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Repair of Neglected Tendoachilli's Rupture.

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I. Introduction

Acute rupture of the Achilles tendon can be easily diagnosed clinically by a physical examination, but incorrect early diagnosis can occur in 10% to 25% of acute rupture patients (Boyden et al., 1995; Gabel and Manoli, 1994). If the diagnosis of acute rupture is missed, a conservative treatment fails, or the rupture turns into a chronic injury from severe degeneration, discomfort is caused by reduced plantar flexion (Lee et al., 2009; Takao et al., 2003) which can only be reversed by surgical treatment (Wang et al., 2009; Wapner et al., 1993). Chronic Achilles tendon ruptures are defined as those with a time period 4 to 6 weeks between injury and surgical management (Maffulli and Ajis, 2008). Patients with neglected Achilles tendon ruptures may recall a specific c injury without prodromal symptoms such as pain or swelling, thus delaying diagnosis. Various surgical reconstruction methods have been introduced depending on the defect gap and the state of the remaining tendon, but a more difficult surgery and a longer recovery time than those for an acute ruptures are the challenges to the surgeon and patient, respectively (Wegrzyn et al., 2010). The current study describes the outcomes of surgery performed on patients with chronic Achilles tendon ruptures by applying conservative reconstruction methods.

II. Patients and Methods

A series of 25 patients (Five men, twenty women) were treated with this conservative method in Isapure Orthopaedic hospital from --------- to -------- was reviewed. The average age of the patients at surgery was 40 to 60 years. Five patients were having history of steroid injection in tendoachillis for tendonitis. Four patients had a history of diabetic and morbid obese. Hypertension was visualized in ten patients. Six patients were having history of trauma and they were having gradual onset of pain and difficulty in walking. One patieny had a history of fall while jogging. There was pain and swelling over back of the ankle joints. All patients had major weakness of active plantar flexion and limp. Visible and palpable achillis tendon with defect was seen in all patients. Thomsons test was positive in all patients. X-ray shows calcification in the stump of achillis tendon in 4 patients.

III. Surgical Procedure

Each patient was placed in a prone position under general, spinal or popliteal block anaesthesia and a thigh tourniquet was applied. The ruptured tendon was approached via hockey stick incision of length-8-10cm on the medial aspect of the tendoachillis. The tendon sheath was exposed at the site of rupture. Rupture was assisted and was classified as either mid substance tear or avulsion. Transverse hole was drilled through posterior aspect of calcenius with foot 10-15 degree plantar flexion. Then a steel wire gauge 18mm passed from medial to lateral through drill hole and taken through the calcaneal substance and then passed superiomedially over the distal stump from lateral to medial aspect. Then it is taken through the substance of the proximal stump towards the lateral side. Further, it is then taken inferiorly to criss-cross over the ruptured tendon to be sutured medially. Finally, the ruptured ends are sutured with the help of non absorbable sutures. At the end, Plantaris tendon is taken from the medial aspect of the tendoachillis and spanned over the gap between the rupture ends of the tendon so as to reinforce the anastomosis.

Post operatively the foot was kept at 15 degree of equinus below knee joint cast. After 3 weeks the angulation is reduced. The weight bearing were started at 8 weeks and the range of motion and exercise were started at 3 months. Athletics activities were restricted for 3-5 months. The key findings after surgery were as follows, (a) rupture from the insersion of achillis tendon; (b) calcification at the rupture end; (c) excessive scarring of the rupture ends due to steroids and (d) big gap between the two ends.

IV. Results

The outcome of the present was as follows, 15 patients reported to have excellent results with no pain, no limitation of activities and no postoperative complications. Whilst in 5 patients elicited good results with functional decease in the strength. In 3 patients post operative complication have been visualized and 2 patients exhibited poor results with less functional activities and stiffness of the ankle and wound infection.

V. Discussion

Acute Achilles tendon ruptures may go undiagnosed in as many as 25% of patients, resulting in chronic or neglected states that become difficult to treat (Inglis et al., 1997) The most appropriate reconstructive technique remains controversial (Lee, 2004). Rupture is classified as chronic if older than 4 weeks (Jennings, 2003). Contraction of the gastrosoleus complex occurs as early as 3 to 4 days (Bosworth, 1956). Reconstruction becomes necessary if the treatment is delayed >4 weeks and the tendon defect is >2 cm is the second strongest tendon after the gastrosoleus and offers stronger plantar flexion than the FDL and PB tendons. (2) The axis of contraction is more in line with the Achilles than FDL and PB tendons. (3) The FHL tendon fires in phase with the gastrosoleus complex. (4) It has anatomic proximity to the Achilles tendon (Coughlin et al., 1999; Wulker et al., 1998).Therefore, the FHL tendon is particularly well suited to calcaneal tendon reconstruction (Wulker et al., 1998).Digitations present between FDL and FHL tendons help retain great toe flexion after the FHL tendon transfer (Wapner et al., 1994). Passing the tendon through multiple transverse drill holes in the calcaneum involves a more extensive skin incision through an area of compromised vascularity (Wapner et al., 1993). We sutured the distal stump of the FHL tendon to the FDL tendon to help maintain great toe flexion. This offers simpler exposure and easier fixation of the tendon to the calcaneus, minimising the risk of complications, particularly in patients with multiple co-morbidities.

Reinforcement of the calcaneal tendon with transfer of the FHL tendon is recommended treatment for pre-rupture syndrome, acute rupture caused by tendinosis, avulsion of the tendon from the calcaneal attachment, and late repairs (Pichler et al., 2005). This is particularly applicable to chronic tendinosis of the calcaneal tendon, which results in a large defect after debridement of the degenerative and calcified tendon sections (Coughlin et al., 1999; Wulker et al., 1998; Wapner et al., 1994; Pichler et al., 2005; Banks et al., 2001; Hela et al., 1996; Kremer et al., 1997; Zwipp, 1997). If the calcaneal tendon is not sufficiently load-stable after debridement, a transfer of the FHL tendon is indicated (Pichler et al., 2005). There are 4 different topographic anatomic variations of the distal end of the FHL tendon. Surgeons should be aware of these before planning the operation (Pichler et al., 2005). In patients with FDL tendon transfer, 57% had excellent, 29% had good, and 14% had fair results.3 In our patients with FHL tendon transfer, 83% had excellent and 17% had fair results. Sural nerve injury is common after lateral foot and ankle procedures (Lawrence et al., 1994; Webb et al., 2000) but no such injury occurred in our series. Tendon allografts are costly and limited in supply and there is a risk of infection (Siebold et al., 2003). A synthetic product can result in an inflammatory response (Muermans and Coenen, 1991). The use of mesenchymal stem cells in a collagen matrix is still preliminary for this purpose (Young et al., 1991). The FHL transfer is biomechanically and anatomically well-suited for chronic achilles tendon deficiency. It is effective, safe and easily performs

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