



## Trimalleolar fracture with subluxation of ankle joint in a compromised soft tissue cover

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#### Abstract:

Fractures around the ankle joint occur due to a variety of forces involved in trauma. Trimalleolar fractures occur with loss of joint integrity and soft tissue injuries in gross violent forces. To avoid complications they need to be planned in such a way to treat them with proper reduction and minimal soft tissue dissection around the ankle.

**Key words:** Trimalleolar fracture , subluxation of ankle , compromised soft tissue cover

#### Introduction:

The injuries around ankle joint may be caused by a variety of forces resulting in combination of malleolar fractures and at times with subluxation or dislocation of ankle joint and injuries to soft tissues also. These complex injuries are associated with gross swelling and potentially prone for complications like infections, loss of soft tissue cover, post traumatic arthritis.

#### Case report

A thirty two year old male was brought to the emergency department with a swelling and deformity left ankle. He sustained the injuries in Road Traffic Accident with multiple lacerations in the distal third of the left leg. Patient has been evaluated for any life threatening and limb threatening injuries and sufficiently stabilized and

taken up for evaluation of the left ankle injuries. Routine blood investigations and radiographs of the ankle are done.



**Figure 1: Compound wound**

His ankle injuries are diagnosed as trimalleolar fracture of the left ankle with fracture of

the medial malleolus, posterior malleolus and fracture at the supra syndesmotc region of the fubula. The wound appeared as contaminated and skin surrounding the ankle joint developed gross edema by the time he was brought.



**Figure 2: Radiograph with trimalleolar fracture and ankle subluxation**

The wounds were thoroughly irrigated under general anaesthesia and manipulations could not give a stable reduction of the joint. Because of the potential risk of infections patient was considered for surgical correction after the edema subsides and under anti biotic cover.

After a gap of six days the soft tissues around the ankle have developed wrinkles and the wounds showed healthy granulations and no soakage of the dressings. The case is planned for minimal intervention on the side of soft tissue injury that causes least meddling and damage to the soft tissue cover over the left ankle.

#### **Treatment**

After thorough preparation of the skin for surgery and draping , manipulations could not give acceptable reduction of fracture as well as the subluxated ankle joint. The supra syndesmotc fracture of the fibula has been exposed with lateral approach and fixed internally with a rush nail. The fixation of the fibula resulted in acceptable reduction of the medial, posterior malleoli as well as the subluxated ankle joint but not even on mild stress to the joint. The soft tissue injuries in the medial and posterior aspect of the syndesmotc region are not disturbed. Remaining malleoli are fixed internally with canulated screws , two for medial and one for posterior malleoli. After the closure of the surgical wounds , a thick POP support is given to the joint. The compound wounds eventually healed with out any complications as well as the surgical wounds.

The patient allowed non weight bearing movements eight weeks following surgery and partial and full weight bearing with a subsequent gap of four weeks each.



**Figure 3: Post operative radiograph**

#### **Discussion:**

Malleolar fractures occur with a variety of forces disrupting the integrity of the joint. More the number of malleoli involved the difficulty in reducing the fracture its stability and subsequent complications occur with direct proportions. These difficulties are faced with an emergency like situation to reduce the fractures when there is a subluxation or dislocation to overcome the subsequent gross edema. The presence of a fracture-dislocation considerably worsens prognosis because of the cartilaginous damage produced. The risk of poor results increases considerably when reduction of fracture is insufficient or absent. Post-traumatic arthritis is a common complication totally affecting the prognosis. Anatomical reduction, fracture stabilization, joint reduction give better outcome [1].

Ankle joint is one of the quickly responding joints even to minimal trauma in terms of post traumatic edema. The fractures around ankle can be reduced and stabilized by minimal hardware in a situation where the soft tissue cover is compromised and presenting oedema. Manipulative reduction and percutaneous pin fixation is a safe and convenient treatment for severely displaced distal tibial fractures in children. The advantages are like micro-trauma, tiny tissue damage, firm fixation, and the patients can exercise the function of ankle early, suggesting that it is an effective treatment method [2].

The presence of an incongruous joint at the time of injury represents a negative prognostic factor in malleolar fractures. Higher rates of posttraumatic arthritis are also observed with trimalleolar fracures, especially fractures of the posterior tibial rim, cartilage damage, and syndesmotc disruption.

Irrespective of the fracture classification, good to excellent results can be obtained in 75-89% of cases with anatomic reconstruction of the ankle mortise and the articular surfaces. Proper reduction of the distal fibula into the tibial incisura is of utmost importance in cases of frank syndesmotic diastasis [3]

Posttraumatic misalignment in the ankle joint is associated with a high risk of secondary degenerative lesions. In cases with suspicion of a syndesmosis lesion, confirmation of the diagnosis is imperative so as to perform an anatomic repositioning and reconstruction of stability [4].

Both the tension bands and lag screws result in similar rates of union for transverse fractures of the medial malleolus, but that tension band constructs are associated with less need for revision surgery and fewer complications [5]. The need for repeated surgeries and more soft tissue dissection are the factors to be considered carefully in the backdrop of edema and compromised soft tissue cover.

Early weight bearing is better avoided in distal tibial fractures and outcome will be better with initial protected weight bearing [6].

#### **Conclusion:**

In the case we are reporting prime importance is given to the wound care, and minimal intervention which have minimized the complications in managing a compound fracture subluxation of ankle. The difficulty in reducing a fracture and subluxation are overcome by attempting fibula fixation first.

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