# New age approach to Charcot arthrodesis

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## Abstract

Charcot neuroarthropathy is a debilitating and progressive disease in the setting of diabetes where the bones and joints of the foot are affected, leading to the collapse of the midfoot, instability with gait, and possible ulceration to plantar midfoot [1]. Standard surgical treatment for Charcot neuroarthropathy is an aggressive, open surgical approach during correction. This retrospective poster discusses the benefits of minimally invasive Charcot reconstruction and addresses the hindfoot based on literature review and clinical evidence.

Complications with open surgical approaches include delayed wound healing, ulcerations, and possible infection of the arthrodesis site compared to minimally invasive surgical technique to help minimize the extent of incision site thus decreasing incision healing, vascular compromise and achieving arthrodesis at the osteotomy site [2].

This retrospective study is aimed to discuss the minimally invasive approach technique and its advantages when dealing with Charcot neuroarthropathy reconstructive surgery

## Case Study

Our retrospective study includes 5 patients who underwent staged, minimally invasive preparation of Charcot reconstructive surgery. Surgery is divided into two stages.

**Stage 1** of the surgery included minimally invasive preparation of Charcot joints and bones with the application of an external fixator. The external fixator was kept in place for approximately 12 weeks for consolidation of arthrodesis site.

**Stage 2** of the surgery included the removal of external fixator, assessment of the arthrodesis site, MIS preparation of the subtalar joint, open preparation of the ankle joint, and insertion of an intramedullary nail with or without beaming of the midfoot joint.

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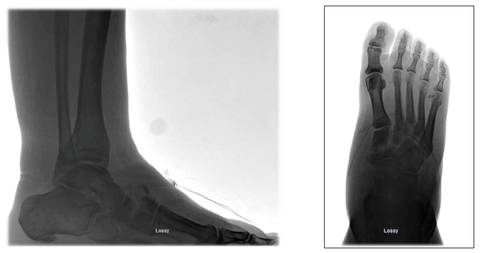
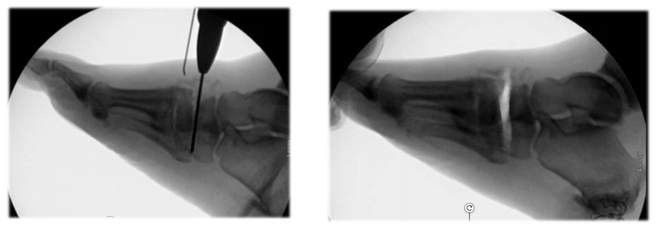
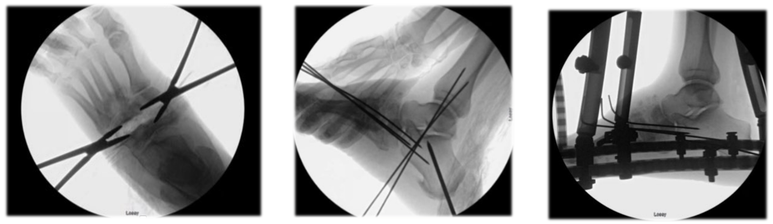
## Preoperative Images



## Stage 1





## Stage 2

## Results

We compared pre- and post-radiographic findings and noticed significant changes in the restoration of the midfoot, arch of the foot, calcaneal height, and Meary's angle.

Incision sites were healed within 2 weeks of **Stage 1** of the procedure and approximately 3 weeks after **Stage 2** of the procedure.

We did encounter complications with 2 of our patients, including one pin site infection and one heel ulcer due to the posterior splint, which required a soft tissue advancement flap to heal. We also added an angiocatheter with a 60cc syringe of sterile saline during the preparation of Charcot osteotomy site to avoid the possibility of thermal necrosis.

## Conclusion

In recent literature, there are only a couple of articles that discuss the benefits of a minimally invasive approach to Charcot arthrodesis.

Our 5 patients, who underwent minimally invasive approach for Charcot joint preparation with the use of angiocatheter at the osteotomy site, has yielded favorable results like minimizing vascular compromise, decreased wound dehiscence, provides structural stability at the osteotomy or arthrodesis site, and encourages early mobilization.

## References

1. Frøkjær J. Surgical treatment of midfoot charcot neuroarthropathy review of literature and our results after superconstruct reconstruction of midfoot charcot neuroarthropathy. J Clin Orthop Trauma. 2021 Feb

2. Mateen S, Thomas MA, Siddiqui NA. Comparison of Minimally Invasive and Open Approaches for Midfoot Charcot Neuroarthropathy Reconstruction. J Foot Ankle Surg. 2023 Aug

## Disclosure

The authors have no financial disclosures to report

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