A CASE REPORT OF TRIMALLEOLAR FRACTURE TREATED WITH PLATING AND TENSION BAND WIRING

Orthopaedics

Dr. Ajay Krishna* 3rd Year orthopaedic Post Graduate Student. *Corresponding Author

Dr. Thiagarajan Pandian Assistant professor, Department of orthopaedics, Sree Balaji Medical College and Hospital, Chennai, Tamilnadu 600044

ABSTRACT

A case of trimalleolar fractures of left ankle has been described here. Fractures around the ankle joint mainly depend on the direction of forces during trauma, position of the ankle and foot at the hour of injury. A 44 year-old man fell off a two wheeler on a road and sustained injury to his left ankle. X-ray radiographs were taken and patient was diagnosed to have left sided post traumatic closed trimalleolar fracture with lauge Hansen classification of supination external rotation without any distal neurovascular deficit. Patient underwent osteosyntheses and During the post-operative period there was no complications.

KEYWORDS

Trimalleolar fracture; Ankle fracture, medial malleolus, lateral malleolus, posterior malleolus, osteosyntheses, tension band wiring.

INTRODUCTION

Ankle fracture is a common injury occurring under variety of conditions such as road traffic accidents, fall from height, sports injuries. Studies have shown that 20 - 30% of ankle fractures occur in the elderly people each year [1]. Pathological cause for an ankle fracture and bilateral trimalleolar fracture in a symmetric pattern is quite rare. In ankle fractures soft tissue plays a major role, usually after ankle injury there will be severe swelling of soft tissue and if no proper preoperative planning was taken, patients outcome will be poor. A trimalleolar fracture is a serious injury as it takes several months to heal.

Rehabilitation through physical therapy and home exercise is essential for strengthening the ankle. Even after the person can walk again, it can still take months for the muscles to get strong enough for them to walk without a limp. With proper physio therapy, a person can recover full function following an ankle fracture, but this can take up to two years, according to the American Academy of Orthopaedic Surgeons.

Case presentation:

A 44 year old male patient came to our institution sree Balaji medical college & hospitals casualty who had an alleged history fall from two wheeler and sustained injury to his left ankle followed by which patient had difficulty in walking. On local examination of his left ankle there were no external injuries, generalised swelling were present but no fracture blisters and range of movements were globally restricted without any distal neurovascular deficit.

x-ray radiographs were taken of ankle AP, lateral and mortise view showing trimalleolar fracture. CT scan with 3D reconstruction was taken for better fracture anatomy. Patient was put on below knee slab for immobilisation and analgesics were given.

Procedure

All the investigations required before surgery was done. Anaesthetic fitness was taken. Patient was taken for surgery after 6 days, swelling was subsided and was planned for open reduction and internal fixation with plating over lateral and posterior malleolus and tension band wire over medial malleolus. Patient in lateral position, under spinal anesthesia in sterile aseptic precaution incision were made through posterolateral approach 10cm incision was made, sural nerve identified and retracted laterally, sup peroneal retinaculum excised & fracture site visualised found to be segmented, it was fixed with 6 holes distal fibular locking plate and with lag screw and through the same incision posterior malleoli was fixed with a buttress plate with 2 screws. Thorough wound wash was given and wound was closed in layers. Patient was changed to supine position a 6 cm medial incision was made, fracture site was visualised and fixed with tension band wiring. Fracture reduction was checked under c-arm and was found to be satisfactory. Thorough wound wash given and wound closed in layers, sterile dressing was done.

Figure 1 showing plain x-ray ankle AP and lateral view

Figure 2 showing CT scan with 3D reconstruction

Figure 3 showing post operative x-ray of left ankle with implant insitu.

DISCUSSION

Ankle fractures are a very common traumatic injury. The prevalence of ankle fractures was reported to be 107 fractures per 100 000 person-years [2]. Koval et al reported that 14.2% were trimalleolar fractures [3]. Malleolar fractures occur because of different forces acting which

disrupts the integrity of the joint. More the number of malleoli involved more the difficulty in reducing the fracture and its stability and subsequent complications occur with direct proportions. It is not only the forces acting at the ankle is important also the attitude of the ankle is also equally important. Based on the fracture pattern on x-ray ankle fracture can be classified based on LAUGE – HANSEN classification[2]. There are other classifications but the importance of this classification is that it helps in fracture reduction. By reducing in the opposite direction of the forces and the ankle position the fracture site can be reduced. If the fracture is found to be dislocated or subluxated immediate reduction is required to overcome the subsequent gross edema. The presence of a fracture dislocation considerably worsens prognosis because of the cartilaginous damage produced. If the reduction of fracture is insufficient or absent the risk of poor results increases.

For better outcome proper anatomical reduction with adequate fracture stabilization and joint reduction is needed[1]. If there is a gross oedema or a soft tissue coverage compromise the ankle fractures can be reduced and stabilized by an external fixator till the oedema subsides or the soft tissue is good. In some cases plastic surgeon's help may be required if there is gross soft tissue compromise. Irrespective of the fracture classification, good to excellent results can be obtained in 75-89% of cases. In cases of frank syndesmotic diastasis [4] it is important to accurately reduce distal fibula into the tibial incisura.

Posttraumatic malignment in the ankle joint is associated with a high risk of secondary degenerative lesions, arthritis is a common complication affecting the prognosis. Both the tension bands and lag screws produces similar rates of union for transverse fractures of the medial malleolus, but tension band constructs are associated with fewer complications [5]. Early weight bearing is better avoided in distal tibial fractures and outcome will be better with initial protected weight bearing.

CONCLUSION:

Ankle fracture needs to be addressed with caution taking in to consideration of its soft tissue coverings. Not only plain x-ray, use of CT scan with 3D reconstruction is also needed for proper understanding of the fracture anatomy. Proper anatomical restoration of the ankle with surgical management will result in a good clinical outcome.

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