

CASE REPORT

Compound Equivalent Lisfranc's Fracture Dislocation of Foot

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ABSTRACT

Background: A Lisfranc's injury is a tarsometatarsal fracture dislocation is characterized by Traumatic disruption of Medial cuneiform and base of the second metatarsal. Incidence 0.2% of foot injury, Common in males, in third decade, mechanism of Injury fall from height & in Athletic injuries, Injuries range from sprains to severe dislocations. Aim: Ligamentous Vs bony injury pattern has treatment indications. Lisfranc equivalent injuries present with proximal metatarsal fracture or tarsal fractures, can involve multiple tarsometatarsal (TMT) fractures and joints¹.

In Anatomy mainly involvement Lisfranc ligament, it is a interosseous ligament that goes from medial cuneiform to base of 2nd metatarsal on planter surface, critical to stabilizing the 1st & 2nd tarsometatarsal joints and maintenance of the midfoot, second ligament is plantar tarsometatarsal ligament which is between medial cuneiform and the second and third metatarsals along with its lisfranc ligament is necessary to give from severe instability. Third Dorsal tarsometatarsal ligaments which is weaker therefore bony displacement with injury is often dorsal and forth intermetatarsal ligaments between second to fifth metatarsal bases.

Material & Result: On Radiograph **fleck Sign** small bony fragment, often seen on AP view of the foot, indicating avulsion fracture Lanfranc ligament. This fragment is typically located in the Lanfranc space between based of 1st & 2nd metatarsal bones and is very subtle but important finding suggesting of Lanfranc injury. **Step off sign** in Lanfranc injury refers to the dorsal displacement of the second metatarsal base creating a visible step or a gap on the dorsal (top) surface of the foot when viewed on lateral x-ray, this sign is indicative of Lanfranc injury which involves damages to the ligament and bone in the midfoot, Radiograph findings may be subtle so stress radiographs or CT may be needed in complex cases.

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Conclusion: One such case of post traumatic following Road Traffic Accident compound equivalent type III, Lisfranc fracture Dislocation is reported for Discussion.³

KEYWORDS

• Lisfranc fracture dislocation Lisfranc Joint • Diagnosis & Treatment

Key Message: In some of the lisfranc injuries open reduction and internal fixation and in compound lisfranc injuries primary arthrodesis advised.

INTRODUCTION

Lisfranc injury refers to an injury in which one or more of the metatarsals are displaced with respect to tarsals. The Injury that are purely ligaments and fractures of metatarsals cuneiform bones and cuboid bones. Accurate diagnosis of these injuries are required for their proper treatment and to prevent long term sequelae, majority are closed, are becoming more frequency in athletes. These injuries also occur in sports such as soccer, gymnastics and running.² In this case report, we are reviewing the main concepts related to the mechanism of injury, classification, diagnosis and Treatment of lisfranc fracture dislocations.

Case Summary (Study): A 35 years male presented to accident and emergency to Vijay Hospital and Trauma centre following

Road Traffic Accident with Injury to Left Foot. Complaining of severe pain, bleeding, deformity of left foot, on examination Patient had compound type III fracture dislocation of foot, dorsalis artery felt, Degloving of skin from dorsal aspect of foot. X-ray shows - Dislocation of 1st & 2nd metatarsal bones with fracture 2nd, 3rd, 4th and 5th metatarsals with subluxation of 4th & 5th metatarsals. Treatment debridement closed reduction of 1st & 2nd metatarsal bones, 3rd, 4th & 5th metatarsals are fixed with 'K' wires, subluxation at 4th & 5th metatarsal reduced and fixed with 'K' wires. Degloving skin over dorsum of foot is treated with split thickness skin graft by plastic surgeon, fractures united after 6 weeks, started mobilizing the foot, patient started weight bearing after 8 weeks with painless and functional foot.



Preoperative X-ray



Postoperative X-ray



Post operative clinical photograph (foot)

DISCUSSION

Lisfranc fracture dislocation is carefully stabilized and supported until it is healed enough to handle the body weight and movement. The classification of Lisfranc lesions was originally described by Queno and Kuss in 1909 based on the concept of the three columns. The lesions were classified as homolateral, isolated and diverjoint.⁴ The classification was modified by Hardcastle *et al* in 1982:

Hardcastle / Myerson: This system is widely used and categorizes Lisfranc injuries into three main types:

- **Type A:** All five metatarsals are displaced in the same direction, usually laterally.
- **Type B:** Involves an isolated incongruity, meaning only some metatarsals are displaced. This can be further divided into B1 (medial displacement of the first

metatarsal) and B2 (lateral displacement of one or more of the lateral four metatarsals).

- **Type C:** Characterized by divergent dislocations, where metatarsals are displaced in different directions. This can be C1 (partial divergent) or C2 (complete divergent).

SFR (Specific Fracture-related) Classification:

This system focuses on the type of injury (ligamentous or fracture) and the location of the fracture (proximal or distal row). It classifies injuries as:

85-C1: Ligament injuries only.

85-C2: Fractures of the proximal row.

85-C3: Fractures of the distal row.

85-C4: Fractures on both the proximal and distal rows.

Nunley-Vertullo Classification:

This system incorporates clinical, radiographic, and bone scan findings to classify Lisfranc injuries and correlate them with management options.

Treatment of Lisfranc initially by Ice and elevation, immobilization with below knee slab, followed Lisfranc surgery to make the joint stable, reducing dislocations stabilizing with 'K' wires, plate and screw into foot to hold the joint in place. After surgery need to be of the foot for one or two months, then wear a boot for two months, For pain needs non steroidal anti-inflammatory drugs.⁶ In chronic neglected lisfranc injuries needs primary fusion to prevent primary central arthritis and secondary metatarsal arthrizia and non union. Complications of lisfranc injuries are compartmental syndrome, chronic pain and disability.

CONCLUSION

Lisfranc injuries are commonly missed, if neglected with and up in traumatic arthritis

and chronic foot pain which causes significant morbidity, clinician must keep a high index of suspicion when treating these injuries in emergency department. To prevent complications to this kind of injury, it requires a correct diagnosis and timely treatment in the form of closed / open reductions fixation⁷ / arthrodesis.

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