Retrospective Analysis of First Metatarsocuneiform Joint Arthrodesis by a Single Surgeon Over a 10 Year Span

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Objectives

Fusion of the first metatarsocuneiform, or tarsometatarsal (TMT), joint is a widely used technique for hallux valgus correction. First described by a surgeon from New York, named Dr. Paul Lapidus. His procedure has evolved significantly in terms of Construct techniques since its inception. As there are now multiple fixation methods that are utilized and considered acceptable. Plates and screws combined have been shown to withstand more deforming forces than crossed screws[1], though the latter is a time tested technique which works well in the hands of those comfortable with it. There is research showing the benefits of both techniques in terms of union rates, strength of fixation, and earlier weight bearing possibilities. No studies that we are aware of, to date, have been reported for the same technique performed by a single surgeon over a decade. The goal of this study was to show the results of the Lapidus procedure with crossed screw fixation performed by a single surgeon over a 10 year span.

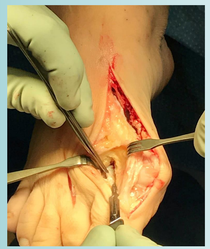
Study Design and Methods

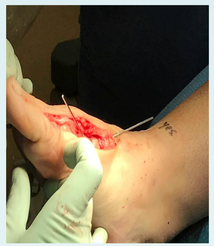
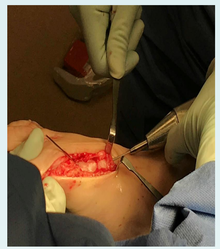
The authors retrospectively reviewed 680 consecutive patients who had undergone a 1st TMT fusion between the dates of May 5, 2005 and September 25, 2015. All patients received two solid core, fully threaded screws placed in a crossing fashion for fixation across the 1st TMT. Exclusion criteria included Lapidus arthrodesis procedures performed utilizing an alternative fixation method to the aforementioned. All procedures were performed by one surgeon (J.M.M.), and the medical records were independently reviewed by the primary investigator (S.M.H.). Adjunct procedures were recorded, as well as the interval from surgery to partial (PWB), and full (FWB) weightbearing, in a fixed-ankle immobilization walker. Radiographic non-union was defined as the absence of osseous trabeculation, diastasis, and/or sclerosis at the arthrodesis site 6 months following the procedure.

Results

Between May 5, 2005 and September 25, 2015, 680 consecutive first metatarsocuneiform arthrodesis procedures were performed by the surgeon (J.M.M.), utilizing 2 crossing solid core, fully threaded, cortical screws for fixation. The procedure was performed on 79 males (11.6%) and 601 females (88.4%) with a mean follow-up of 15.97 months (range, 1.91 to 127.96 months). The mean age at the time of surgery was 48.6 (range 12 to 84) years. The mean time to PWB in a boot was 42.78 days (range, 25 to 76 days), and mean time to FWB was 55.49 days (range, 27 to 90 days). Complications are listed in the table below. A total of 16 non-unions (2.35%) were reported. Of the 16 non-unions, 7 (43.8%) were symptomatic. 5 of these patients underwent revision arthrodesis while the other 2 declined further surgical intervention. Of the 16 patients with nonunion, 3 admitted to early weight-bearing against medical advice. Overall, the rate of union was 97.65%. In many of the cases additional procedures were performed. The most common being hammertoe correction, and distal lesser metatarsal osteotomies

Complications	Number
Non-Union	16 (9 asymptomatic, 5 electing for revision)
Delayed Union	2
Hallux Varus	16 (8 asymptomatic, 8 requiring revision)
DVT	3
Hallux Malleus	1
1st Metatarsal Fracture	1
Lisfranc Dislocation	1
Lesser Metatarsal Fracture	1
Stress Fracture at HW Site	1




Discussion

This study has a significantly larger population than any other first metatarsocuneiform joint arthrodesis study in the literature to date. Our findings show that that the crossed screw technique for fixation of the first metatarsocuneiform joint is capable of achieving optimal results with low rates of nonunion, and other complications. This supports similar findings depicted in the literature. Although the surgeon in this study did not utilize an early WB regimen post-operatively[2], the results of this study offer another quality piece of evidence showing 2 cheap cortical screws (< $50) remain a viable fixation method.


References

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