CASE REPORT

Joint-Preserving Reconstruction for Chronic Neglected Lisfranc Injury with Severe Post-traumatic Midfoot Destruction Mimicking a Charcot Pattern in a Neurologically Intact Patient: A Case Report

Dr Somavarapu Sai Praneeth[1*], Dr Mervin Rosario[2], Dr Ashin Khan[3]

[1*]Junior Resident, Department of Orthopaedics, Bharath University, Sree Balaji Medical College and Hospital, Chennai- 600044, Tamil Nadu, India Email Id: praneethsomavarapu7@gmail.com, Orcid Id: 0009-0007-5188-3623
[2]Assistant Professor, Department of Orthopaedics, Bharath University, Sree Balaji Medical College and Hospital, Chennai- 600044, Tamil Nadu, India, Email Id: mervinrosario363@gmail.com, Orcid Id: 0000-0003-3144-1485
[3] Junior Resident, Department of Orthopaedics, Bharath University, Sree Balaji Medical College and Hospital, Chennai-600044, Tamil Nadu, India, Email Id: aashinkhan.31@gmail.com, Orcid Id: 0009-0006-2906-9564

ABSTRACT

Introduction:

Neglected Lisfranc injuries may progress to chronic instability, deformity, and advanced midfoot collapse. Longstanding mechanical instability can produce radiographic patterns resembling neuropathic arthropathy even in patients without neurological disease. Accurate clinical correlation is essential to avoid misdiagnosis and to guide appropriate surgical planning.

Case Report:

A 43-year-old female presented with progressive swelling and deformity of the right midfoot following an untreated low-energy injury. Radiographs and CT imaging demonstrated chronic displacement of the second to fifth tarsometatarsal joints with fragmentation and structural collapse producing a destructive pattern mimicking neuropathic arthropathy. Neurological examination and metabolic assessment were normal. The patient underwent joint-preserving reconstruction using corrective osteotomies and rigid internal fixation.

Conclusion:

Severe chronic post-traumatic midfoot destruction may mimic neuropathic patterns despite intact neurological status. Joint-preserving reconstruction remains a feasible option in selected chronic Lisfranc injuries with reconstructable joint surfaces.

Keywords: Lisfranc injury; Chronic midfoot injury; Charcot arthropathy; Metatarsal osteotomy; Internal fixation

How to cite this article: Praneeth SS, Rosario M, Khan A. Joint-Preserving Reconstruction for Chronic Neglected Lisfranc Injury with Severe Post-traumatic Midfoot Destruction Mimicking a Charcot Pattern in a Neurologically Intact Patient: A Case Report. Int J Drug Deliv Technol. 2026;16(33s):347-352. DOI: 10.25258/ijddt.16.33s.40

INTRODUCTION

The Lisfranc joint complex is fundamental to midfoot stability and efficient load transmission during gait. Although relatively uncommon, Lisfranc injuries are frequently overlooked during initial evaluation, particularly after low-energy trauma. Missed injuries may progress to chronic instability, deformity, and secondary degenerative changes that significantly compromise function.[1,2]

Prolonged mechanical instability in neglected injuries can lead to progressive joint disorganization and midfoot collapse. In advanced stages, radiographic findings may resemble neuropathic arthropathy despite the absence of neurological impairment. Classical Charcot neuroarthropathy requires an underlying neuropathic process; therefore, careful clinical assessment is necessary before attributing destructive changes to neuropathic disease.[5,9]

Arthrodesis is often recommended for chronic Lisfranc injuries with structural collapse; however, it sacrifices joint motion and may alter long-term biomechanics. Joint-preserving reconstruction may be considered in selected patients when articular surfaces remain reconstructable and anatomical alignment can be restored.[3,4,6] This case highlights severe post-traumatic midfoot destruction producing a Charcot-like radiographic pattern in a neurologically intact patient and demonstrates successful joint-preserving reconstruction.[4,10]

CASE REPORT

A 43-year-old female presented with progressive swelling and deformity of the right midfoot for four months following a slip-and-fall injury sustained five months earlier. She had not sought medical care initially. There was no history of diabetes mellitus, peripheral neuropathy, alcoholism, spinal pathology, or systemic illness.

