

RUPTURES OF THE LATERAL LIGAMENTS OF THE ANKLE

Clinical Diagnosis

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During the 11-month period 1 October 1977 to 31 August 1978 a total of 44 patients with acute supination trauma of the ankle were examined. The clinical findings were compared with the results of arthrography. This revealed that direct and indirect tenderness of the anterior talofibular ligament and calcaneofibular ligament respectively, combined with a ≥ 4 cm swelling anteriorly and over the lateral malleolus, indicated a ligament injury with great likelihood. If some of the diagnostic signs are absent, most emphasis should be laid on the swelling over the lateral malleolus and on the direct and indirect tenderness of the calcaneofibular ligament. The talar-tilt test and examination for the drawer sign were of limited diagnostic value.

Key words: anterior talofibular ligament; calcaneofibular ligament; clinical diagnosis

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Supination trauma in the ankle is so common that often a clinical evaluation is the only examination performed. In that case it is important to know the clinical diagnostic accuracy. Arthrography of the ankle has gained much ground because of its great diagnostic value (Broström 1965a, b, Lindholm et al. 1978, Percey et al. 1969, Vuust 1980), but it is invasive and requires time and resources.

The present prospective study was undertaken for the purpose of assessing the accuracy of clinically diagnosing acute injuries to the lateral ligaments of the ankle in patients with supination traumas by comparing the clinical and arthrographic findings.

MATERIAL AND METHODS

The material comprises 444 patients with supination traumas of the ankle joint examined in the Casualty

Ward of Aalborg Hospital, South Section, during the period 1 October 1977 to 31 August 1978. Patients over 50 years of age were excluded because elderly persons are more apt to sustain fracture of the ankle than injury to its ligaments (Broström 1965b). Children with open epiphyseal lines were also excluded, as they are more apt to develop epiphysiolysis than ligament injuries. If X-rays revealed fracture at the ankle joint, the patient was also excluded from the study.

The patients were examined by the casualty officer according to a fixed form. Examination was done for:

- a. Direct tenderness of the anterior talofibular ligament (TAFL) and calcaneofibular ligament (CAFL).
- b. Indirect tenderness of the TAFL elicited by internal rotation and supination of the foot and indirect tenderness of the CAFL elicited by adduction of the heel.
- c. Stability tests without local anaesthesia. The drawer test was carried out with the patient sitting, the foot in 30° plantar flexion, by fixing the tibia with one hand while the other hand pressed the calcaneus forward. The test was taken to be positive if the talus could be moved more forward in the ankle mortise than on the other side. The talar-tilt test was

carried out by inversion of the calcaneus with fixed tibia. This test was interpreted as positive if the talus tilted more in the ankle joint than on the other side.

- d. Swelling anterior to and over the lateral malleolus was measured and recorded as ≥ 4 cm or < 4 cm in diameter.

According to the findings the patients were divided into three groups:

Group 1: Patients having severe physical signs, i.e. both indirect and direct tenderness of both ligaments as well as a swelling of 4 cm or more over the lateral malleolus.

Group 2: Patients with moderate signs and tenderness of at least one ligament.

Group 3: Patients with few signs and no tenderness of the ligaments.

Group 3 patients were treated with strapping and were discharged, while group 1 and 2 patients were subjected to arthrography within 24 hours of the trauma. A total of 372 were examined by arthrography, which was considered positive if there was laterally a leakage of contrast medium > 4 cm² (Percey et al. 1969).

RESULTS

Of the 372 consecutive patients included in the material 57 per cent were 25 years or younger (Figure 1). Of these latter patients 52 per cent were actively engaged in sports, and 40 per cent reported that they had previously had ankle complaints in the form of a tendency to sprains and pain.

Figure 2 shows that males and females sprained their ankles with equal frequency without sustaining ligament injuries, while ligament injuries were approximately twice as common in males as in females.

Among patients with a swelling ≥ 4 cm in diameter 30 per cent had no ligament injury and 70 per cent did (Figure 3).

Of the 55 group 1 patients with severe physical signs 91 per cent had ligament rupture (Figure 4). In Table 1 the frequency of ligament rupture is compared with the individual objective findings.

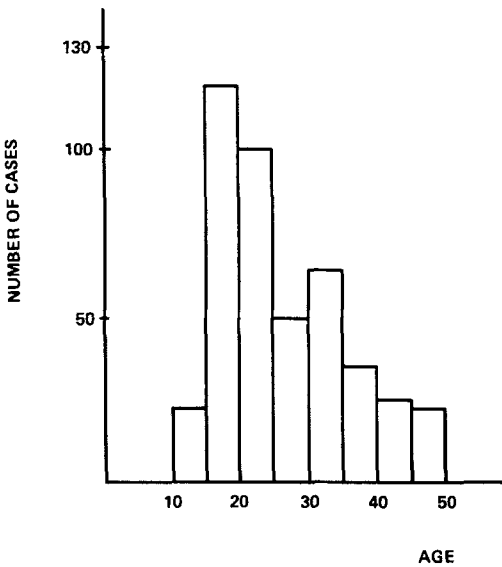


Figure 1. The distribution of the 444 ankle sprains according to age.

