

Single Stage Surgery for Open Lisfranc Injury: A Case Report

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ABSTRACT

Management of open Lisfranc injuries is challenging. The improper management of the injuries might lead to bad results like skin necrosis and arthritis of Lisfranc's joints. A case of Myerson type A Gustilo Grade IIIB open Lisfranc injury was managed with single stage debridement and internal fixation. At three years follow-up, the result was excellent with American Orthopedic Foot and Ankle Society (AOFAS) midfoot score of 100 and the patient had rejoined his previous occupation requiring prolonged walking.

Keywords

Open Lisfranc injury, single stage internal fixation

INTRODUCTION

Lisfranc injuries account for 0.2% of all fractures.¹ The reported incidence of this uncommon injury is approximately 1 per 55,000 persons per year.² High energy open Lisfranc injuries mainly result from being crushed under a heavy object, traffic accidents, or falling from a height and are represented by severe Lisfranc joint fracture-dislocation with serious soft tissue injuries.³ A case which presented with Gustilo grade IIIB open and Myerson type A Lisfranc injury was managed with single stage debridement and internal fixation.

CASE PRESENTATION

A 24 years old gentleman presented with Myerson type A Gustilo grade IIIB open Lisfranc injury of right foot to Tribhuvan University Teaching Hospital in a road traffic accident, being involved in high speed motor-bike accident. (Figure 1) One stage debridement of the injury with anatomical reduction through the wound on the medial aspect of the foot; an incision on the lateral aspect of the dorsum of the foot, and fixation of the Lisfranc injury was done. A partially threaded screw was passed from medial cuneiform to the base of second metatarsal, two K-wires were passed from the base second metatarsal to the middle cuneiform, another K-wire from the third metatarsal to the lateral cuneiform, and one K-wire was passed from base of fourth and fifth

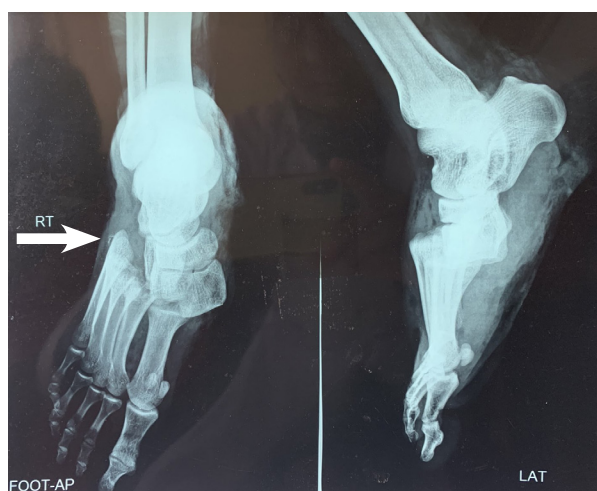


Fig 1. X-ray at injury showing Myerson Type A Lisfranc fracture dislocation



Fig 3. X-ray at 3 years followup showing well-reduced Lisfranc Joint with no features of arthritis

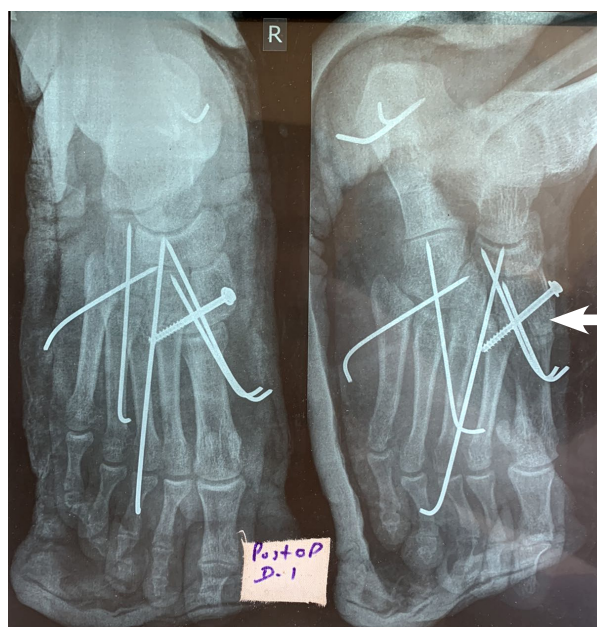


Fig 2. Post-operative X-ray showing well-reduced Lisfranc joint

metatarsals to the cuboid each. The heel flap was fixed to the calcaneum with two K-wires.(Figure 2) The open wound on the medial side of the foot was loosely closed. There was no infection in the wound. After development of the granulation tissue, skin graft was done. Post-operative slab support was applied. K-wires were removed after 3 months and weight bearing was started. The screw was removed 4 months post-operatively.

At 3 years follow-up the American Orthopedic Foot and Ankle Society (AOFAS) midfoot score was 100, with only occasional morning stiffness in foot lasting for a few minutes (Figure 3,4). The patient has rejoined his previous profession of policeman requiring prolonged walking and walking on uneven surfaces.



Fig 4. Clinical photograph at 3 years follow-up showing normal looking plantigrade foot

DISCUSSION

The difficulty in the clinical treatment of open Lisfranc fracture and dislocation results from the severe destruction of the bony structure, with poor condition of local soft tissue. Thus, staged treatment has been frequently performed^{4,5}, with initial external fixation followed by definitive fixation. However it is practical to attempt a safe and effective one-stage definitive internal fixation owing to the fact that the two stage procedure would require long incisions for reductions due to scarring and may even require osteotomies and fusions.⁶ In our case, we did single stage reduction and fixation with excellent result.

Proper debridement and wound care resulted in good soft tissue healing in our case. The results were as good as that on using vacuum suction drainage system, which is common in developed countries⁷ but unavailable in our part of the world due to financial issues.

The excellent result of the surgery may be due to the anatomical reduction of the joints, which was carefully done from the medial open wound and by a longitudinal incision on the lateral aspect of the dorsum of the foot. Previous studies demonstrated that malreduction during surgery led to poor function and imaging scores in upto 49.6% of the cases. Nithyananth³, Kuo⁶ and Kadow⁷ demonstrated the standard to ensure anatomical reduction during the surgery and we followed the guidelines.

Lisfranc injuries have been treated with one stage joint fusions too⁸, but some researchers demonstrated no statistically significant difference between cases treated with one-stage joint fusion and those treated with one-stage internal fixation, after a long-term follow-up.⁹ Joint fusions could be done later on for symptomatic Lisfranc joint instability.⁶ Our case had excellent result with single stage internal fixation and does not have symptomatic Lisfranc joint instability in the follow-ups.

CONCLUSION

When managing Lisfranc fracture dislocation, the goal should be to achieve a painless, functional normal-looking plantigrade foot. The Myerson type A and Grade IIIB open Lisfranc injury was managed by single stage debridement and internal fixation with excellent results.

CONSENT

Informed consent was obtained from the patient for publication of this case report.

CONFLICT OF INTEREST

None declared.

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