Clinical Examination:

Diffuse dorsal midfoot swelling was present without erythema or warmth. Midfoot range of motion was

*Author for Correspondence: praneethsomavarapu7@gmail.com

restricted but only mildly painful. No skin compromise or ulceration was noted. Neurological evaluation demonstrated intact protective sensation, preserved vibration sense, normal proprioception, and full motor strength. Peripheral pulses were palpable and symmetrical.[5]

Imaging Findings:

Plain radiographs showed chronic displacement of the second to fifth tarsometatarsal joints with joint incongruity, fragmentation, and midfoot collapse. CT imaging confirmed malalignment, subchondral sclerosis, and advanced structural disorganization involving the central and lateral columns.[2],[9]

Differential Diagnoses Considered:

Chronic Lisfranc malunion; post-traumatic midfoot osteoarthritis; chronic mechanical instability with collapse; complex regional pain syndrome; chronic osteomyelitis (excluded clinically and by laboratory findings).[9],[11]

SURGICAL TECHNIQUE

Given the patient's preserved neurological status and reconstructable joint surfaces, a joint-preserving reconstructive approach was selected instead of primary arthrodesis.[3],[4],[6]

Under regional anesthesia with tourniquet control, a dorsomedial approach allowed access to the medial column. Provisional reduction was achieved under fluoroscopy and temporarily stabilized with Kirschner wires. Definitive fixation with a dynamic compression plate restored medial column alignment and stability.[4],[8]

A second dorsal incision exposed the central columns. Corrective metatarsal osteotomies were performed to restore column length and anatomical alignment. One-third tubular plates were applied for rigid fixation. The lateral columns were reduced percutaneously and stabilized with Kirschner wires. Intraoperative fluoroscopy confirmed restoration of midfoot architecture and satisfactory alignment.[4],[10]

POSTOPERATIVE MANAGEMENT

Immediate postoperative radiographs confirmed satisfactory reduction and stable fixation. Strict non-weight-bearing was maintained during the initial healing phase. Serial radiographs demonstrated maintained alignment and progressive union. Gradual rehabilitation was initiated with progressive protected weight-bearing once radiological healing was evident.[4],[11]

DISCUSSION

Chronic Lisfranc injuries present significant reconstructive challenges due to delayed diagnosis, established deformity, fibrosis, and secondary degenerative joint changes. Persistent mechanical instability alters load transmission across the midfoot, leading to progressive collapse and functional impairment if left untreated.[1],[2],[9]

In longstanding neglected injuries, repetitive microinstability and abnormal biomechanical stress may produce extensive osseous fragmentation and joint disorganization. These structural changes can closely resemble neuropathic arthropathy on imaging. However, classical Charcot neuroarthropathy requires an underlying neuropathic process. In the present case, detailed neurological examination demonstrated intact protective sensation, preserved proprioception, and absence of systemic risk factors, supporting a mechanical post-traumatic etiology rather than neuropathic disease.[5],[9]

Differentiating severe post-traumatic degeneration from true neuropathic arthropathy is clinically important because it influences both diagnosis and surgical strategy. Overdiagnosis of Charcot arthropathy may lead to unnecessary assumptions regarding disease progression and fixation challenges. Instead, recognition of mechanical instability as the primary driver allows individualized reconstruction planning based on structural integrity and joint viability.[5],[9],[10]

Arthrodesis has traditionally been recommended for chronic Lisfranc injuries due to its predictable mechanical stability and pain relief. Nevertheless, fusion sacrifices joint motion and may alter load transfer to adjacent joints, potentially accelerating secondary degeneration.[3],[6],[7]

In selected patients with reconstructable articular surfaces and preserved neurological status, joint-preserving reconstruction may be considered as an alternative approach.[3],[4],[10]

