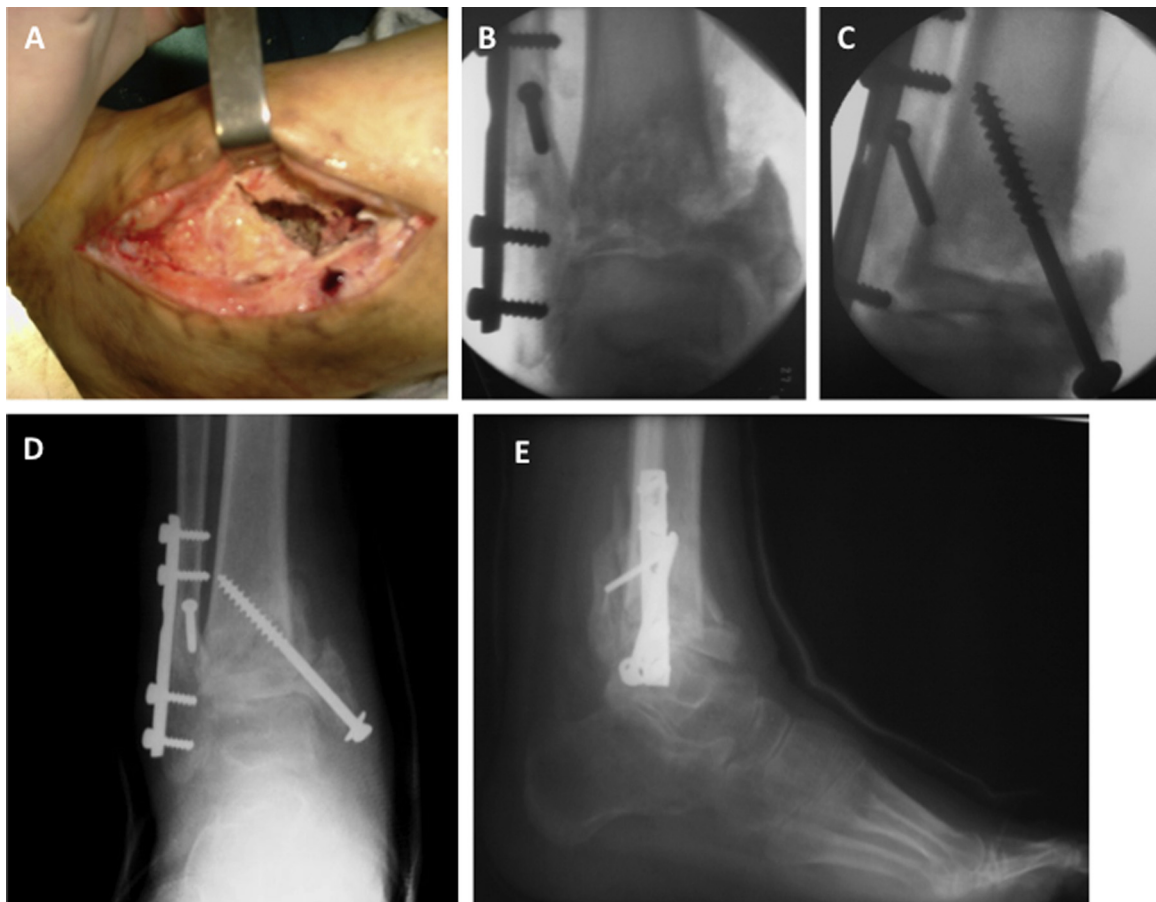
E-mail addresses: [mbbalibey@gmail.com](mailto:mbbalibey@gmail.com), [mehmetbalioglu2003@yahoo.com](mailto:mehmetbalioglu2003@yahoo.com) (M.B. Balioğlu), [yemreakman@gmail.com](mailto:yemreakman@gmail.com) (Y.E. Akman), [drhakanbahar@gmail.com](mailto:drhakanbahar@gmail.com) (H. Bahar), [albayrakakif@gmail.com](mailto:albayrakakif@gmail.com) (A. Albayrak).



**Fig. 1.** Assessment of ankle joint; (A, B) anterior–posterior and lateral radiographs, showing implant failure, pseudarthrosis and joint destruction; (C) CT image; and (D, E) weight bearing and ankle movements after initial surgery.

joint, with implant material identified inside the medial aspect of the joint. The distal joint surface of the tibia was destroyed and the implant material irritated the surface of the talus. For fracture reduction and stabilization, the fibula was fixed first with a plate and the fibular length restored. The articular surface of the

tibia was then debrided through the medial incision. A TCG was harvested from the right iliac crest. The autograft was adapted on the tibial plafond as the cortex of the concave side articulating with the talus, and the autograft internally fixed. A short leg cylinder cast was applied and maintained for 6 weeks post-surgery



**Fig. 2.** Appearance of the medial ankle joint defect after removal of the implants (A); application of tricortical iliac crest autologous bone grafting (TCG) to the tibial plafond of the ankle joint surface (B); pre-operative fluoroscopy images before and after autografting (C); and anterior–posterior and lateral radiographs in the early post-operative period with cast *in situ* (D, E).

Download English Version:

<https://daneshyari.com/en/article/4288733>

Download Persian Version:

<https://daneshyari.com/article/4288733>

[Daneshyari.com](https://daneshyari.com)