

Foot and Ankle Fusions

Indications and
Surgical Techniques

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Editors

 Springer

Chapter 2

Minimally Invasive Ankle Arthrodesis

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Background

Ankle arthrodesis has remained the gold standard for end-stage ankle arthritis that no longer responds to non-operative management. Good results have been reported with open techniques, including fusion rates of greater than 90% [1–4]. Despite high fusion rates, however, there are potential complications associated with open arthrodesis. These include nonunion, infection, adjacent joint arthrosis, malalignment, neurovascular injury, and delayed wound healing [1, 4, 5]. For patients with tenuous soft tissue about the ankle, wound complications may lead to infection and/or nonunion [6]. As a result, minimally invasive ankle fusion techniques have been developed in an effort to not only decrease overall complication rates, but also shorten hospital stay and improve time to recovery.

The ankle joint involves three separate articulations—the tibia and talus, the distal tibia and fibula in which the fibula articulates with the concave incisura of the lateral tibia, and the talofibular articulation [7]. With the tibial plafond, the medial and lateral malleoli comprise the ankle mortise, a structure which provides inherent stability to the ankle joint. The syndesmosis, or distal tibiofibular articulation, is responsible for maintaining the integrity of the mortise and is stabilized by four separate ligaments. These include the anteroinferior tibiofibular, the posteroinferior tibiofibular, interosseous, and transverse ligaments.

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