Corrective metatarsal osteotomy combined with rigid internal fixation enables restoration of column length, anatomical alignment, and midfoot stability while maintaining residual joint mobility. Stable fixation is essential in chronic injuries due to compromised bone quality and long-standing deformity. Careful intraoperative assessment of joint surfaces and soft-tissue condition is necessary to determine the feasibility of preserving motion segments.[4],[8],[10]

The present case demonstrates that severe destructive midfoot patterns do not necessarily indicate neuropathic pathology. Individualized surgical decision-making based on clinical findings, imaging characteristics, and functional demands allowed successful anatomical reconstruction without fusion. Early radiological and clinical outcomes were satisfactory, with maintained alignment and progressive functional recovery.[4],[10]

Although long-term follow-up is required to evaluate durability, this case supports the concept that joint-preserving strategies remain viable in selected chronic Lisfranc injuries presenting with advanced structural disorganization but intact neurological function.[4],[9]

CONCLUSION

Severe chronic post-traumatic Lisfranc injuries may demonstrate destructive midfoot patterns that mimic neuropathic arthropathy despite intact neurological status. Careful clinical assessment and exclusion of neuropathy are essential for accurate diagnosis. Joint-preserving reconstruction using corrective osteotomy

and rigid internal fixation may provide satisfactory structural restoration and functional outcomes in selected patients.

REFERENCES

1. Stavlas P, Roberts CS, Xypnitos FN, Giannoudis PV. The role of reduction and internal fixation of Lisfranc fracture–dislocations: A systematic review. *Int Orthop*. 2015;39:223-231.
2. Richter M, Thermann H, Hufner T, et al. Etiology and long-term results of midfoot fractures. *Foot Ankle Int*. 2018;39:147-156.
3. Sheibani-Rad S, Coetzee JC, Giveans MR, DiGiovanni C. Arthrodesis versus open reduction and internal fixation for Lisfranc fractures. *Foot Ankle Int*. 2016;37:1145-1151.
4. Qiao Y, Wu X, Li Y, Zhou Q. Midfoot osteotomy and reconstruction for chronic Lisfranc injury. *J Foot Ankle Surg*. 2017;56:1201-1207.
5. Wukich DK, Raspovic KM. Charcot arthropathy and midfoot reconstruction. *Foot Ankle Clin*. 2019;24:559-575.
6. Smith N, Stone C, Furey A. Open reduction internal fixation versus primary arthrodesis for Lisfranc injuries. *Clin Orthop Relat Res*. 2016;474:1445-1452.
7. Hu SJ, Chang SM, Li XH, Yu GR. Outcome comparison of primary arthrodesis versus ORIF for Lisfranc injuries. *Orthop Surg*. 2018;10:188-195.
8. DeVries JG, Scharer B, Hyer CF. Revision and salvage techniques for Lisfranc injuries. *Foot Ankle Clin*. 2017;22:127-145.
9. Mora S, Thordarson DB. Chronic Lisfranc injuries: Diagnosis and management. *EFORT Open Rev*. 2021;6:430-437.
10. Vulcano E, Tracey J, Ellis SJ. Midfoot reconstruction in Charcot neuroarthropathy. *Foot Ankle Clin*. 2022;27:343-360.
11. Weatherford BM, Anderson JG, Bohay DR. Management of tarsometatarsal joint injuries. *J Am Acad Orthop Surg*. 2017;25:469-479.
12. Henning PT, Sangeorzan BJ. Current concepts in Lisfranc injuries. *Foot Ankle Int*. 2023;44:3-15.

