



Posterior Malleolar Fracture Fixation in Semilateral Position: A Review Study of 15 Cases

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Abstract

Objective: Ankle fracture is a common orthopedic injury¹. Ankle laxity varies depending on the plantar flexion-dorsiflexion position and the direction of the applied force so light rotational forces can cause complex ankle fracture². Careful evaluation of x rays and clinical examination are mandatory for successful outcome.

Methods: We reviewed 15 cases of ankle fracture with posterior malleolar involvement. We operated all cases by posterolateral approach in semi lateral position.

Result: Semilateral position and posterolateral approach allows a great exposure of all malleoli. This makes interpretation of fracture and fixation easy.

Conclusion: we strongly recommend semilateral position and posterolateral approach for all fibula fracture with post. malleoli involvement.

Keywords: posterior malleoli, planter flexion, dorsiflexion, pasterolateral, semilateral.

Introduction

Ankle fracture is one of the most common orthopedic injury. Halloway KL found almost 162 fracture of ankle from 582 fractures of lower limb¹. He found most of fracture as a result of minimal trauma. This is due to continuous variation of ankle laxity depending on the plantar flexion-dorsiflexion position and the direction of the applied force². So light rotational forces can cause complex ankle fracture. Ankle fracture are associated with high mortality rate in elderly³. Toole WP found low-energy ankle fractures in the elderly, very similar to hip fractures, were associated with a high mortality incidence (27.27%) at a mean of 2.67 ± 2.02 months. By mid-century, India's 60 and older population is

expected to encompass 323 million people, a number greater than the total U.S. population in 2012..So we are expected to encounter a lot of ankle injuries in coming time.

Posterior malleolus plays a very important role in ankle stabilization⁶. Displacement of more than 2 mm and fracture size more than 25% (figure 1) are common indications of fixation⁴. Approach to post. malleolus fracture, mode of fixation and indication of fixations are controversial topics . Many orthopaedic surgeons use anteroposterior screw for fixation by indirect reduction while some prefer butteress plate with direct reduction⁵. Posterolateral approach in prone position is most preferred approach by most orthopaedic surgeons^{7,8,9,10}.

We used semilateral position and posterolateral approach for fixing 15 cases of trimalleolar fractures. Semilateral position allows easy exposure of posterior malleoli as well as fibula. Just by removing side attachment semilateral position can be easily converted to supine position. So medial malleoli can be easily fixed. C arm position can also be easily adjusted in this position. These are benefit of semilateral position as compared to prone position.

Material and Methods

This was a prospective study. Approval was taken by our institutional review board. We include 15 patients (9 males 6 females) of mean age 44.5 (28 to 67) year in our study. Four patients had acute ankle dislocation. Dislocation was reduced and pop slab applied in emergency. Limb was elevated and surgery was done after swelling got subsided. Patient was put supine in semi lateral position with the help of sand bag and side support (fig.2). Side support was kept as such that can be easily removed and position changed to supine if needed. After tourniquet inflation, incision was given midway between lateral border of tendoachillis and fibula. Sural nerve was indentified and preserved. Retracting the peroneal tendons medially gives access to posterior aspect of lateral malleoli. Fibula was fixed with screw or semi tubular plate depending on fracture configuration.

Second interval was developed between flexor hallucis longus and peroneal tendon. Flexor hallucis was lifted from tibial part to gain access to posterior malleoli (fig 3). Fracture was fixed with screw or aniglide plate depending upon size of fragment or communiton. C arm can be easily used in this position to check orientation of screw and plate by just rotating the foot (fig 4). After fixing lateral side, side support is removed. Now position is changed to supine and medial malleollus fracture can be easily fixed.

Approach to medial malleoli and c arm positioning are biggest challenge in prone

position, which are not encountered in semilateral position⁹.

Results

All fracture united with a mean period of 10 weeks (fig 5,6,7) fig (9,10,11,12) fig (1,13). No superficial or deep infection was encountered in any case. Full weight bearing was allowed at three months. Patients were followed for a period of one year.

Discussion

Main aim of surgical management of ankle fracture is to maintain articular congruity and stable fixation to achieve good fuctional recovery. Management of trimalleolar fracture is difficult as compared to bimalleolar fracture due to involvement of posterior malleoli as well as lack of protocols.

Posterior malleoli fracture fixation is a controversial topic.

There are very few reports in literatures regarding posterior malleoli fixation. Few studies suggests fixation of post. malleoli^{4,8,10} and few finds no statistically significant difference was noted between the clinical results with and without fixation¹¹.

But based on his study on large cohort Warner sj strongly recomeneded accurate and stable fixation of post. malleoli to achieve stable ankle mortis¹². Nowadays recommended indication of posterior malleolar fixation is fracture affecting over 25% of the articular surface, displacement over 2 mm, ankle instability, and persistent subluxation of the talus^{4, 14}.

In our study we included 15 patients of post. malleolar fracture . Out of fifteen, thirteen patients had trimalleolar fracture. Two patients had deltoid ligament involvement without involving medial malleollus (fig 8).

We operated all cases through posterolateral approach in semilateral position. All studies in literature recommend prone position and same approach. But there are certain draw backs of prone position. Patient discomfort, C ARM

positioning and fixation of medial malleoli are difficulties in prone position. But in semilateral position we did not faced any of these difficulties. Mode of fixation was based on size of fracture fragment and bone quality. We used t butteress plate in old aged with osteoporotic bone. Rest in all cases we used partial or full threaded 4mm cancellous screw. Fibula was fixed with semi t or interfragmentary screw. Syndesmotoc injury was assessed on table by checking movement of fibula (more than 4mm) and radiology (clear space less than 5mm)¹⁴. We operated all cases after subsiding of soft tissue swelling to decrease the chance of wound dehiscence.

Depending on result of this study we strongly recommend semi lateral position and posterolateral approach to fix all trimalleolar fracture.

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