

Talus Fractures: Treatment

Numerous surgical approaches have been described for talar neck fractures. The medial approach allows easy access to the talar neck and is commonly used.

Medial Approach

An incision just medial to the tibialis anterior starting at the navicular tuberosity exposes the neck and can be extended proximally to facilitate fixation of a malleolar fracture or to perform a malleolar osteotomy. Surgical exposure can contribute to circulatory compromise of the talus. Care must be taken to avoid stripping of the dorsal neck vessels and to preserve the deltoid branches entering at the level of the deep deltoid ligament.

The disadvantage of the medial approach is that the exposure is less extensile.

This limited exposure makes judging rotation and medial neck shortening difficult. Medial neck comminution or impaction can be underestimated; if either condition is present, compression-screw fixation of the medial neck will result in shortening and varus malalignment.

In these circumstances, a separate lateral exposure allows a more accurate assessment of reduction and better fixation.

Anterolateral approach

Lateral to the common extensor digitorum longus–peroneus tertius tendon sheath provides exposure to the stronger lateral talar neck.

A wide-enough skin bridge must exist between the two incisions, and stripping of the dorsal talar neck must be avoided.

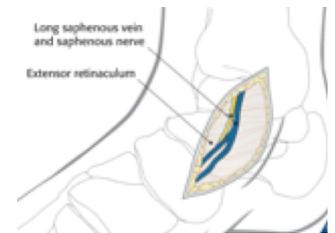
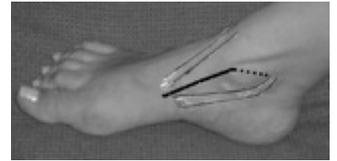
Once the fracture has been reduced, it is provisionally stabilized with Kirschner wires.

One medial and one lateral screws are inserted from a point just off the articular surface of the head and directed posteriorly into the body.

Lag screws can be used unless there is significant neck comminution that would result in neck shortening or malalignment when the fracture is compressed.

Bone graft is occasionally necessary to make up for large impaction defects of the medial talar neck.

Incision



Posterior Approach [Trillat]

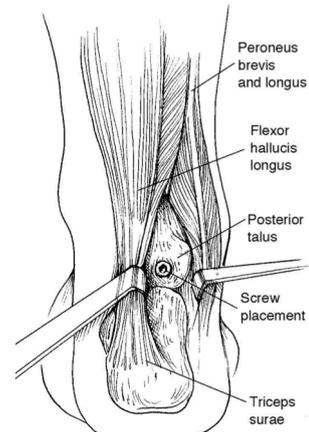
An incision is made lateral to the heel cord in the interval between the flexor hallucis longus and peroneal muscles.

This allows safe access to the entire posterior talar process.

Care must be taken during exposure to avoid injury to the peroneal artery and its branches.

Posterior-to-anterior screw placement provides superior mechanical strength.

Pitfalls of posterior-to-anterior screw fixation include penetration of the subtalar joint or lateral trochlear surface, injury to the flexor hallucis longus tendon, and restriction of ankle plantar-flexion due to screw-head impingement. These potential problems can be minimized by placement of smaller-diameter countersunk screws directed along the talar axis.



Screws placed from the talar head into the body may interfere with talonavicular joint function if the screw head is prominent and near the joint. This often necessitates countersinking the screw head. Headless lag screws have been shown to have mechanical properties comparable to those of small-fragment compression screws.

The timing of operative treatment of type II fractures remains controversial. There are no data to suggest that emergent treatment of type II fractures improves outcome, but most would agree that they should be treated with all possible expediency.

Type III fractures, which are characterized by displacement of the talar body from the ankle and subtalar joints, pose a treatment challenge. Urgent open reduction is mandated to relieve compression from the displaced body on the neurovascular bundle and skin medially and to minimize the occurrence of osteonecrosis. Many of these injuries have an associated medial malleolar fracture, which facilitates exposure. When the malleolus is intact, medial malleolar osteotomy is often required to allow repositioning of the talar body. Careful attention to the soft tissues around the deltoid ligament and medial surface of the talus is necessary, as these may contain the only remaining intact blood supply. A femoral distractor or external fixator may be applied for distraction of the calcaneus from the tibia to help extricate the body fragment. A percutaneous pin may be placed in the talus to toggle the body back into its anatomic position.

Open type III injuries are devastating and typically associated with significant long-term functional impairment.

A combined anterolateral and anteromedial approaches provide the advantages of

both approaches and rigid, anatomic reduction and debridement of the subtalar joint.

Anterior Vs Posterior screw Fixation

Anterior Screw Fixation

Advantage

1. Allow visualization of the fracture
2. Open reduction

Disadvantage:

1. Placed through the weaker talar neck
2. Talar head articular surface.

Cannulated screws are now available for percutaneous fixation of fractures accurately reduced using closed methods

Posterior to anterior

Advantages:

1. Avoid disruption of the talonavicular joint
2. Avoid further damage to the dorsal blood supply to the talar neck
3. PA screw: Biomechanically better

Disadvantage:

Do not allow direct visualization of fracture reduction

Postoperative Care

Cast immobilization until provisional healing has taken place (4 to 6 weeks).

Weight bearing is delayed until there is convincing evidence of healing.