

A study of Bimalleolar fractures treated with open & closed method by TBW, k-wire, CC screw & semitubular plate



Medical Science

KEYWORDS : Ankle injuries; Ankle surgery; Bone screws; Fractures; Complications, Fracture fixation; Treatment outcome.

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ABSTRACT

Acute injuries gain importance because body weight is transmitted through it and location depends upon the stability of this joint. Many of these fracture are reduced by conservative treatment and have given good results. The other unstable displaced and open fractures require open reduction internal fixation. Objectives were to study the functional out come and results of surgical treatment of malleolar fractures.

Introduction

Sir Robert Jones said "Ankle is most injured joint of the body but the least well treated". Ankle injury gain importance because body weight is transmitted through it and locomotion depends upon stability of joint. They are usually mixed injuries, ligamentous and bony and each injury is an end result of ligamentous and bony failure due to deforming forces. Malleolar fracture have varied presentation which have given rise to a wide variety of classification System, of which two are invogue Lauge-Hansens and Danis-Weber classification .

Malleolar fractures are one of the most common fractures in orthopedic traumatology. As with all intra articular fracture, malleolar fracture necessitate accurate reduction and stable internal fixation. When malleolar fractures are not reduced accurately they may lead to post traumatic painful restriction of motion or osteoarthritis or both.

Many of the fractures which are stable are reduced by conservative treatment and have given good result. The other unstable displaced and open fracture require open reduction internal fixation. The superiority of ORIF over closed treatment have been thoroughly in literature.

The purpose of study is to assess the functional outcome and result of surgical treatment of malleolar fractures. The treatment option with ORIF technique available for malleolar fracture, to attain a proper anatomical alignment and stability of joint.

Aims and Objective

1. To study the functional outcome and result of surgical treatment of malleolar fractures.
2. To know the complication of open reduction internal fixation in malleolar fractures.

Material and Method

Twenty patients with fresh unimalleolar, bimalleolar and tri-malleolar fracture s who attend Smt. Shardaben Hospital, Saraspur, Ahmedabad between January 2012 to March 2014 were studied. Diagnosis is confirmed by the antero-posterior and lateral radiographs as seen in figure 1. Analgesic were give and patient were put on a below knee posterior POP slab to alleviate pain. Also antibiotics and tetanus immunoglobulin were given as needed. The fractures were classified based on Lauge-Hansens and Denis Weber classification in adults. Routine investiga-

tions were done in all patients. Patients were operated as early as possible once the general condition stable and was fit for surgery.

After pre operative assessment patient is taken to operation theatre and anaesthetized and shift to operative table in supine position. After through antiseptic wash, painting and draping of operative area alone. The procedure done under tourniquet to achieve bloodless operative field and to decrease blood loss.

The Lateral malleolus was approach either closed or open method. In closed method we used square nail that inserted from the tip of lateral malleolus. In open method it was approached through a postero lateral incision. The incision was put about 6 cm proximal to tip of lateral malleolus & extend distally along the posterior margin of fibula to the tip of lateral malleolus. Soft tissue & periosteum cleared. One third tubular plate was contoured to accommodate the lateral bow of the fibula. The distal two hole were fixed with cancellous screw. The proximal hole was fixed with cortical screw.

In 6 case lateral malleolus fixed with 1/3 semitubular plate & 12 case it was fixed with square nail.

The medial malleolus was approach either closed or open method. In closed method we used 4 mm CC screw with or without washer with the help of guide wire. In open method incision of 5 cm from the tip medial malleolus between its anterior & posterior border extend proximally. Reduction achieved with clamp & two parallel k wire inserted with drill. One was anterior & other was posterior from the tip of medial malleolus to the proximal tibia transfixing the malleoli the tibia without entering joint. A drill hole made 4 cm distal to fracture in proximal tibia. An AO wire 18 gauge is passed through predrilled hole of tibia from anteromedial to anterior aspect in figure of eight manner passing behind k wire & tensioned with an AO tensioner and the tips of wire was cut with cutter.

In 7 case tension band wire was done for medial malleolus & in 13 cases 4mm CC screw with or without washer used.

Post operative Protocol

Iv fluid were infused appropriate & injectable antibiotic & analgesic given. Elevation of affected limb was given. After 24 hours x ray of AP & lateral was taken. Wound inspected on 3rd day.

Suture removes after 12 day on an average. Below knee POP cast given & discharged with instruction of non weight bearing walking for 6 weeks and to come after 4 week for follow up.



Observation & Discussion

In our study of 20 patients, the age of the patients between 18-60 years with the mean age 38.05 years and the incidence of malleolar fracture found to be high in age group of 31 to 40 years. Out of 20 patients, 14 fractures were found in men & 6 fractures were in females. The union occurred in mean period of 10 weeks. Al-

though the scoring of Baird and Jackson has proven to be strict allowing only very small fluctuation from normal about 75% patients in this series achieved excellent result 20 % patients achieve good results. Partial weight bearing allow after 6 weeks.

Conclusion

Understanding the mechanism of injury is essential for good reduction & internal fixation

The fibular length has to be maintained for lateral stability of the ankle.

Anatomical reduction is essential in all intra articular fractures more so if a weight bearing joint like ankle joint is involved.

More severe injuries were followed by least satisfactory results.

Chances of non union of medial malleolus interposition of the periosteum and deltoid ligament are avoided.

Presence of posterior malleolar fragment affects the final outcome.

Tension bend wiring is the method preferred for small fragments and osteoporotic bones.

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