

The Use of the Ilizarov Fixator in Primary Fusions of the Midfoot Due to Charcot Arthropathy: Review of Four Cases



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Introduction

The best results of Charcot foot reconstruction are achieved when the deformity is managed early. Before the collapse and destruction of the foot, the Tendo-achillis should be lengthened and the foot placed in a non-weight-bearing cast.¹

Surgical correction of this problem is difficult. However, the Charcot foot normally has an excellent blood supply and is able to tolerate reconstructive surgery, while healing well afterwards.² Osteomyelitis must be ruled out, but waiting for an ulcer to heal is not feasible. The deformity of the foot rarely allows healing.

Tendo-achilles lengthenings or gastrocnemius recessions are indicated in almost all cases involving hindfoot equinus and a dorsal dislocation of Chopart's or Lisfranc's joint.³⁻⁴ The Ilizarov circular fixator provides the capability of maintaining the surgically corrected position until the primary fusions sites are solid or the osteolysis has subsided.

Four examples of primary midfoot fusion are illustrated.

Aim

The aim is simple:

- 1) Restore a normal shape to the foot by fusing the dislocated joints into appropriate alignment.
- 2) Resection of a bony extrusion or shortening of the foot may be necessary to equalize medial and lateral column lengths.
- 3) Establish a plantigrade foot with proper hindfoot and forefoot relations.

Method

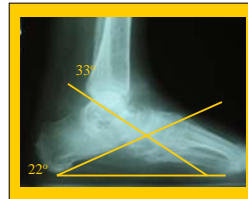
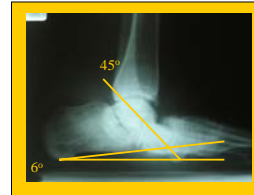
Tendo-achilles lengthenings were performed on all four patients. Patients 1 & 3 had bone resected along with the fusion of the midfoot. Patients 2 & 4 had only midfoot osteotomies performed.

The Ilizarov frames were applied using standard technique, along with arched wire technique at the fusion sites. The length of time the patients wore the frame was determined by radiographic and clinical findings. All patients were weight bearing.

Results

Case 1:

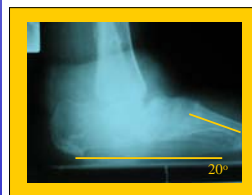
- Dislocation of Chopart's and Lisfranc's. No open lesions. Vascular study noted pulsatile flow to the digits.



Fusion of Chopart's joint was performed. The Ilizarov frame was maintained for 10 weeks. Currently, the patient is in an Arizona brace.

Case 2:

- Dislocation of Chopart's and Lisfranc's joint for 3 years with open plantar lesions. Vascular study noted pulsatile flow to the digits.

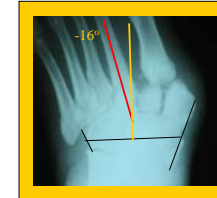


Partial taleyotomy with fusion of Chopart's joint was performed. The Ilizarov frame was maintained for 12 weeks. Currently, the patient has no open ulcer and is in an Arizona brace.

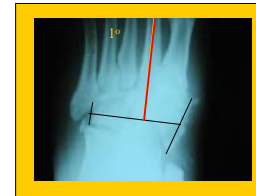
Results

Case 3:

- Dislocation of Lisfranc's joint. No open lesion and vascular studies noted pulsatile flow to the digits.

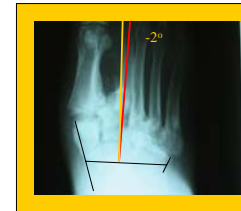


Fusion of Lisfranc's joint with resection of the 1st and 2nd cuneiform. The Symphony™ platelet system was used along with a bone autograft. The Ilizarov frame was maintained for 10 weeks. Currently, the patient is in an Arizona brace.

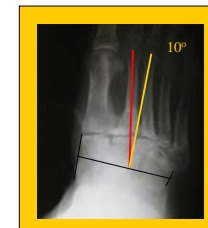


Case 4:

- Dislocation of Lisfranc's joint with an open ulcer on the medial arch for 4 months. Vascular study notes pulsatile flow to the digits.



Fusion of Lisfranc's joint was performed. X-rays are 3 months post-op. No motion noted at Lisfranc's joint. The Ilizarov frame was maintained for 9 weeks. Currently, the patient is in a custom diabetic shoe.



Conclusion

The ultimate goal of surgery is to prevent long term hospitalization with inactivity and a prolonged antibiotic regimen.

The surgical reconstruction of Charcot fracture-dislocation is common at the Lisfranc's or tarsometatarsal joint levels and at the Chopart's joint level. All four cases were successful in restoring appropriate alignment of the foot and a stable plantigrade position. The open lesions in two of the patients closed after their postoperative course.

Ilizarov circular fixation for Charcot arthropathy provides an alternative method of fixation. Rigid fixation, lower extremity stability, and early mobilization are advantages over traditional internal fixation. Cases 1-3 progressed to primary fusions within 12 to 16 weeks and Case 4 is a stable non-union. These results indicate that this technique can be successful in the treatment of Charcot arthropathy.

Literature Cited

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For Further Information

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