LUXATION OF THE PERONEUS TENDONS

K. Karchinov

The condition has been also coined with the following denominations: chronic dislocation of the peroneus tendons, congenital dislocation of peroneus tendons, subluxation of peroneus tendons, permanent, recurrent or habitual dislocation of peroneus tendons.

Presumably, Gutierrez (1877) is the first to describe dislocation of the peroneus tendons. It is a matter of a relatively rare condition (Samiento and Wolf, 1975; Horanov, 1974). Usually sporadic cases are described, and only Mounier-Kuhn and Marsan (1968) published a series of thirty-four patients (18 permanent and habitual, and 16 recurrent dislocations). The condition is observed mainly in the young and middle age, and mostly athletes, skiers, basketball and soccer players, ballet-dancers etc are affected.

We treated a series of 14 patients — six with luxation of the peroneus tendons, and eight with posterior positioning (retroposition) of the fibular malleolus — of which eleven men and three women, with age ranging from 10 to 38 years, mainly sportsmen and servicemen.

The etiopathogenesis of luxation of the peroneus tendons is not fully clarified as yet. Occurrence of the luxation of the mentioned tendons is usually explained by traumatic lesions or congenital changes in the fibular malleolus region.

The supporters of the theory of direct or indirect trauma (Mounier-Kuhn and Marsan, 1968; Watson-Jones, 1945; Lewin, 1959; Du Vries, 1956; Boychev and Gerchev, 1970; Horanov, 1974 etc) usually report on a tearing of the peroneus tendons' fibrous sheath, detachment of the latter along its anterior segment, malunion of malleolar fractures, distal fractures of the external malleolus, rupture of the fibulocalcanear or talo-fibular ligaments building up the medial wall. Either a direct blow is taken to be the causing agent, or strong, active, sudden and continued contractions of the peroneus tendons, in case of fault stepping and sudden slipping while walking with a supinated foot, or in forced dorsiflexion with heavy contracture of the peroneus tendons.

Those in favour of the congenital theory (Lecontour and Sarlin, 1960; Watson-Jones, 1945; Mounier-Kuhn and Marsan, 1968; Du Vries, 1956; Boychev and Gerchev, 1970; Karchinov, 1962 etc) accept the existence of congenital predisposing factors in the soft tissues or bones. Such factors favouring luxation of the peroneus tendons may include a shallow sulcus fibularis with insufficient retro- and submalleolar space for the peroneal tendons, which is rather dependent on the fibular bone, with absent bony ridge, presence of slack annular ligaments, and poorly formed fibular malleolus.

Karchinov (1962) calls attention to the fact that during the embryonal development of the fetus, initially the fibula is situated inwards from the tibia, and by means of torsion, prompted by the action of the peroneal mus-
cles, it is shifted externally. Whenever the embryonal process of fibural torsion is arrested by exogenous or embryonal factors, the fibular malleolus may remain in abnormal, rather backward position. In the position described, the peroneus tendons may remain in front of the fibular malleolus from the very birth, or else a predisposition may result for their luxation in later life subsequent to sudden or continued forward pull by the peroneus tendons. Eight patients with abnormal position of the fibular malleolus and anteroposition of the peroneal tendons, eventually of the Achilles tendon too, are described. The statement of Du Vries (1956) that dislocation of the peroneus tendons may be produced as the result of an arthritis process is less verisimilar, since young and healthy subjects are usually concerned.

In the literature the issue about the tendons involved by dislocation remains disputable. Watson-Jones (1945), Boychev et al (1958) assume that there is a possibility for luxation of both peroneus tendons. Most of the authors believe that luxation of the m. peroneus longus tendon is the most symptomatic or the only one (Du Vries, 1956; Karchinov, 1962). Rather few reports are available on the isolated dislocation of the m. peroneus brevis tendon (Lewin, 1959; Boychev and Gerchev, 1970). In our case material either the tendon of m. peroneus longus alone, or in case of retroposition of the fibular malleolus, both peroneus tendons were dislocated.

In the opinion of Boychev et al, the congenital form is with bilateral involvement, whilst the acquired one is usually unilateral. In two cases of our series the dislocation is bilateral and not fully symmetrical, five patients are with rightside, and six — with leftside dislocation.

