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Short Communication

Chronic Achilles Tendon Ruptures Considerations

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A neglected rupture or an inveterate Achilles tendon, with severe substance loss of the tendon itself requires specific surgical treatment in order to supply vascularization to the substance loss and in order to re-establish tendon functionality.

Delayed ruptures are characterized by the difficulty of achieving an end-to-end apposition of the tendon ends with plantar flexion of the foot during surgical reconstruction.

The failure rate in the primary treatment of a ruptured Achilles tendon ranges from 4 - 8%. Re-ruptures are more frequent (5 - 6%) in orthopaedic treatments with percutaneous sutures than those of surgical procedures. The failure of primary surgery or poorly indicated conservative treatments can lead to tendinopathies and necrosis of the ends of the Achilles tendon which progressively encourage the occurrence of cavities and non-contractile fibrous tissue (degenerative cystic, tendinosis, etc).

In more advanced stages lead to the production of a gap by loss of substance, increasing over time by the contraction of the gastrocnemius sometimes reaching 6 - 10 cm. This situation makes its repair with plasty or common tendon transfers complex and difficult.

There is a higher incidence of necrosis, infection and tendinosis of the ends of the tendon in surgical reconstruction using end-to-end suture due to the damage of the vascularization of the peritenon during surgery (2%) and as is often the case, this conditions the onset of substance loss of up to 3 or 4 centimeters in size.

The long standing tendinosis with micro-ruptures or successive surgical treatments and the progressive elongation of the gap (Kuwada III-IV classification) [1], determine the subsequent dysfunction.

These small substance losses or failures can be treated with plasty reconstruction techniques such as Lindholm [2], Bosworth [3] and in those instances where there is a substance loss of 3 - 4 centimeters, A serious problem arises when the gap size is 6 centimeters or more or there is an absolute difficulty for surgical reconstruction due to the severe tendinosis of the ends. This requires to surgically resection a wide area up to the healthy tissue for its reconstruction.

In these situations the materials available for augmentation can be categorized into autologous, synthetic, or allograft techniques.

Different procedures with distant or local autologous tendon transfers have been described in order to reinforce or reconstruct neglected Achilles tendon ruptures. The plastys and local tendon transfer or distant, Flexor Hallucis Longus, Peroneus Brevis, Flexor Digitorum Longus, free Gracilis tendon, fascia graft and the techniques of Abraham-Pankovich [3] (V-Y tendinous flap), Christiensen [4] (turn-down-flap) etc. and in some instances, reinforcement and augmentation techniques can be coupled with an Acellular Dermal Matrix (graft-jacket).

However, these cases, do not satisfactorily bridge these serious defects because of the risk of developing problems in vascularization and failure to adequately assess and reinstate the optimal length-tension relationship of the gastrocnemius-soleus complex.

Synthetic materials have also been used for augmentation. The advantage of using synthetic materials is that they avoid sacrificing other active tendons. In turn, the morbidity associated with larger incisions and dissections involved in autologous techniques can be bypassed. However, the use of synthetic materials in the area well-known for tenuous wound healing is a major disadvantage.

The use of Achilles tendon allograft for reconstruction of the neglected ruptures have been reported but mostly limited to case reports Yuen and Nicholas [7], Lepow and Green [7], Lee [8], Hanna [9] and Yu-Jie [10]. All the authors reported favourable outcomes after the operation because they corrected these defects.

The procedure of allografts of the Achilles tendon has been recommended when a significant segmental defect of 10 cm or more is found and when the advance of the fascia or the transfer of the tendon is not able to provide a sufficient bridge between the ends of the tendon, that forces to sacrifice other autologous tendons of the lower extremity.

The cryopreserved Achilles Tendon allograft with attached bone block is prepared for insertion, thawed and rehydrated in sterile normal saline solution for 30 minutes prior to insertion.

Afterwards, a quadrangular cavity of the same size as the bone block graft is carved in the posterior tuberosity of the calcaneus. This is anchored press-fit into the carved out cavity and checked to see that it fits perfectly so as to avoid the use of osteosynthesis. Once the bone graft is hosted in the posterior tuberosity, the tendon portion is extended with 90° traction of the foot, suturing it to the calf muscles, so that it would maintain the tension of the implanted tendon.

The two patients were operated, so the same protocol was followed. During the post-surgery, a cast was used for 8 weeks. At the end of the period, the patients presented an ankle range of motion of 20°, without pain and their Thompson sign was negative. A slight plantar flexion was observed when the movement was performed.

In both cases, the relief of the tendon was visible and since there was absence of pain, a rehabilitation program was started.

In our experience and according to Haraguchi [11], Myerson, Yuen-Nicholas Lepow, Fernandez-Torres [12], Cienfuegos [13] and Hanna [9], in these severe and long-standing cases, it is considered necessary to transplant the cryopreserved Achilles tendon graft with the bone insertion of the calcaneus. This surgical procedure ensures that the length, tension and the gastrocnemius-soleus complex functionality is restored in the patient. In our case, ten years later they make a normal life [14,15].

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