**CLINICAL PUBLICATION SUMMARY**

The DynaNail® TTC Fusion System has proven clinical success in treating high-risk patients with complex pathologies.

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**Tibiotalocalcaneal Arthrodesis Utilizing a Titanium Intramedullary Nail with an Internal Pseudoelastic Nitinol Compression Element: A Retrospective Case Series of 33 Patients**

*Surgeon Author(s):* Kent Ellington, MD, Samuel Ford, MD (OrthoCarolina Foot & Ankle Institute), John Kwon, MD (Harvard Medical School)

*Reference:* Journal of Foot & Ankle Surgery, 2019 Jan; (https://doi.org/10.1053/j.jfas.2018.08.046)

“The DynaNail is safe and effective in generating axial compression across both [...] joints, [...] even in the setting of challenging clinical scenarios.”

*Study Type:* Retrospective Case Series  
*No. of Patients:* 33 (30% Diabetic, 24% Charcot, 24% Talar AVN)

- Fusion defined as >50% bony bridging on CT scan
- 90% fusion of all arthrodesis surfaces
- 71% fusion in patients with Charcot neuroarthropathy
- 21% re-operation rate (0% for non-union)

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**Revision Tibiotalocalcaneal Arthrodesis with a Pseudoelastic Intramedullary Nail – A Case Study**

*Surgeon Author(s):* Dan Latt, MD (University of Arizona)


“These cases provide early evidence that sustained compression via an intramedullary nail can lead to rapid successful hindfoot fusion when standard approaches have failed.”

*Study Type:* Case Report  
*No. of Patients:* 2

- Tibiotalocalcaneal arthrodesis revision surgery with the DynaNail
- 2/2 fusion on CT at 3 months post-surgery (both diabetic with Charcot neuroarthropathy)
- At 1+ year follow-up, alignment maintained with no reported issues

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**Total Ankle Replacement Conversion to Tibiotalocalcaneal Arthrodesis with Bulk Femoral Head Allograft and Pseudoelastic Intramedullary Nail Providing Sustained Joint Compression: A Case Report.**

*Surgeon Author(s):* Mark Conklin, MD (Panorama Orthopedics, Denver, CO)


“The pseudoelastic nail’s combined sustained compression and ability to immediately dynamize at time of surgery potentially mean [...] greater load sharing between hardware and bone, which could limit the risk of hardware failure and potentially allow for earlier safe weight bearing.”

*Study Type:* Case Report  
*No. of Patients:* 2

- First report describing successful conversion of failed total ankle replacement to TTCA using the DynaNail and femoral head allograft
- 2/2 patients achieved fusion on CT by 6 months post-surgery
- Time to weight-bearing: 6 weeks
- At two years post-surgery, function restored and both patients satisfied with procedure
**Tibiotalocalcaneal Arthrodesis Using a Nitinol Intramedullary Hindfoot Nail**

Surgeon Author(s): Andrew Hsu, MD, Kent Ellington, MD (OrthoCarolina Foot & Ankle Institute), Sam Adams, MD (Duke University)


“...we have found that the nail is safe, reliable, and has promising clinical and radiographic results in settings of hindfoot arthritis, complex deformity, Charcot arthropathy, and talar avascular necrosis.”

**Study Type:** Expert Opinion

- Describes design rationale, performance, and surgical technique for the DynaNail
- Demonstrates that the DynaNail maintains compression for over 6 mm of simulated bone resorption compared with another internal compression nail that loses compression after 1 mm

**Case Example:** Chronic smoker underwent TTCA to revise failed tibiotalar arthrodesis

- Fusion confirmed on CT scans at 3 months post-surgery
- Weight-bearing at 6 weeks in CAM boot
- At 18 months follow-up, patient had no residual pain or other symptoms

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**Technique for Use of Trabecular Metal Spacers in Tibiotalocalcaneal Arthrodesis With Large Bony Defects.**

Surgeon Author(s): Chris Kreulen, MD; Eric Giza, MD (UC Davis)


“2 types of compression from the intramedullary TTC nail help stabilize this construct to ensure favorable outcomes.”

**Study Type:** Case Series

- First report describing use of the DynaNail with Trabecular Metal spacers for TTCA to treat large bony defects
- 100% fusion in all 6 patients (2 with failed TARs and 2 with Charcot neuropathy)
- Average fusion time: 8 weeks
- No reported complications

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**Measurement of Nitinol Recovery Distance Using Pseudoelastic Intramedullary Nail in Tibiotalocalcaneal Arthrodesis.**

Surgeon Author(s): Chris Gross, MD, Sam Adams, MD, Selene Parekh, MD, Beau Kildow, MD (Duke University)


“The movement of the nitinol element suggests continuous compression at the arthrodesis site.”

**Study Type:** Retrospective Case Series

**No. of Patients:** 15 (60% revisions, 27% smokers, 27% diabetics)

- First study to describe method for measuring the recovery distance of the DynaNail Compressive Element on radiographs
- Average follow-up time: 195 days
- Compressive Element recovered an average of 5.58 mm
- 86% of total recovered distance occurred within the first 40 days