

# Syndesmotic Disruption with Distal Fibular Fracture Among the Football Players of Manipur: A Case Series

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## ABSTRACT

Football is one of the most popular sports in Manipur. Ankle joint is frequently injured in contact sports like football. Syndesmotic ankle sprains are less common than typical ankle sprain; but are associated more often with significant morbidity and need for surgical treatment. It leads to prolonged loss of sports activities. Fracture of fibula is commonly associated with syndesmotic disruption. Here we present three cases of syndesmotic disruption with distal fibular fracture in football players presented to Sports Medicine OPD RIMS. They have presented with pain and swelling around the ankle joint following twisting injuries. Diagnosis was made from X-ray findings correlated with clinical examinations. All are treated surgically by open reduction and internal fixation with syndesmotic screw fixation, but one case without syndesmotic screw fixation. The patients followed an early functional rehabilitation program followed by sports specific exercises. They have returned to their previous sports activity within 6 months.

**Key words:** Football, Syndesmotic ankle sprains, Distal fibula Fracture

## INTRODUCTION

Football is one of the most popular sports in Manipur. Ankle joint is frequently injured in contact sports like football, hockey etc. Syndesmotic ankle sprains are much less common than typical ankle sprain; but are associated more often with significant morbidity and need for surgical treatment. Fracture of fibula is commonly associated with high grade syndesmotic disruption. The syndesmosis is a complex of ligaments that joins the distal fibula to the distal tibia at the level of the ankle joint and provides stability to the mortise of the talocrural (ankle) joint. Syndesmotic injuries can disrupt the normal stability of the ankle joint depending on their severity. This instability, if uncorrected, can lead to chronic instability and significant morbidity, ultimately leading to degenerative arthritis. Rehabilitation is focused on allowing patients to return to their pre-injury activities as quickly and safely as possible. Protocols initially focus on controlling swelling and recovery from surgery. The protocols then progress to restoration of motion, early protected weight bearing, restoration of strength, and

eventually a functional progression back to desired activities.

We report a series of 3 cases of syndesmotic disruption with distal fibular fracture among the football players of Manipur.

## CASE REPORTS



Figure 1: Preoperative X-ray Ankle AP, Lateral, Mortise view.



Figure 2: Post operative X-ray Ankle AP and lateral.

### Case 1

A 21 years old female footballer attended in the OPD with pain and swelling around the left ankle joint following a twisting injury while playing football on the same day. There was swelling and deformity around the ankle and unable to bear weight. On palpation, there was tenderness along the distal third of the fibula, over the anterior and posterior syndesmotic ligament and over the deltoid ligament. There was no tenderness in the proximal end of the fibula. Sensation was present and distal pulsations were felt. X-ray of the affected ankle (AP view, Mortise view, Lateral view) was taken and there was fracture of lateral malleoli above the syndesmosis (Danis-Weber type C) and increased tibiofibular clear space, decreased tibiofibular overlap, and increased medial clear space was also noted.

Patient was put in below knee POP slab for 4 days with left lower limb elevation. Open reduction and internal fixation of fibula with plate osteosynthesis was done for fracture and intraoperatively, cotton stress test and external rotation stress test of the dorsiflexed ankle was performed under fluoroscopy to assess tibiofibular diastasis and found to be positive. The fibula is reduced into the incisura usually under fluoroscopic control without direct visualization, held with a large pointed reduction forceps, and fixed with a trans-syndesmotic position screw. Syndesmotic screw was removed after 8 weeks. The patients followed an early functional rehabilitation program including ROM exercises, progressive strengthening of muscles, neuromuscular proprioceptive balance training, followed by sports specific exercises. Patient has returned to sports after 6 months.

### Case 2

A 19 years old female footballer attended in the OPD with pain and swelling around the right ankle joint following a twisting injury while playing football 10 days back. There was history of manipulation by a local quack following which there was increased pain and swelling around the ankle and she was not able to bear weight. On palpation, there was tenderness along the distal third of the fibula, on the anterior syndesmotic ligament and over the deltoid ligament. There was no tenderness in the proximal end of the fibula. Sensation is present and distal pulsations are felt. X-ray ankle was taken and there was fracture of lateral malleoli at the level of syndesmosis (Danis-Weber type B) and increased tibiofibular clear space, decreased tibiofibular overlap, and increased medial clear space was noted. Open reduction and internal fixation of fibula with plate osteosynthesis was done for fracture and intraoperatively, cotton stress test and external rotation stress test of the dorsiflex ankle was performed under fluoroscopy to assess tibiofibular diastasis and found to be negative. The patients

followed an early functional rehabilitation program. Patient has returned to sports after 4 and ½ months.

### Case 3

A 23 years old male footballer attended in the OPD with pain and swelling around the left ankle joint following a twisting injury while playing football 2 days back. There was swelling and deformity around the ankle and unable to bear weight. On palpation, there was tenderness along the distal third of the fibula, over the anterior syndesmotic ligament and over the deltoid ligament. Tenderness is absent in the proximal end of the fibula. Sensation is present and distal pulsations are felt. X-ray ankle was taken and there was fracture of lateral malleoli above the level of syndesmosis (Danis-Weber type C) and increased tibiofibular clear space, decreased tibiofibular overlap, and increased medial clear space. Patient is put in below knee pop cast for 5 days with lower limb elevated. Open reduction and internal fixation of fibula with plate osteosynthesis was done with syndesmotic screw fixation. The patients followed an early functional rehabilitation program and return to sports activities in 5 months.

#### Early functional rehabilitation program:

##### Phase 1 (1 month)

- Active toe range of motion
- Core exercises
- Isometric strengthening exercises for both quadriceps and hamstrings
- Multidirectional leg raises
- Isometric core muscle exercises
- Non weight bearing in POP cast

##### Phase 2 (2-3 month)

- Active and passive range of motion of ankle
- Calf stretching
- Multidirectional ankle strengthening
- Partial to full weight bearing
- Balance training

- Step downs and ups
- Cardio exercises

##### Phase 3 (3+ month)

- Aggressive stretching of both PF and DF
- Advanced ankle strengthening
- Balance with catching a ball
- Plyometric exercises
- Agility and ladder drills
- Sports specific drills and activities

##### Phase 4

- Return to sports
- Tapping and bracing
- Maintenance program

## DISCUSSION

Syndesmotic ankle injury are a challenging lower extremity injury for athletes and sports medicine clinicians.<sup>1</sup> Indication of surgery is the presence of frank syndesmotic instability and presence of fracture requiring fixation.<sup>1</sup> Accurate reduction and stable fixation of the syndesmosis are critical to outcomes.<sup>2</sup> Intraoperative stress tests and stress radiographs are taken to assess the syndesmotic diastasis and syndesmotic screw fixation is done in instability.<sup>3</sup> The syndesmotic screw is removed after 8 weeks.<sup>3</sup>

## CONCLUSION

The operative goal in the treatment of syndesmotic injury associated with ankle fracture is to restore anatomy and stability for early movement, full functional recovery and early return to sports activities and to prevent post traumatic arthritis.<sup>4</sup> Any instability of the syndesmosis must be recognized and treated surgically with the key principles of anatomic reduction and secure fixation. Full rehabilitation typically requires 2–6 months and following an organized regimen that allows adequate time for healing with sequential, functional increases in activity.<sup>5</sup>

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