

SUBCUTANEOUS RUPTURE OF THE TENDON OF THE ANTERIOR TIBIAL MUSCLE

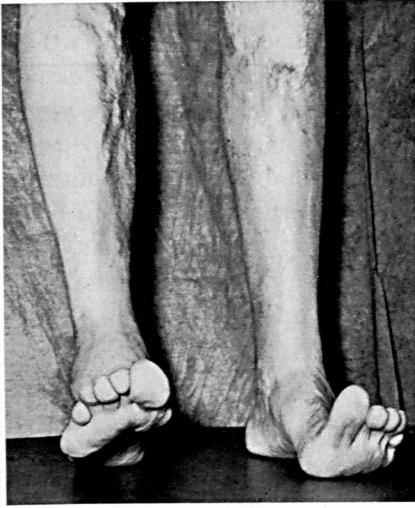
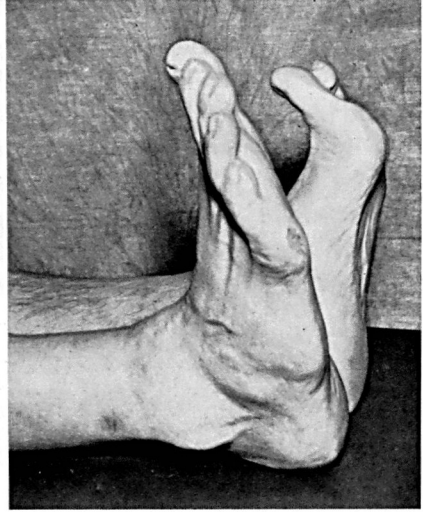
By

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Subcutaneous ruptures of some tendons, especially of the Achilles tendon and the tendon of the musculus pollicis longus, are fairly common. Thus, during the last decade 26 cases of rupture of the Achilles tendon have been treated at the Institute for Cripples, Hälsingborg, and 6 cases of rupture of the tendon of the musculus pollicis longus. On the other hand, rupture of the tendon of the anterior tibial muscle appears to be rare. Judging by the Annual Reports of the Institute no such case has ever been seen there, and a fairly thorough search of the literature failed to reveal more than 12 instances of this injury. It was therefore considered of interest to report a case recently seen at the Institute.

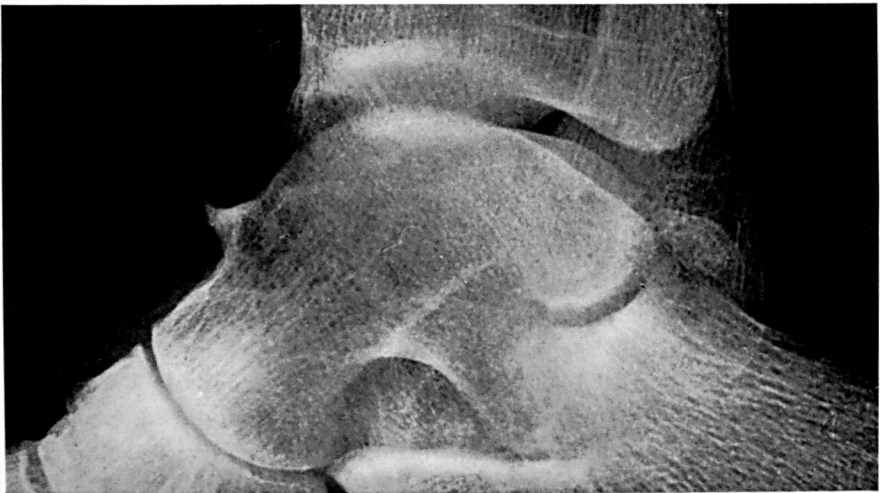
The patient was a doctor, aged 55. In November 1955 he had stumbled over a heavy carpet and fallen backwards with extreme plantar flexion of the ankle. He immediately felt a sharp, cutting ankle pain, which soon disappeared. He could support himself on the foot immediately after the accident. The following day the ankle was swollen and discoloured and the patient himself thought it was simply a sprain. After a few days' bed rest the ankle was no longer painful and after a week or so by when it was no longer so swollen the patient noticed marked decrease in dorsal flexion of the ankle.

