FROM THE ORTHOPAEDIC CLINIC OF LUND (CHIEF: PROF. GUNNAR WIBERG)

TENODESIS EMPLOYING THE METHOD OF WATSON-JONES FOR THE TREATMENT OF RECURRENT SUBLUXATION OF THE ANKLE

By

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It was not until recent times that it was fully realised that the rupture of the collateral ligaments of the foot is more common than had previously been supposed, and that it is liable to pass undetected at a routine examination. If the routine radiographic examination of an acutely injured ankle shows no skeletal injury, treatment may consist of the application of an elastic bandage or injections of novocaine and massage or exercise, and thus a ruptured ligament will not receive the immobilisation necessary for union and serious incapacity may result.

It is in the first place the lateral ligament that is injured by inversion sprains of the ankle. A flake of bone may be avulsed from the tip of the lateral malleolus or the ligament may be ruptured. This rupture is then equivalent to a fracture, and has also been classed under the heading of "ligamental fractures of the ankle".

Opinions still differ as to how many of the three lateral ligaments (anterior talo-fibular ligament, calcanus-fibular ligament and posterior talo-fibular ligament) of a sprained ankle are ruptured. On the basis of studies in the dissecting room *Lauge-Hansen* concluded that forced inversion of the joint ruptures only the calcanus-fibular ligament, but that simultaneous inward rotation will also rupture the anterior talo-fibular ligament.

The result is an instability of the ankle joint with the talus tending to tilt over in the tibio-fibular mortice, as can be seen in radiograms of the fully inverted foot (Fig. 1). Radiologic investigation of such acute injury requires the use of local anaesthesia, because otherwise pain contraction may mask any tilting of the talus.

This also applies to injuries of the medial ligaments resulting from

eversion sprains, which are, however, investigated with the foot fully everted.

How common are ruptures of the ligaments? *Aage Petersen* studied 109 recent ankle injuries at the Orthopaedic Hospital, Copenhagen, in which ordinary radiologic examination showed no skeletal injury. In as many as 12 (11 per cent) radiologic examination of the ankle, with the foot fully everted or inverted, revealed ligamental ruptures. and always of the lateral ligament. *Lauge-Hansen* found a simila. frequency in a series from Randers. *Aage Petersen* also reported 65 patients who said that their ankles were always "giving way", i.e. recur-

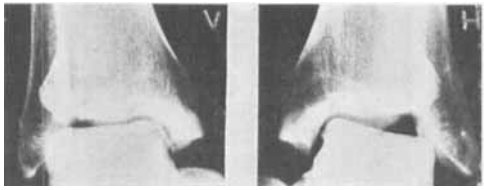


Fig. 1.
V: A normal, fully inverted foot.
H: Tilting of the talus, suggestive of ligamental injury.

rent subluxation without signs of skeletal injury at the routine radiographic examination. Radiologic examination of the fully everted or inverted foot of these patients, however, revealed tilting of the talus in 11 cases (17 per cent), suggestive of ligament injury of the lateral ligament in 10 and of the medial ligament in 1.

The usual treatment of acute ruptures of the lateral ligament consists of immobilisation in plaster for 6–10 weeks.

In those cases in which such immobilisation does not lead to healing of the ligament, and in which tilting of the talus persists as well as in those cases termed recurrent subluxation above, power exercises for increasing the strength of the muscles concerned with eversion may help to counteract instability. The wearing of shoes with soles of outwardly increasing thickness for slightly everting the foot is often useful.

However, there remains a group of patients who are seriously incapacitated by a continuous feeling of insecurity, and who only walk on rough ground with reluctance. In the treatment of such cases boots with irons, subtalus arthrodesis or reconstruction of the external ligament have been suggested. In the operative reconstruction many orthopaedic surgeons have used the tendon of the peroneus brevis. Various

methods have been described by *Nilsonne, Kiaer, Windfeld,* and *Watson-Jones.*

During the years 1948–1951, six cases of recurrent subluxation of the ankle were operated on following the method of *Watson-Jones,* at the Orthopaedic department, Lasarettet, Lund (Fig. 2). According to

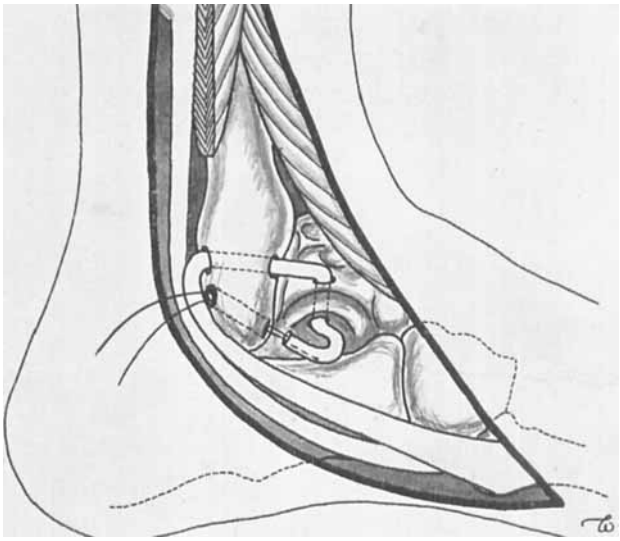


Fig. 2.
Tenodesis employing the method of Watson-Jones.

