

## TECHNIQUE FOR ISOLATED ARTHROPLASTY OF THE SECOND METATARSOCUNEIFORM JOINT

*Thomas J. Merrill, DPM*

*Sarah Sweeney*

The majority of available literature describing the surgical treatment of traumatic osteoarthritis of the second metatarsocuneiform joint involves isolated arthrodesis. Patients with post-traumatic osteoarthritis of the second metatarsocuneiform joint present with pain, stiffness, and presence of osteophytes within the joint space. After conservative treatment has failed, surgical intervention should be considered. We will discuss the technique and outcome of arthroplasty of the second metatarsocuneiform joint for post-traumatic osteoarthritis in a young, healthy female.

A 28-year-old female marathon runner presented to the clinic with pain in the right midfoot area. The patient admitted to enduring trauma during a marathon in 2003, and since then the pain has been constant. Upon examination, the patient was noted to have a high-arched foot with mild bilateral hallux abducto valgus. The bilateral HAV was asymptomatic. Pain was present upon palpation at the right second metatarsocuneiform joint. Radiographs revealed osteoarthritis of the medial aspect of the right second tarsal-metatarsal joint. The patient reported pain while running, walking, and at times during inactivity (Figures 1-3).

The patient tried numerous noninvasive treatment modalities, including physical therapy, shoe modification, custom orthotics, and injections. After repetitive failure of conservative treatment methods, surgical treatment was proposed. The patient agreed to arthroplasty of the second metatarsocuneiform joint of the right foot. Postoperatively, the patient healed without incident. A follow-up of five years was conducted on the patient, and she has experienced no pain since the procedure. She has been able to resume marathon running and has been satisfied with the results (Figures 4-6).

### OPERATIVE TECHNIQUES

The patient is positioned supine on the operative table. No tourniquet hemostasis is used in order to properly visualize the neurovascular structures in the foot. A 4.0 cm oblique incision is made over the second metatarsocuneiform joint parallel to the extensor tendons. Intraoperative fluoroscopy is used in order to ensure the correct placement of the incision. Using both sharp and blunt technique, the

incision is taken to the level of the subcutaneous tissue structures, with appropriate ligation and retraction of neurovascular structures.

The second metatarsal cuneiform joint is exposed by performing a capsulotomy. A rongeur is then used to debride dorsal spurring from the second metatarsocuneiform joint. Next, sharp dissection is utilized to expose the second metatarsocuneiform joint. Using a rongeur the cartilaginous surfaces of the base of the second metatarsal are removed. No cartilage or bone is removed from the three cuneiforms.

The wound is then flushed with sterile saline solution and #4-0 Prolene is used to reapproximate and repair the skin. Normal saline soaked gauze is used to create a mild compression dressing, and ACE wrap is applied to the foot. The patient is allowed to bear weight on the foot immediately as tolerated.

### DISCUSSION

When impairment of daily activities occurs, and quality of life diminishes, surgical intervention is necessary. Previous literature has discussed surgical management of post-traumatic second metatarsocuneiform osteoarthritis by arthrodesis. While this treatment is successful, it still presents the patient with a higher risk postoperatively. Since screws, plates, or K-wires are utilized for the arthrodesis (1-3), there is a high risk of postoperative non-union as well as hardware failure (1-3).

Another negative aspect to arthrodesis is the period that the patient must be nonweightbearing. Smith, Camasta, and Cass clearly stated that the postoperative weightbearing period for second metatarsocuneiform arthrodesis should be six weeks (3). An alternative option to treatment of post-traumatic osteoarthritis of the second metatarsal-cuneiform joint is arthroplasty. This treatment allows the patient to bear weight immediately postoperatively, and carries no risk of non-union or hardware failure. Due to the satisfactory results obtained from this case study, the authors recommend this procedure for treatment of osteoarthritis of the second metatarsocuneiform joint once conservative methods have failed.



Figure 1. Preoperative DP radiograph.



Figure 2. Preoperative oblique radiograph.

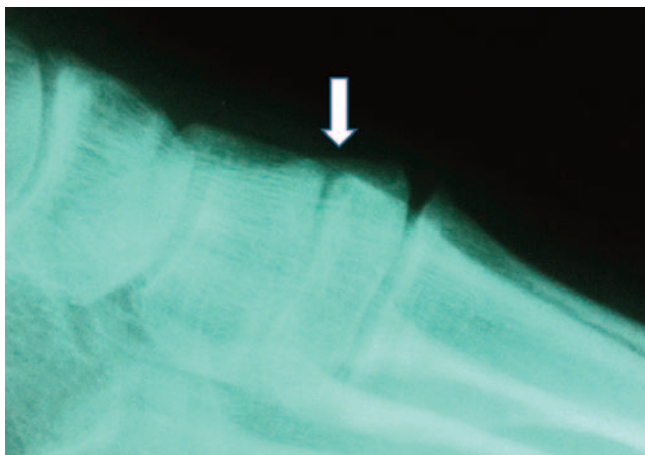


Figure 3. Preoperative lateral radiograph.



Figure 4. 1 year postoperative DP radiograph.

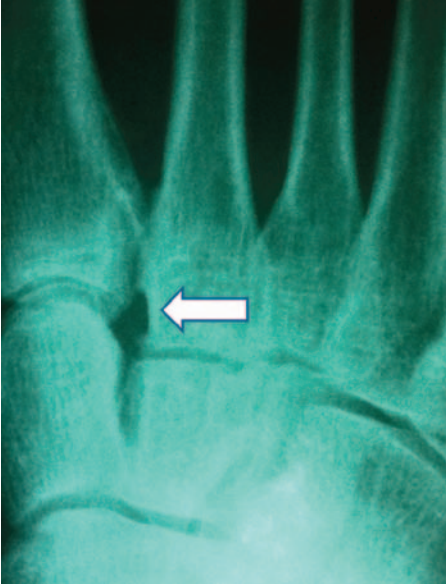


Figure 5. 1 year postoperative oblique radiograph.

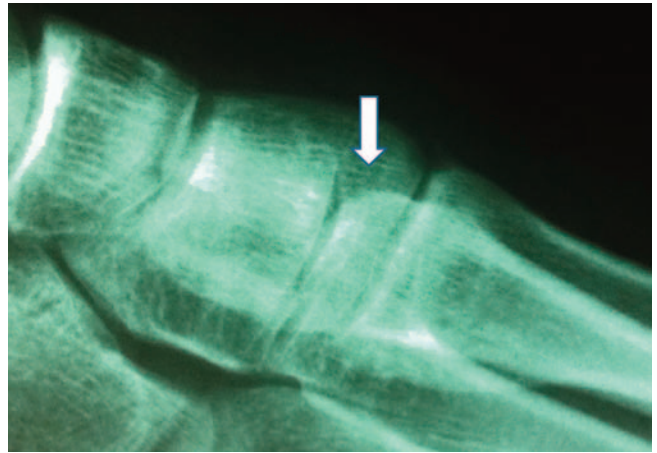


Figure 6. 1 year postoperative lateral radiograph.

## REFERENCES

1. Kilmartin T, O'Kane C. Fusion of the second metatarsocuneiform joint for the painful osteoarthritis. *Foot Ankle Int* 2008;29:1079-87.
2. Mann R, Prieskorn D, Sobel M. Mid-tarsal and tarsometatarsal arthrodesis for primary degenerative osteoarthritis or osteoarthritis after trauma. *J Bone Joint Surg* 1996;78:1376-85.
3. Smith S, Samasta C, Cass A. A technique for isolated arthrodesis of the second metatarsocuneiform joint. *J Foot Ankle Surg* 2009;48:606-11.