In February 1956 (at least 2 months after the accident) the patient presented himself at the Institute for Cripples, Hälsingborg. Examination here showed that active dorsal flexion was considerably weakened and limited to at most 90° (Figs. 1 and 2), and gross functional strength of dorsal flexion was markedly decreased. Appreciable atrophy was

*Fig. 1.**Fig. 2.*

also noted at the site of the anterior tibial muscle and palpation over the normal course of the anterior tibial tendon revealed a defect in the soft parts just above the anterior surface of the talo-crural joint, just medial to the tendon of the extensor hallucis longus. A hard lump the size of a pea was felt just below this defect.

Roentgen examination (Fig. 3) showed: At the anterior edge of the

*Fig. 3.*

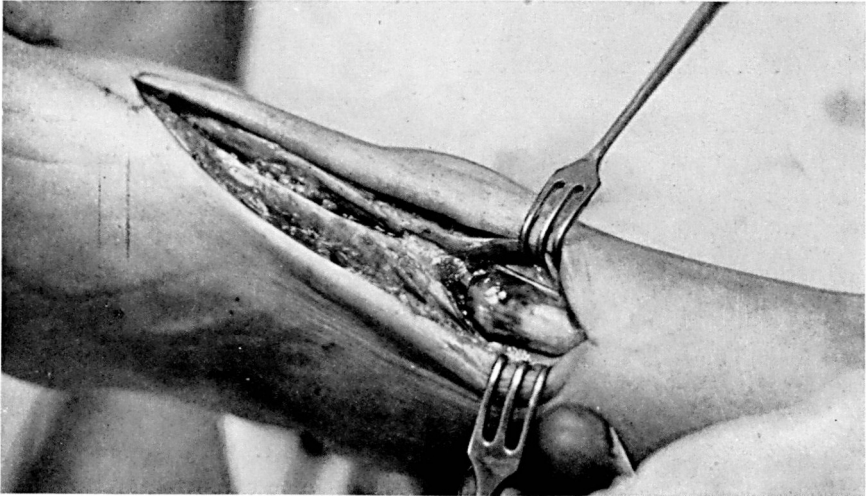


Fig. 4.

articular surface of the talus and just where the tendon of the anterior tibial muscle passes was a pronounced spur 9 mm in height, with a diameter of 7 mm at its base and 2 mm at its tip. Incipient deformans changes were seen in the talo-crural joint. (An unexpected finding in the roentgenogram was a density the thickness of a pencil in the lower third of the tibia: Melorheostose Léri).

Operation on February 15, 1956. A few centimetres above the crucial ligament was a club-shaped tendon stump of the anterior tibial muscle (Fig. 4). The exostosis seen in the roentgenogram at the anterior edge of the talus was readily recognized. Distal to the exostosis were small necrotic fragments of the tendon constituting the distal part of the anterior tibial tendon (Fig. 5). The exostosis was chiselled off. The proximal end of the tendon could only be drawn down about 1 cm so that union end-to-end was not possible. After a piece of the proximal tendon stump had been excised for pathologic examination the tendon was slit up about 5 cm and one half was drawn down and fastened in a groove gouged in the first cuneiform bone.

Pathologic examination showed: Tendon necrosis with commencing organization. The age of the necrosis could not be judged with certainty. Since the operation and the pathologic examination were carried out so long after the accident it is not possible to say anything about any changes before the accident.

It appears that only 12 cases of this condition are on record. In 1905

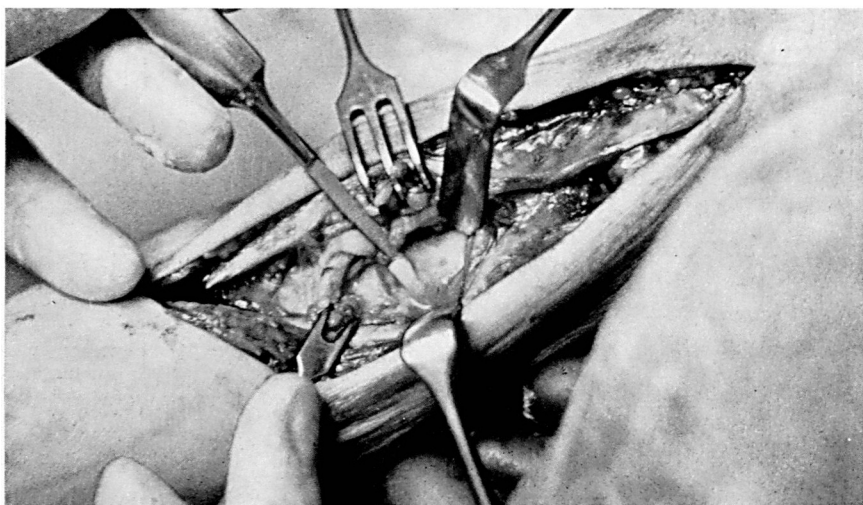


Fig. 5.

