RECURRENT SPRAIN OF THE ANKLE JOINT WITH DIASTASIS

J. F. P. MULLINS and J. G. SALLIS, DURBAN, SOUTH AFRICA

From the Addington Hospital, Durban, and St Mary's Hospital, Marianhill

We believe that diastasis of the ankle joint is a common cause of recurrent sprains. It is not well recognised, although it has been described by various authors, notably by Outland (1943). The true incidence of partial diastasis in recurrent sprains is not known, but we believe it to be 70 or 80 per cent.

In this paper we describe the treatment of recurrent sprains by stabilisation of the inferior tibio-fibular joint with a lag screw.

CLINICAL MATERIAL

Seventy-five patients were treated in this series. Their ages ranged from sixteen to sixty-five years with an approximately equal sex incidence. The condition has also been recognised in children from the age of eight years, but operation has not been used. Gross diastasis which is quite obvious is excluded from this study.

CLINICAL FEATURES

History—There is a history of injury to the ankle—usually a sprain—and from then on the patient has a weak ankle, which is sprained repeatedly. A prominent feature is a sense of instability of the ankle. There is a chronic aching pain, with tiredness. Pain is often felt over the lateral ligament.

Examination—In acute cases there are pain, swelling and discoloration. Tenderness to palpation may be generalised over the usual ligamentous areas, but there is also specially marked tenderness over the anterior inferior tibio-fibular ligament, and possibly over the posterior inferior tibio-fibular ligaments. The patient is unable to bear weight. The talus can be rocked from side to side with a characteristic feeling of a click in the ankle mortise. This is elicited by holding the talus just below the malleoli with the foot at right angles and sliding it from side to side. The leg must be held well above the malleoli, so that there is no compression and narrowing of the ankle mortise. It is important to exclude inversion and eversion at the subtalar joint. This “rocking” causes pain, which in acute cases interferes with the examination, and an anaesthetic may be required. In some cases a slight rock is normal and this can be checked by testing the uninjured ankle. In chronic cases there may be no obvious swelling, but widening of the malleoli may be apparent. There is usually tenderness over the anterior inferior tibio-fibular ligament, and the typical side-to-side “rock” of the talus can sometimes be eliminated or markedly diminished by compression of the malleoli. This confirms the diagnosis. There is usually pain on “rocking,” and in old cases there may be crepitus. Movements of the joint otherwise are full and pain-free.

Radiographic features—Radiographs of the ankle taken in full inversion and in full eversion show the following features. 1) Tilting of the talus in relation to the inferior articular surface of the tibia. Tilting is more usually shown on inversion, unless the inner part of the medial ligament is torn, in which case tilting can be shown also on eversion. 2) There is sometimes a perceptible widening of the syndesmosis between the tibia and the fibula just above its articular surface. 3) In chronic cases roughening of the tibia and fibula may be present where the ligaments have been avulsed.
TREATMENT

Costigan (1953) used a stainless steel screw across the tibio-fibular syndesmosis with apparently satisfactory results in twenty-five cases and did not find it necessary to remove the screw. Lee and Horan (1943) passed threaded Kirschner wires through the tibia and fibula and drew the bones together with thumb nuts. Leonard (1949) treated fifty-one patients by

Fig. 1
Case 1—Radiographs showing, on both sides, tilting of the talus on inversion.

immobilisation in a walking plaster for six weeks. Outland (1943) also used plaster, but he believed that tibio-fibular fusion might be necessary in chronic cases.

We have been disappointed with conservative methods in both acute and chronic cases, and for the last six years we have always advised operative stabilisation with a lag screw.

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OPERATION

The lower end of the fibula is exposed, and a hole is drilled through the fibula into the tibia with a slight cranial and anterior inclination. The hole must be as low as possible so that the screw will exert pressure at the junction of the articular surfaces of the fibula and tibia. A Johannsen lag screw (usually 1.5 inches long) is inserted into the drill-hole and driven firmly home. After this the "rocking" test will show whether the reconstruction has been effective.

Post-operative care—Immobilisation in plaster is not required. After three or four days in bed with the foot elevated ankle movements are encouraged and the patient is allowed up. Swelling of the ankle sometimes persists for a few weeks, but this gradually disappears. Some patients may be comforted by a crepe bandage, but there is no clinical necessity for this.

![Figure 3](image)

Case 2—Tilting of left talus on inversion. The right ankle is shown for comparison.

COMMENTS

Only a lag screw gives the necessary compression at the tibio-fibular syndesmosis: it grips the cancellous bone well, counter pressure being exerted on the fibula by the washer which should always be used. A Sherman screw does not give a compression force because of its fine thread. There has been no need to remove the screw.

The results in our seventy-five cases have been uniformly successful. We have not done this operation in children, because of the danger of disturbing the epiphysis.

Since our experience with these sprains we have treated ankle fractures with extra care, and frequently use screw fixation at the time of injury to avoid partial diastasis with its instability, recurrent sprains and later osteoarthritis. If it is not possible to operate at the time of the fracture because the fracture line traverses the site where one inserts the screw, operation is performed when the fracture has united.

ILLUSTRATIVE CASES

Case 1—A man aged twenty-six years complained of instability of both ankles since spraining them about two years before. Examination showed that movements were full and pain-free. There was tenderness over both anterior inferior tibio-fibular ligaments. The talus could be "rocked" in both ankles—especially the left, in which crepitus was marked. Radiographs showed tilting of the talus, on inversion only, in both ankles (Fig. 1). There was widening of the tibio-fibular syndesmosis,
especially of the right. The right fibula showed a roughened area where the periosteum had been torn by the pull of the ligaments. The tibio-fibular joint was stabilised by a lag screw on both sides (Fig. 2). The patient has returned to competitive badminton and leads a normal life, with no symptoms from either ankle.

Case 2—A woman aged forty-seven years complained that her left ankle had been weak for many years. She gave a history of having sprained the ankle some years previously. On examination, movements of the ankle were full and pain-free, but there was tenderness over the anterior inferior tibio-fibular ligaments, and the talus could be rocked. Radiographs showed tilting of the talus on both inversion and eversion, and perceptible widening of the tibio-fibular syndesmosis (Fig. 3). The tibio-fibular joint was stabilised by a lag screw. Since then she has had a stable ankle, a full range of movements, and has been back to her normal active life without symptoms.

**SUMMARY**

1. Partial diastasis of the tibio-fibular syndesmosis is believed to be common, but it is often overlooked as a cause of recurrent sprains of the ankle.
2. The treatment of recurrent sprains of the ankle by stabilising the inferior tibio-fibular joint with a lag screw is described. The method has been used in seventy-five patients aged between sixteen and sixty-five years. The longest follow-up has been six years.

**REFERENCES**