FIGURES

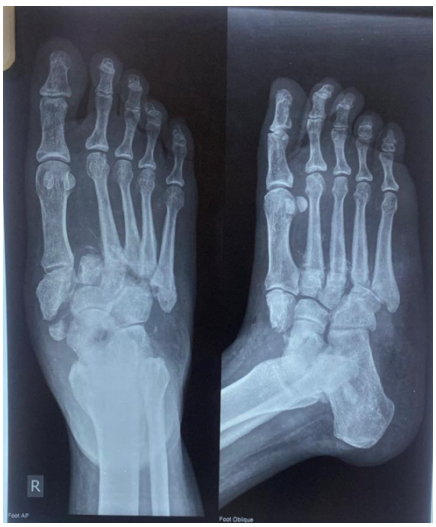

Fig 1: Preoperative anteroposterior radiograph of the right foot showing chronic displacement of the second to fifth tarsometatarsal joints with joint incongruity and midfoot collapse.

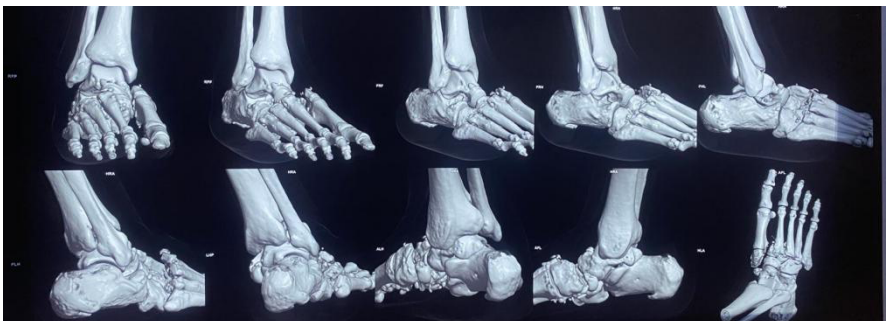

Fig 2: Preoperative CT scan (axial view) demonstrating malalignment and fragmentation involving the central and lateral columns of the midfoot.

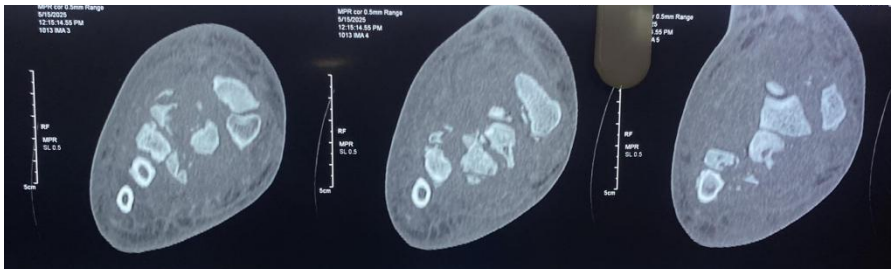

Fig 3: Preoperative CT scan (sagittal reconstruction) showing subchondral sclerosis and structural disorganization producing a destructive post-traumatic pattern.

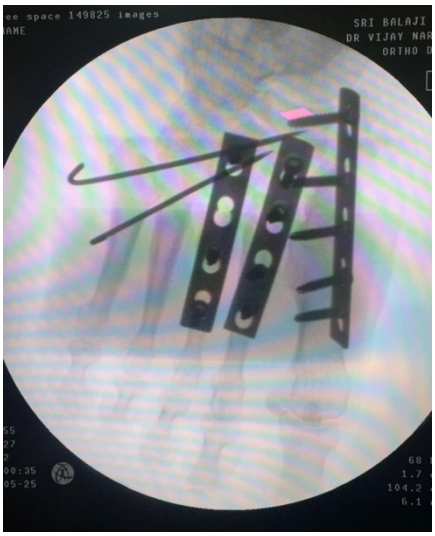

Fig 4: Intraoperative image demonstrating provisional reduction of the medial column under fluoroscopic guidance.

