

Key Publications

Stability of the Syndesmosis After Posterior Malleolar Fracture Fixation

Publication Excerpt

“Our data demonstrates that the rate of syndesmotic instability was reduced in trimalleolar and trimalleolar equivalent fractures when prone positioning and direct fixation of the posterior malleolus were first performed.”

Journal Abstract

Background

We sought to define the rate of syndesmotic instability after anatomic reduction of the posterior malleolus when posterior stabilization of a trimalleolar or trimalleolar equivalent ankle fracture was chosen vs when a supine position and initially conservative management of the posterior elements was chosen.

Methods

The types of syndesmotic and posterior malleolar fixation used to treat adult patients with ankle fractures involving the posterior malleolus at our level I trauma center were retrospectively assessed (N = 198). Specifically, both bimalleolar and trimalleolar fractures were included. Exclusion criteria included pilon fractures, trimalleolar fractures with Chaput fragments, and neurologic injury. Demographics, fracture classification, initial operative position, medial clear space, and posterior malleolar fragment size were recorded for each fracture.

Results

In total, 151 patients (76.3%) were initially positioned supine, 27.2% of whom had syndesmotic instability requiring operative stabilization. Almost 25% of supine patients also underwent posterior malleolar stabilization for posterior instability. Overall, 73 (48.3%) patients who were initially treated in the supine position needed some form of additional stabilization. Forty-seven patients (23.7%) were initially positioned prone. Syndesmotic stability was restored in 97.9% of these patients. This 2.1% rate of instability vastly differs from the 13-fold higher syndesmotic instability rate observed in the supine group ($P < .001$).

Conclusion

Our data demonstrate that the rate of syndesmotic instability was reduced in trimalleolar and trimalleolar equivalent fractures when prone positioning and direct fixation of the posterior malleolus were first performed. Using traditional preoperative estimates of posterior stability to determine the need for posterior malleolar fixation may be inadequate since almost a quarter of patients treated supine received posterior stabilization.

Level of Evidence

Level III, retrospective comparative series.

Reference

Miller MA, McDonald TC, Graves ML, et al. Stability of the syndesmosis after posterior malleolar fracture fixation. *Foot Ankle Int.* 2018; 39(1):99-104.

“A to P” Screw vs Posterolateral Plate for Posterior Malleolus Fixation in Trimalleolar Ankle Fractures

Publication Excerpt

“Patients with trimalleolar ankle fractures in whom the posterior malleolus was treated with posterolateral buttress plating had superior clinical outcomes at follow-up compared with those treated with AP screws.”

Journal Abstract

Objective

To compare radiographic and clinical midterm outcomes of posterior malleolar fractures treated with posterior buttress plating versus anterior to posterior lag screw fixation.

Methods

Design: Retrospective case series. Setting: Level I trauma center. Patients/Participants: Between January 2002 and December 2010, patients with posterior malleolar fractures were identified by Current Procedural Terminology code and their charts reviewed for eligibility. Intervention: Posterior malleolar fixation using either anterior to posterior (AP) lag screws or posterior buttress plating. Main Outcome Measurements: Demographic data, length of follow-up, range of motion, and postoperative Short Musculoskeletal Function Assessment (SMFA) scores were the main outcome measurements. Immediate postoperative radiographs for residual gap/step-off and final follow-up radiographs for the degree of arthritis that developed were evaluated.

Results

Thirty-seven patients were eligible for the study, and 27 chose to participate. Sixteen patients underwent posterior buttress plating, and 11 underwent AP screw fixation with mean follow-up times of 54.9 and 32 months, respectively. Demographic data were similar between groups. The posterolateral plating group demonstrated superior postoperative SMFA scores compared with the AP screw group with statistically significant differences in the SMFA bother index (26.7 vs. 9.2, $P = 0.03$) and trends toward improvement in the mobility (28.3 vs. 12.9, $P = 0.08$) and functional indices (20.2 vs. 9.4, $P = 0.08$). There were no significant differences in the range of motion or the development of ankle arthritis over time.

Conclusions

Patients with trimalleolar ankle fractures in whom the posterior malleolus was treated with posterolateral buttress plating had superior clinical outcomes at follow-up compared with those treated with AP screws.

Reference

O'Connor T, Mueller B, Ly TV, et al. “A to P” screw versus posterolateral plate for posterior malleolus fixation in trimalleolar ankle fractures. *J Orthop Trauma*. 2015; 29(4):e151-6.

Anterior Tibiofibular Ligament Avulsion Fracture in Weber Type B Lateral Malleolar Fracture

Publication Excerpt

“The accurate reduction and fixation of the avulsed fragment is important for restoration of the stable distal tibiofibular joint and to prevent the chronic ankle joint pain caused by impingement of the avulsed fragment.”

Journal Abstract

Objective

The purpose of this study was to determine the incidence, relationship with the ankle diastasis, and effect of treatment of the anterior tibiofibular ligament avulsion fracture (Wagstaffe fracture) combined with the Weber type B lateral malleolar fracture.

Methods

This study reviewed 94 cases of ankle fractures treated with operative methods.

Results

There were 52 cases of Weber type B lateral malleolar fractures and 13 cases of Wagstaffe fractures combined with them (25%). Ankle diastases were diagnosed in 20 cases (38.5%) in all Weber type B fractures and 11 (84.6%) of the 13 Wagstaffe fractures.

Conclusion

The Wagstaffe fracture can be a good diagnostic clue of ankle diastasis in Weber type B lateral malleolar fracture. The accurate reduction and fixation of the avulsed fragment is important for restoration of the stable distal tibiofibular joint and to prevent the chronic ankle joint pain caused by impingement of the avulsed fragment.

Reference

Park JW, et al. Anterior tibiofibular ligament avulsion fracture in weber type B lateral malleolar fracture. *J Trauma Acute Care Surg.* 2002;52(4):655-9.



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