Brüning described 1 case of subcutaneous rupture of the tendon of the anterior tibial muscle and in 1910 *Els* published a similar case in which severe trauma did not rupture the anterior tibial tendon but resulted in an avulsion fracture of the tendon at its attachment on the first cuneiform bone. In 1934 *Burman* published a detailed description of the origin, the diagnosis and the treatment of this injury and contributed 2 personal cases. Later *Lapidus* (1941) described 2 cases, *Moberg* (1947) 4 cases and *Mensor & Ordway* (1954) 2 cases.

With but one exception all cases on record occurred in males between 45 and 69 years of age (average age 55). In case 2 the tendon was not ruptured but its attachment on the first cuneiform bone was avulsed because of a severe trauma to the foot. Apart from cases 2 and 8, the ruptures were all due to indirect, fairly mild violence. In at least 8 cases the rupture was due to maximal plantar flexion of the ankle.

It appears that mild or even very mild violence is capable of causing subcutaneous ruptures of the tendons. That mild violence is capable of causing rupture of such an otherwise strong tendon as the Achilles tendon is probably due to preexistent degenerative changes in the tendon. This is not only of theoretic interest but also of importance from a point of view of insurance.

Of the present collection from the literature, 2 of the cases had been examined pathologically and both showed necrotic changes in the tendon tissue. In none of these cases could it be decided with certainty

TABLE

Case no.	Author	Age in years	Sex	Trauma	Remarks
1	Brünning	45	♂	Hyperflexion while ski-ing.	Avulsion fracture of attachment of anterior tendon of tibialis. Subluxation of all toes.
2	Els	25	♂	Railway carriage against foot. Hyperflexion.	
3	Burman	69	♂	Stumbled. Repeated small traumata earlier.	Pathologic examination.
4	Burman	48	♂	Kick against hard object. Hyperflexion.	
5	Lapidus	46	♂	Stumbled.	
6	Lapidus	46	♂	Stumbled. Hyperflexion.	
7	Moberg	50	♂	Slipped up. Hyperflexion. Repeated small traumata.	
8	Moberg	46	♂	Direct violence. Heavy iron bar dropped on foot.	Metatarsal fracture. Rupture of tendon diagnosed 8 years after injury.
9	Moberg	46	♂	Stumbled.	Pathologic examination.
10	Moberg	62	♂	Stumbled. Hyperflexion.	
11	Mensor & Ordway	59	♂	Hyperflexion. Fell backwards with foot fixed.	Pathologic examination.
12	Mensor & Ordway	54	♂	Stumbled.	
13	Stenport	55	♂	Hyperflexion. Fell backwards with foot fixed. Repeated small traumata.	

whether these necrotic changes had existed *before* the accident, nor was this possible in the author's case.

In the cases described here an exostosis was seen at the site where the tendon of the anterior tibial muscle passes the anterior parts of the talus. It is known that a Colles' fracture, by friction and wear and tear of the tendon of the extensor pollicis longus against the sharp fragments, can lead to a subcutaneous rupture in a purely mechanical way. But, it is probably too bold to compare the tendon rupture in the present case with a Colles' fracture. However, it appears plausible and probable that chronic irritation of the tendon by the exostosis had caused a degenerative process which gradually progressed and weakened the tendon, so that it was no longer strong enough to tolerate the strain placed upon it by the accident.

SUMMARY

The author describes a case of subcutaneous rupture of the anterior tibial muscle and gives a survey of cases published earlier.

RESUME

L'auteur décrit un cas de rupture sous-cutanée du muscle tibial antérieur et rend compte des cas publiés antérieurement.

ZUSAMMENFASSUNG

Der Verfasser beschreibt einen Fall von subkutaner Ruptur des m. tibialis anterior und gibt eine Übersicht der bisher veröffentlichten Fälle.

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