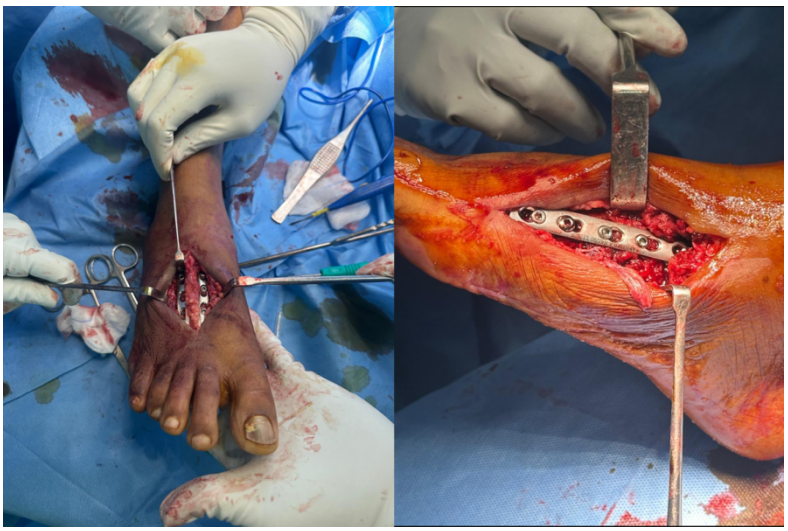

Fig 5: Intraoperative image showing corrective osteotomy and rigid plate fixation of the central metatarsals.

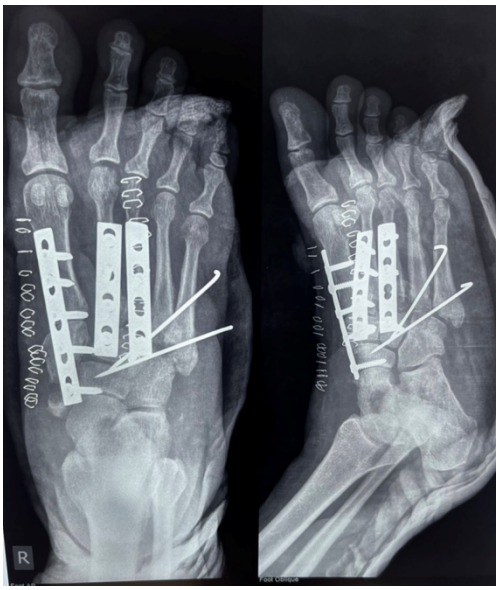

Fig 6: Immediate postoperative radiograph confirming restoration of midfoot alignment and stable internal fixation.

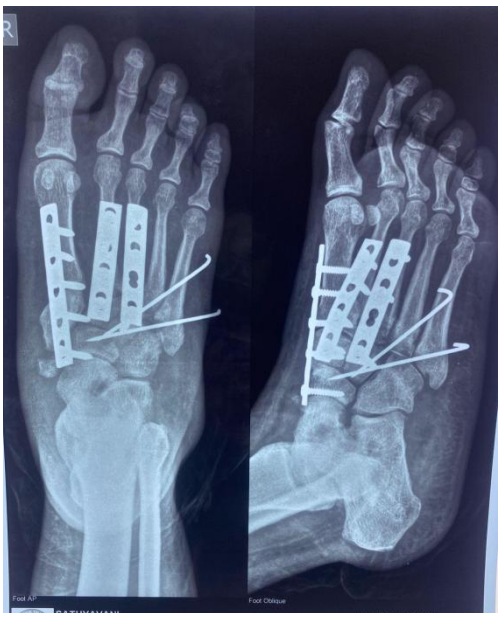

Fig 7: One-month follow-up radiograph demonstrating maintained reduction and early signs of healing.