this method the upper end of the tendon of the peroneus brevis is first dissected free from the belly of the muscle, then passed from behind forwards through a drill hole in the lateral malleolus, then from above downwards through a new drill hole in the neck of the talus, and is then stitched to the tip of the malleolus, or a third hole is drilled upwards and backwards, and the tendon is stitched to itself behind the malleolus. The muscle belly is stitched to the tendon of the peroneus longus in order to avoid reduction of the muscles concerned with eversion.

Palmer reported 6 cases operated on following the technique of *Watson-Jones,* but he did not say how long he had followed-up his patients. In all of the cases the joint proved stable afterwards, but the range of inversion was limited by about 50 per cent.

The advantage of the operation according to *Watson-Jones* is that it represents a combination of tenodesis and ligament reconstruction.

Of the 6 cases in the present series, 4 were females and 2 were

males: 5 patients were 23–32 years old and 1, a woman, was 40. The history was one and the same throughout: after having sprained the ankle some years before, the foot had gradually begun to give way more and more so that the patient had a feeling of insecurity, and the ankle was often "twisted". Four of the patients had been examined radiographically, omitting inversion of the foot, at the time of the first sprain, but in none of them had any rupture or fracture been detected.

Examination just before operation was not very informative: slight tension or tenderness over the lateral malleolus on inversion was the only finding, and in none of the patients could any tilting of the talus be demonstrated without X-ray examination.

The technique described by *Watson-Jones* was used. In 4 cases two holes were drilled through the lateral malleolus, in 2 cases only 1. In none of the cases could it be decided at operation which of the three ligaments had been ruptured.

Five of the patients made a complete recovery: they are symptom-free, and have no feeling of instability in the ankle; they are able to go dancing and deny any interference with games or recreation. One of them even played in league football matches after the operation. In these 5 cases the interval between the operation and the last follow-up was 2–4 years.

The range of motion, the circumference of the calf, the position of the foot, and the gross functional power of the foot seem to be normal, and radiograms taken with the foot fully inverted show no tilting of the talus.

The sixth patient (30 years old), who has been followed-up for 1 year, complains of a feeling of tension over the lateral malleolus when she wears shoes with high or low heels. She is symptom-free as long as she wears shoes with heels of medium height, and is more than satisfied with the result of the operation, especially as she feels that the ankle is improving all the time. The range of plantar flexion has diminished by 10°, supination by 15° and pronation by 10°, compared with the other side. The foot is otherwise normal.

SUMMARY

Six patients submitted to tenodesis according to the method of *Watson-Jones* because of injury to the lateral ligament of the ankle were re-examined. Five of the patients, who had been operated on at least two years earlier, were symptom-free and the radiographic studies revealed no signs of a pathologic condition. One patient, operated on

one year earlier, reported a feeling of tension over the external malleolus, and slight limitation of the range of motion of the ankle. In this case the ankle is still gradually improving.

RESUME

Six malades soumis à la ténodèse par la méthode de Watson-Jones, à la suite d'une lésion du ligament latéral de la cheville ont été réexaminés. 5 de ces malades qui avaient été opérés au moins deux ans avant ne présentaient plus aucun symptome et les radiographies n'ont révélé aucun signe pathologique. Un malade, opéré un an plus tôt, a déclaré avoir l'impression d'une tension du malléole externe et d'une légère restriction du degré de mobilité de la cheville. Dans ce cas la cheville est toutefois en voie graduelle d'amélioration.

ZUSAMMENFASSUNG

Sechs Patienten, bei denen eine Tenodese nach der Methode von Watson-Jones wegen einer Beschädigung des lateralen Knöchelbandes ausgeführt wurde, wurden nachuntersucht. Fünf der Patienten, die zumindest vor zwei Jahren operiert worden waren, zeigten keinerlei Symptome und die Röntgenuntersuchung ergab keine pathologischen Veränderungen. Ein Patient, der vor einem Jahr operiert worden war, berichtete über ein Spannungsgefühl am äusseren Knöchel und eine leichte Begrenzung der Beweglichkeit des Knöchels. In diesem Falle verbessert sich der Zustand des Knöchelgelenkes fortgesetzt in zunehmenden Masse.

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