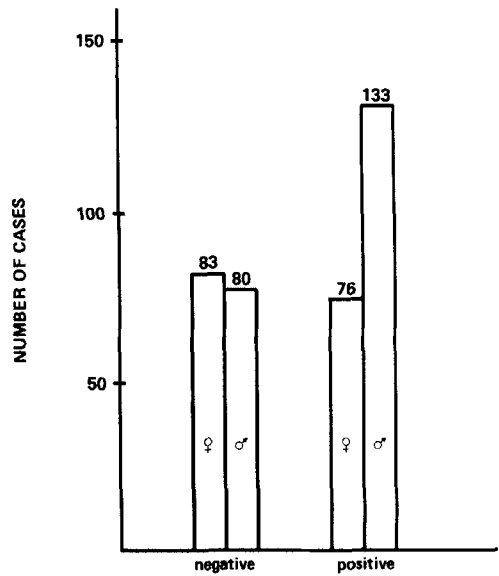


Figure 2. Negative and positive arthrography in relation to sex.

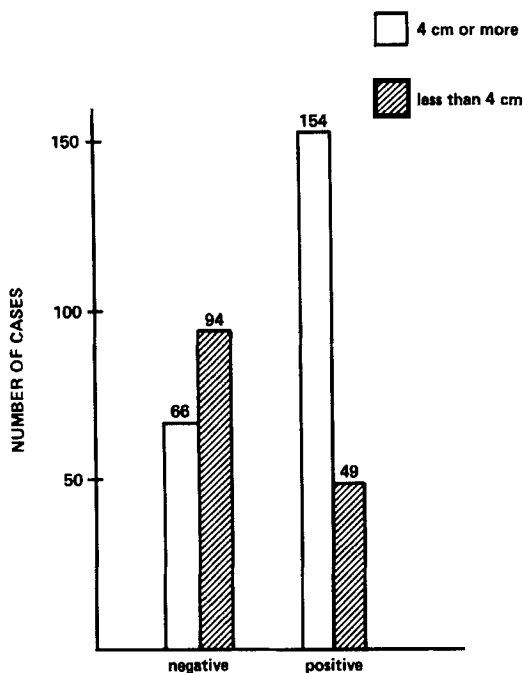


Figure 3. Size of swelling in relation to the outcome of arthrography. Nine ankles were not registered.

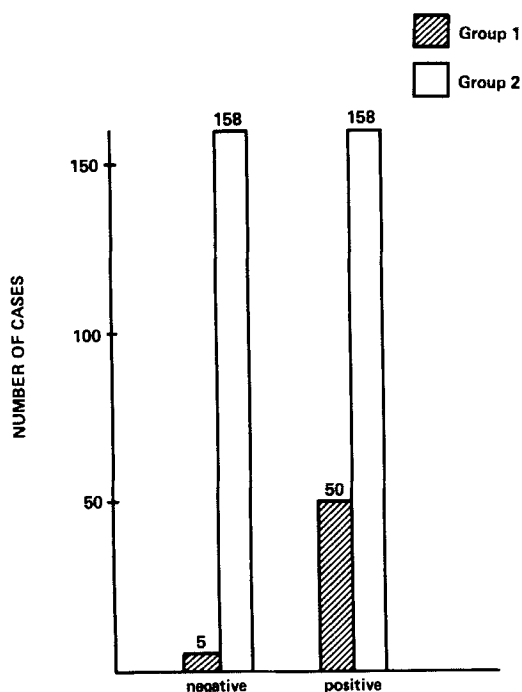


Figure 4. Size of groups 1 and 2 in relation to the outcome of arthrography.

Table 1. Arthrographic results according to the different criteria

Criteria	Number of cases	Ligament rupture (per cent)
A. Tenderness of TAFL	342	58
Tenderness of CAFL	162	72
B. Transferred pain of TAFL	278	55
Transferred pain of CAFL	112	66
C. Drawer test	35	71
D. Talar tilt	53	68
E. ≥ 4 cm	220	70
< 4 cm	143	34

DISCUSSION

In our study we used arthrography as the basis for evaluation, because we feel it is a reliable method for assessing ligament ruptures in the ankle (Broström 1965a, Lindholmer et al. 1978, Percey et al. 1969, Vuust 1980).

We did not attach importance to whether one or both ligaments were ruptured, as it is presumably difficult to perform so accurate a clinical diagnosis and because in several authors' opinion the treatment is the same (Niedermann et al. 1981).

As a single finding, swelling over the lateral malleolus is the most valuable diagnostic sign. This swelling is to be localized anterior to and over the lateral malleolus, and its extent must be ≥ 4 cm. Among patients with this sign 70 per cent had ligament rupture. Tenderness of the calcaneofibular ligament is of appreciably more diagnostic value than tenderness of the anterior talofibular ligament, seeing that 72 per cent of the patients with tenderness of the former had ligament rupture, as compared with only 58 per cent with tenderness of the latter.

If the patients had direct and indirect tenderness of the lateral ligaments and swelling over the lateral malleolus of ≥ 4 cm in diameter, the likelihood of a ligament injury was great, in our material 91 per cent.

The talar-tilt test and drawer sign were of diagnostic value, if positive. However, as they were

positive in only a few patients, these tests are of limited value in diagnosing lateral ligament injuries.

If some of the diagnostic signs are absent, most importance should be attached to the diameter of the haematoma and to the direct and indirect tenderness of the calcaneofibular ligament.

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