We distinguish two clinical forms of peroneus tendon dislocation: acquired and congenital.

The clinical course in the acquired form is usually linked to a direct trauma or overstrain of the peroneal muscles in dorsiflexion — with pronation or supination of the foot. A rupture of the tendon retinaculum or fibulocalcaneal ligament occurs. Some authors compare the rupture of these ligaments and the dislocation of peroneus tendons with the shoulder capsule avulsion and humeral head dislocation.

Swelling, hemorrhage and local pains are present at the site of soft tissue tear. The ankle joint is unstable and painful on contraction of the peroneal muscles. The gait pattern is altered, and the patient spares the affected foot. On dorsiflexion attempted, the fibular tendons are shifted laterally to the fibular malleolus. The pains subside within a few days, but luxation of the peroneus tendons persists, and may become permanent, recurrent or habitual. In some patients arching of the sole in varus position is impossible, or else while walking, luxation with spasm of the peroneus muscles occurs which may easily cause a fall. Later, a “spring” phenomenon is observed in the region of the fibular malleolus due to persisting luxation of the peroneus tendons. A valgus deformation of the hind foot is also present.

If the acquired luxation is not duly corrected, the repeated displacement and reposition of peroneus tendons leads to painfulness, weakness and instability of the ankle joint and foot. A painful tenovaginitis, associated with, loss of the fine coordination of the peroneal muscles develops, and as a consequence the elastic and elegant gait is modified. The movements in the ankle joint get normal, although with persisting “spring-like” dislocations of the peroneus tendons.
Luxation of the peroneus tendons

The symptoms in the congenital form are somewhat different. The luxation of peroneus tendons is habitual at each contact with the terrain, or permanent in case of fibular malleolus retroposition. The peroneus tendons lose their plantar flexion capacity, and are thereby converted into dorsiflexors of the foot, which assumes a valgus position. Soft tissue slackening may be present leading to shifting of the tendons, or else a shallow, poorly formed groove for the peroneus tendons, a flat fibular malleolus, low bony ridge of the fibula, or retroposition of the fibular malleolus. A fibular muscle spasm is also discovered in some patients.

Luxation of the peroneus tendons is not invariably duly diagnosed, and occasionally, the condition is "neglected" as a mild or inessential nosological entity.

Differential diagnosis should be made with congenital absence of the tibia, retroposition of the fibular malleolus, Volkmann's tibiotarsal malformation and the like.

Conservative management may be undertaken in fresh dislocations, and in primary displacement of the peroneus tendons. The deformity is reduced, and the foot is immobilized with adhesive tape for 6 months (Watson-Jones 1945), or in a plaster cast for 40 days (Boychev and Gerchev, 1970). The results of conservative treatment are not always favourable since recurrences are often recorded.

The indications for operative management are different. Horanov (1974) is in the opinion that frequent recurrent dislocations are indicated for surgery, and may be operated on within 5—10 months of the injury. Boychev et al (1958) are in favour of operative treatment only provided the dislocation of tendons causes pains. We are in the opinion that all recurrent, habitual or permanent subluxations or dislocations of the peroneus tendons require operative management.

The operative procedures existing are mainly of two types: soft tissue operations and bone operations.

— Soft tissue operations. Refreshment and suture of the retinaculum may be done in fresh lesions of the tendon vagina and retinaculum. In case of disinsertion of the pedicle from the fibular malleolus a procedure similar to Bankar's operation may be used.

The classical soft tissue operation is the procedure described by Ellis Jones in 1932. An Achilles tendon strip with distal insertion is used, threaded through a bony canal into the fibular malleolus, and then sutured to itself. Samiento and Wolf (1975) place the fibular tendon underneath the fibulocalcaneal ligament and then repair it. Lecoutour and Sarlin (1960) use stainless steel wire for the creation of a fibrous band around the wire. Boychev et al (1958), Horanov (1974) and others employ a periosteal pedicle flap from the external ankle or a free fascial graft.

