

KEY PROCEDURES

ANTERIOR APPROACH FOR ANKLE ARTHRODESIS

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Published outcomes of this procedure can be found at: World J Orthop. 2014 Jan 18;5(1):1-5, *Foot Ankle Int.* 2011 Oct;32(10):940-7, and *Foot Ankle Int.* 2009 Jul;30(7):631-9

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Abstract

End-stage ankle arthritis may be treated successfully with either an ankle arthrodesis or arthroplasty. Both surgical interventions have demonstrated success with regard to pain relief and function. Ankle arthrodesis is indicated for patients with recalcitrant ankle pain despite appropriate nonoperative intervention. Patients who have a history of posttraumatic arthritis from a high-energy injury, soft-tissue compromise, limited range of motion, or deformity may be superior candidates for arthrodesis. The surgical technique can be undertaken with either an open or an arthroscopic approach. An open anterior approach with an anatomic precontoured locking plate is ideal for patients with deformity and/or bone loss. Additionally, the use of a precontoured plate assists with achieving a neutral alignment in both the coronal and the sagittal plane, which is critical to the long-term success of the procedure. No hardware, however, substitutes for appropriate surgical technique, which is the focus of this video article.

The procedure includes the following steps:

1. An anterior extensile incision is made immediately lateral to the anterior tibial tendon, extending to the level of the talonavicular joint.
2. Dissection is taken with care to avoid the superficial peroneal nerve in the distal aspect of the incision. The extensor retinaculum is incised either longitudinally or in a z-shaped fashion to facilitate closure.
3. Deep dissection may be taken through the sheath of the anterior tibial tendon, which substantially decreases the risk of injury to the deep neurovascular bundle. Alternatively, dissection may be taken through the extensor hallucis longus (EHL) to avoid violation of the anterior tibial tendon sheath. The neurovascular bundle is directly posterior to the EHL at the level of the ankle joint.
4. The ankle joint is exposed, with the removal of tibial and talar osteophytes.
5. The joint surfaces are prepared.
6. The precontoured ankle arthrodesis plate, which is used to improve alignment, is positioned and placed.

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7. Compression is achieved using the “Achilles tension band technique,” which furthers compression through the ankle.
8. An additional transarticular screw is placed.

The expected outcome of the procedure, based on recent clinical outcomes, is osseous union, and the rate of union has been reported to range from 91% to 96%. Improvement in function and pain relief are associated with a successful arthrodesis. Despite a slow deterioration of functional outcomes and radiographic progression of arthritis, clinical improvement with a high rate of patient satisfaction has been noted at a mean of 9 years postoperatively.

Acknowledgment

NOTE: The images in the videos from Wierwioski et al. are reproduced from: Wierwioski M, Barg A, Schlemmer T, Valderrabano V. Ankle joint fusion with an anatomically preshaped anterior locking plate. *J Foot Ankle Surg.* 2016 Mar-Apr;55(2):414-7. Copyright © 2016, with permission from Elsevier. The image from Darland et al. is reproduced from Darland AM, Kadakia AR, Zeller JL. Branching patterns of the superficial peroneal nerve: implications for ankle arthroscopy and for anterolateral surgical approaches to the ankle. *J Foot Ankle Surg.* 2015 May-Jun; 54(3):332-7. Copyright © 2015, with permission from Elsevier.

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