



Lisfranc-like injury involving lateral tarsometatarsal joints: a case report

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Lisfranc injuries or fracture-dislocation of tarsometatarsal joints are uncommon injuries. Isolated involvement of lateral tarsometatarsal joints is very rare. We present a case of plantar disruption of cuboid - fourth and fifth metatarsal joints in a 16yr old boy following a vehicular accident with injuries to head and left foot. A standing AP & lateral radiograph of left foot was suggestive of disruption of cuboid-4th/5th metatarsal joints with plantar displacement. Evidence of head injury on CT scan of head took precedence over foot injury. Patient was managed conservatively for foot injury. Patient made a reasonable recovery by conservative means only. This is an unusual case as there was an isolated lateral tarsometatarsal joint involvement. In addition, the displacement was plantar, whereas in isolated lateral Lisfranc injuries, the displacement usually is dorsal. Lisfranc-like injuries involving lateral tarsometatarsal joints are very rare. These injuries can be easily missed. Strong clinical suspicion and proper investigations are needed to diagnose these subtle injuries.

Key words: Lisfranc joint, lateral tarsometatarsal joint

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The spectrum of tarsometatarsal joint injuries (Lisfranc injuries) encompasses stable sprains to clinically apparent grossly unstable deformities. It is important to recognise and treat these injuries early and aggressively for best results. There are several variations from the classic injury patterns, and we present one such variant. This case report describes a lateral tarsometatarsal disruption with neither diastasis between first & second metatarsals nor injury to first, second & third tarsometatarsal joints. Dislocations of lateral tarsometatarsal joints are rare and are almost always dorsal. To the best of our knowledge only one such case has been reported in literature before.

Case History

A 16-year-old boy had a road traffic accident sustaining injury to the head and left foot. The patient reported to our emergency department with pain and swelling of left foot (Figure 1). Lateral tarsometatarsal joints were exquisitely tender to palpation, whereas no tenderness could be elicited over the medial tarsometatarsal joints. There were no clinical signs or symptoms of head injury. A neurosurgery consultation was sought as per our trauma protocol. Patient underwent CT scan of the head along with standing anteroposterior and lateral radiograph of left foot (Figure 2). The radiograph of the foot revealed lateral tarsometatarsal joint disruption with plantar dislocation. The patient was given a short-leg posterior slab initially along with analgesia.

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Figure 1 Clinical photo on admission.



Figure 3 Follow-up radiographs at 3 months.



Figure 2 Radiographs on admission.



Figure 4 Clinical photo at last follow-up.

CT scan of the head was suggestive of depressed fracture of right frontal bone with extradural hematoma with pneumocephalus. Patient was referred to an outstation neurosurgical center for further management of the head injury. There the foot injury was neglected. Patient was cleared after 2 weeks from neurosurgery. At 2-weeks follow-up, probable nature of foot injury, diagnostic modalities available, its severity and morbidity, treatment options available and complications associated were discussed with relatives and the patient. Respecting patient's decision, no further confirmatory investigations were undertaken and conservative treatment was continued. The posterior slab was changed into a cast. Regular follow-up radiographs were taken which revealed satisfactory recovery (Figure 3).

Discussion

'Lisfranc joint' refers to the medial articulation of first and second metatarsals with medial cuneiforms and 'Lisfranc joint complex' refers to tarsometatarsal articulations. It derives its name from Jacques Lisfranc, a French field surgeon in Napoleon's army, who was the first to describe amputations through this joint. Fractures and dislocations of tarsometatarsal joints are frequently overlooked or misdiagnosed because of variations in the pattern of injury and clinical presentation. Road traffic accidents are the most common cause of Lisfranc fracture dislocations, while twisting injury to the foot is the most common cause for simple dislocation without fracture [1]. Clinical suspicion and radiographic evaluation is crucial in the diagnosis and treatment of this injury.

If possible at the time of presentation, weight-bearing films of the foot in anteroposterior, lateral and 30-degree medial oblique position should be obtained. Because of the possibility of spontaneous reduction in these injuries, non-weight-bearing films provide no loading of the ligaments to test their integrity [2]. In some cases, computed tomography scans and magnetic resonance imaging may be necessary to detect comminution and subtle malalignment. Chiodo and Meyerson classified the tarsometatarsal joint injuries according to columnar theory emphasizing the motion segments of mid-foot [3]. According to this classification, metatarsals within a column function as a unit. They concluded that it is unusual for one (fourth metatarsal) to dislocate while the other (fifth metatarsal) remains in anatomic position. This was demonstrated in our patient too. Lisfranc injuries are associated with high potential for chronic disability, so precise anatomical reduction is a must either by closed or open methods [4]. The literature is divided over specific recommendations for treatment of these subtle injuries [5]. In our case, though surgical treatment would have been ideal, conservative treatment was undertaken with cast immobilization and strict non-weightbearing for 6 weeks, followed by removal of the cast and partial weight bearing with the help of a cane for another 4 weeks. Full weight bearing was allowed at 10 weeks. Return to sports and other high demanding activities was allowed at 12 weeks. Patient used to get swelling in the foot after walking a distance of more than a mile and running for one-half mile. Ipsilateral ankle range of motion was comparable to the normal side at last follow up of 9 months. Result of such treatment in our case was malunion with acceptable functional disability.

We used clinical judgement and stress radiographs only to rule out associated medial joint (Lisfranc joint) involvement, although stress radiographs at best have a sensitivity of 85% but we were restrained by patient refusal for further investigations like MRI.

Our case is unique because the frequency of such injuries is very low.

Conclusion

Lisfranc-like injuries involving lateral tarsometatarsal joints are very rare. These injuries can be easily missed. There is scarcity of literature on treatment of these injuries. Further studies in future are warranted on these rare injuries. These injuries, however, don't seem to have unacceptable results with conservative modality of treatment.

References

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