All soft tissue operations are readily executed and effective, but recurrences are by no means excluded. Horanov (1974) reports on a series of four cured patients. Mounier-Kuhn and Marsan (1968), out of a total of 44 patients with peroneus tendon luxation operated on, obtained excellent results in 22 cases, good — in 9, and fair — in one. We used Ellis Jones' technique in four instances; in one of them stretching of the tendon strip, and subluxation of peroneus tendons occurred.
Bone operations. An osteoperiosteal impediment is created which helps to maintain the peroneus tendons within their normal path (trajectory) behind the fibular malleolus. Kelly (1920) cuts a transverse wedge-shaped autograft out of the fibular malleolus; it is pushed posteriorly and fixed in this position with a screw. Thus a bone wedge is formed impeding the luxation of the peroneus tendons. Du Vries (1956) describes a similar procedure: Watson-Jones (1945) excises with the aid of chisel an osteoperiosteal flap from the surface of the lateral malleolus, and rotates it in external and posterior direction, leaving part of it in contact with the fibula. The other half is covered with the peroneus tendons, and thus their dislocation is prevented. The technique described by Kreske and Kramer is similar.

Bone operations yield more reliable results in treating recurrent and habitual dislocations of the peroneus tendons. Kelly’s procedure provides for an adequately fixed wedge, but it passes across a major portion of the fibula in the malleolar region, and thus creates a precondition for malleolar fracture with ensuing bone projection beneath the skin. Watson-Jones’ osteoperiosteal flap is thin, and it is hardly possible to impart to it the desired position, and to secure stable fixation.

With a view to the above facts, we developed a personal operative procedure, denominated “semaphore-like” osteotomy of the fibular malleolus.

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**Personal operative procedure.** Using a curved incision running along the posterior aspect of the fibular malleolus, long 10—12 cm, the peroneus tendons and fibular malleolus are exposed. In case of luxated tendon, reposition is done. The bone periosteum is not stripped, but vertically incised in the area of the posterior third of the malleolus (Fig. 1), over a segment extending for 2—3 cm. Then, using a chisel, the entire bone of the fibular malleolus is cut from distal to proximalwards, following the trajectory outlined. The posterior third of the fibular malleolus together with the periosteum is bent out and backwards, at 40—50° angulation, preserving intact its proximal insertion. This position is maintained with the aid of a Kirschner pin or screw for 3—4 weeks. The gap is filled out using a triangular bone graft (Fig. 2). Thus a solid bony wedge is created at the point most

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Fig. 1

Fig. 2
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vulnerable to luxation of the peroneus tendons. The bone graft is massive, and is firmly retained in its new position through fixation with the Kirschner pin or screw. The fibular bone graft has a proximal nutritive pedicle which contributes to its quicker adaptation. The backward positioning of the graft does not interfere with the ankle function, nor with the wearing of shoes. The free bone graft filling the gap renders the intervention safer.

In case of fibular malleolus retroposition with permanent luxation of peroneus tendons, Karchinov (1962) resorts to operative reposition of the fibular malleus and peroneus tendons. The distal end of the fibula occupies a normal external position and forms the ankle mortise. The peroneus tendons are placed behind the fibular malleolus. In the fashion described six patients were treated with good outcome. To correct valgus deformity of the heel, extra-articular subtalar arthrodesis after the method of Grice-Green is used.

REFERENCES


ВЫВИХ МАЛОБЕРЦОВЫХ СУХОЖИЛИЙ

K. Карчинов

РЕЗЮМЕ

Представлены 14 больных, из которых шесть — с чистым вывихом малоберцовых сухожилий и восемь — с задней позицией латеральной лодыжки. Приводится толкование этиопатогенеза вывиha малоберцовых сухожилий.

Автор описывает ретропозицию латеральной лодыжки с перманентным вивихом малоберцовых сухожилий и определяется оперативное лечение с ретропозицией лодыжки в целях создания щиколоточной вилки и расположения малоберцовых сухожилий за лодыжкой.

Автор предлагает также новую оперативную технику для лечения чистых вывихов малоберцовых сухожилий. Производится семафорная остеотомия латеральной лодыжки, для задержки сухожилий в нормальной позиции и дефект заполняется гомокостным трансплантатом.