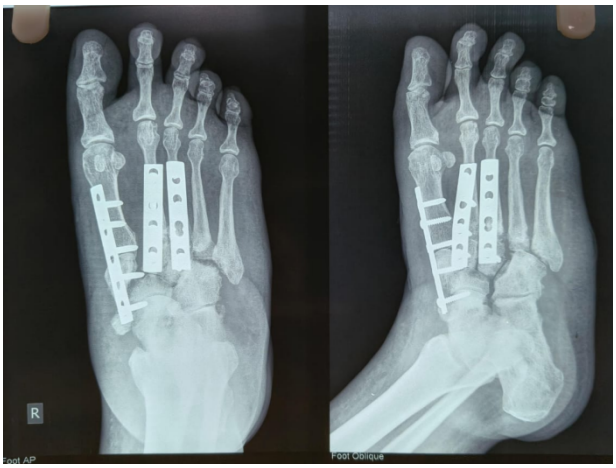

Fig 8: Six-month follow-up radiograph showing maintained column alignment and progressive consolidation.

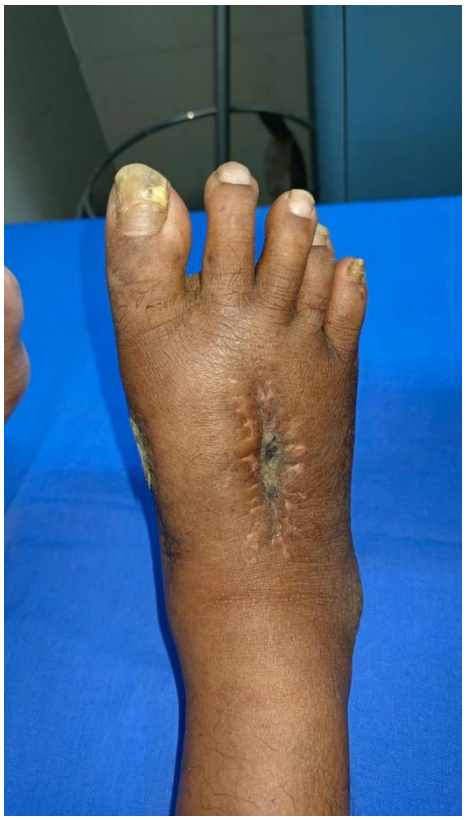

Fig 9: Clinical photograph at six months follow-up demonstrating satisfactory foot alignment and soft-tissue healing.

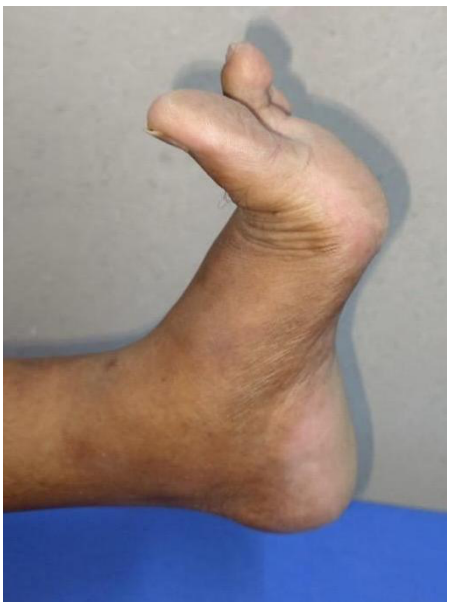

Fig 10: Clinical image demonstrating dorsiflexion at six months follow-up.

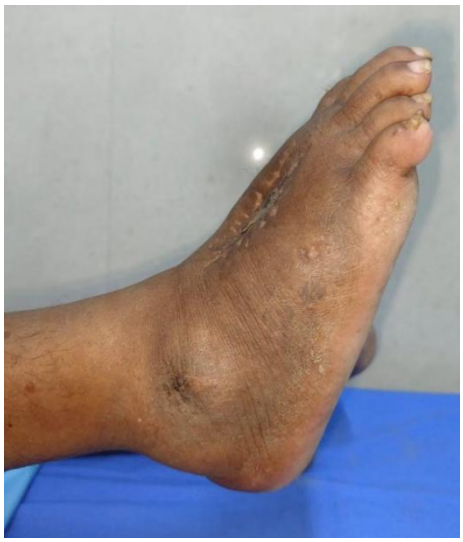

Fig 11: Clinical image demonstrating plantar flexion at six months follow-up.