

A Case of “Nonunion Distal Tibia and Fibula Malleoli Fracture with posterior Malleoli Fracture” Treated with Ilizarov: A Case Report

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Learning Point of the Article:

Distal trimalleolar fracture of ankle fixed with Ilizarov and bone graft provides better stability than plating to prevent non-union, especially in elder patients as early as possible.

Abstract

Introduction: Orthopedic surgeons have long acknowledged the difficulty of treating distal tibia and fibula fractures with posterior malleoli fractures in individuals with medical comorbidities due to a lack of inadequate blood supply. Aged Type 2 diabetic individuals, with distal tibia and fibula fracture with posterior malleoli fracture, are more prone to complications such as non-union, wound infection, and delayed bone healing. It is debatable whether surgical or non-invasive treatment is preferable for diabetic complex fractures.

Case Report: A 62-year-old male suffered a right distal tibia and fibula fracture with posterior malleoli fracture following an incidental fall followed by a hit over the iron rod. The patient was treated conservatively with POP for 6 weeks due to the patient's refusal of surgical management. Radiography after 6 weeks revealed features of non-union.

Conclusion: The Ilizarov external fixation with bone graft was planned later to treat the non-union distal tibia and fibula fracture with posterior malleoli fracture. About 18 months after the Ilizarov fixation radiography reviewed the features of the union and clinically also patient improved.

Keywords: Ilizarov ring fixator, distal tibia and fibula fracture with posterior malleoli fracture, non-union, Type 2 diabetes mellitus.

Introduction

Complex fractures such as the distal tibia and fibula fractures with posterior malleoli fractures are more prone to non-union, especially in elderly patients with medical comorbidities due to inadequate blood supply [1, 2, 3]. Elder patients are more prone to post-operative complications such as surgical site wound infections, bed sores, pulmonary or fat embolism, and wound dehiscence, hence planning treatment for these patients is challenging. Ilizarov fixation reduces the complications which arise from both surgical and non-surgical treatment, especially in medically morbid patients, due to minimal soft-tissue handling and minimal blood loss [4, 5, 6]. Postoperatively, the radiological and clinical outcome is better with Ilizarov fixation.

Case Report

A 62-year-old male sustained the incidental fall followed by a hit over the iron rod and was diagnosed with distal tibia and fibula fracture with posterior malleoli fracture. The patient was not willing to surgical fixation, and hence, the patient was treated conservatively with POP and the patient was asked for non-weight bearing. After 6 weeks of POP removal, radiographic features showed non-union of distal tibia and fibula with posterior malleoli. The patient was convinced then and planned for the Ilizarov fixation. 15 days after surgery, full weight-bearing walking was allowed. Serial X-rays were taken on follow-up, and radiography showed features of the union. After 18 months of the

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Author's Photo Gallery



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Figure 1: Pre-operative X-ray of right ankle taken in anteroposterior and lateral view showing trimalleolar fracture (a and b) and non-union of trimalleolar fracture with POP slab in situ (c and d).

Ilizarov external fixator with bone graft, the patient improved clinically and radiologically. The patient was followed up for 2 years for assessment.

Discussion

Elderly diabetic patients with bony fractures are more prone to complications such as non-union, infection, delayed bone healing, and bed sores, which threaten the patient's life. Ilizarov fixator reduces the risk of complications due to minimal soft-tissue handling, minimal blood loss, and early mobilization [7-

10]. Incidence of post-operative surgical site wound infection is less in external fixation as compared to open reduction with internal fixation, especially in elderly diabetic patients [10- 12]. Thus early mobilization and reduced post-operative complications make the Ilizarov external fixator more feasible for the elderly diabetic patient, especially in distal tibia and fibula fractures which lack adequate blood supply.

Conclusion

A complex distal tibia and fibula fracture with posterior

malleoli fracture in aged diabetic patients are challenging for orthopedicians due to inadequate blood supply and medical comorbidities, which leads to various complications [13, 14]. Ilizarov fixation allows early mobilization, reduces the possible post-operative complications, and achieves the desired result of treatment.

- Pre-operative Radiograph (Fig. 1).

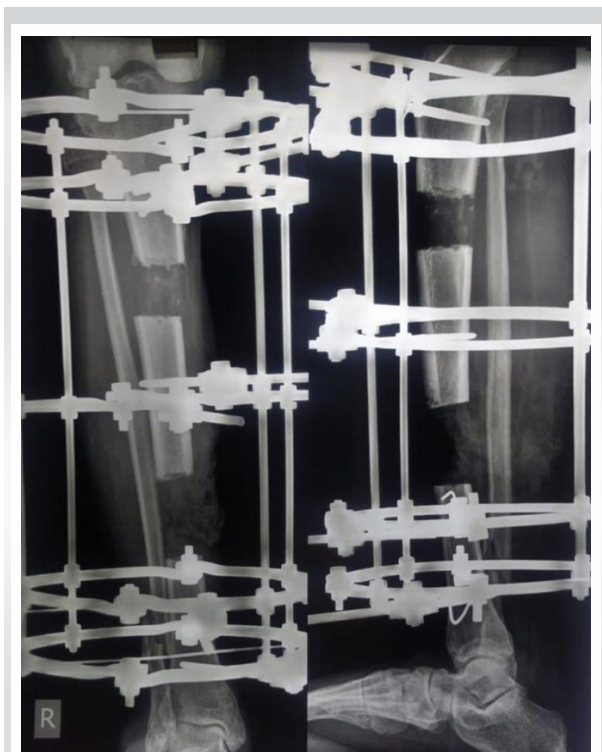


Figure 2: Immediate post-operative X-ray of right leg taken in anteroposterior and lateral view shows corticotomy levels and Ilizarov fixation.



Figure 3: Post-operative X-ray of the right leg after 3 months taken in anteroposterior and lateral view shows features of a union at corticotomy site with union of trimalleolar fracture site and Ilizarov fixation alignment.



Figure 4: 6 months post-operative X-ray of right leg taken anteroposterior and lateral view with Ilizarov in situ.



Figure 5: 12 months post-operative X-ray of right leg taken in anteroposterior and lateral view shows united corticotomy sites with fracture site union after Ilizarov removal.



Figure 6: 18 months post-operative X-ray after external fixator removal shows the union features in both anteriorposterior and lateral X-rays of the right leg.



Figure 7: Clinical outcome images after 18 months of post-operative follow-up.

Clinical Message

Ilizarov fixation with bone graft for trimalleolar fracture of the ankle in patients with medical comorbidities provides better stability and early mobilization with minimal complications than ORIF with plating or other modalities of treatment.

- Post-operative Radiograph (Fig. 2- 7).

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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