WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 7, Issue 18, 1188-1194. Case Study ISSN 2277– 7105

REPAIR OF NEGLECTED ACHILLES TENDON RUPTURES (RIGHT) USING GASTROCNEMIUS- SOLEUS TURN-DOWN GRAFT BY BOSWORTH TECHNIQUE- A CASE STUDY

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Article Received on
20 Sept. 2018,

Revised on 07 Oct. 2018,
Accepted on 28 Oct. 2018

DOI: 10.20959/wjpr201818-13625

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INTRODUCTION

Acute rupture of the Achilles tendon is often a surgical emergency that requires primary repair. There has been a long history of surgical versus non-surgical repair of the Achilles tendon. Rarely in partial interstitial rupture, immobilization and non-surgical treatment such as casting is opted for. If surgical repair is chosen, it is preferable to do the repair within a week of the rupture.

Unfortunately, there are 10-25% cases which are missed and there is a delay in diagnosis.[1] The trouble with delaying treatment of the rupture is an resulting Achilles tendon contracture. In severe cases, the tendon can retract significantly causing a palpable gap on examination along the tendon course. Clinical symptoms can include pain, failure to toe off and trouble walking up-hill or along an incline.

We report here a case of a neglected Achilles rupture that occurred 1 year prior. The tendon was successfully reconstructed using gastrocnemius-soleus turn-down graft by the Bosworth technique. (Figure 1).

CASE STUDY

A 40-years old female was referred to our department for difficulty to walk and climb upstairs for past 3 months. In her history, the patient complained that while she tried to push a heavy object, she had a slip and fall, sustained injury to the right ankle, felt a sharp pain in the right heel, and she was unable to ambulate. She was presented to the emergency

department for right ankle pain and bruising. A diagnosis of right ankle sprain was retained. Not improved, the patient consulted to our department 3 months later. On physical examination the patient presented with partial limitation of plantar flexion of the right foot, and a positive Thompson test finding. On the right ankle, a gap was palpable in the Achille tendon approximately 3 cm proximal to the calcaneal insertion. (Figure 2).

INVESTIGATION

Radiographs did not show any bony injury or avulsion (Figure 3). A final diagnosis of neglected tear of the right Achilles tendon was confirmed by ultrasound.

SURGICAL MANAGEMENT

Patient was positioned prone on the table and an air tourniquet was applied on the proximal right thigh. A 10 cm postero-medial incision made to the proximal one third of the calf muscle and the ruptured Achilles tendon was exposed, a careful dissection of the subcutaneous tissue, and release of the peritendinous adhesions were made. Thus, the tendon stumps are identified between which an extensive fibrous tissue was interposed (Figure 4).

This tissue was debrided on both ends of the rupture site. After measuring the gap, a 7 cm wide strip was cut from the central gastrocnemius muscle and sutured to the distal stump of the Achilles (Figure 5). Then the plantaris tendon was harvested, rolled up and placed around repair site for augmentation as was described by Chigot. The wound was then irrigated and closed. The patient was immobilized in posterior splint with an above knee equinus cast with knee in 30 degrees of flexion for a period of 6 weeks. It was followed by a below knee cast with ankle in neutral position for an additional period of 4 weeks and active knee mobilization exercises were initiated.

FOLLOW UP

In the post op period the wound was dressed by a window created in the cast. There was a cm zone of wound dehiscence which required regular dressing and eventually healed in 3 weeks' time.

At her 6 months postoperative, the patient could perform her right heel rise without difficulty. At 12 months follow up, she remained symptom free except for restriction of dorsiflexion to 5 degrees at the right ankle.

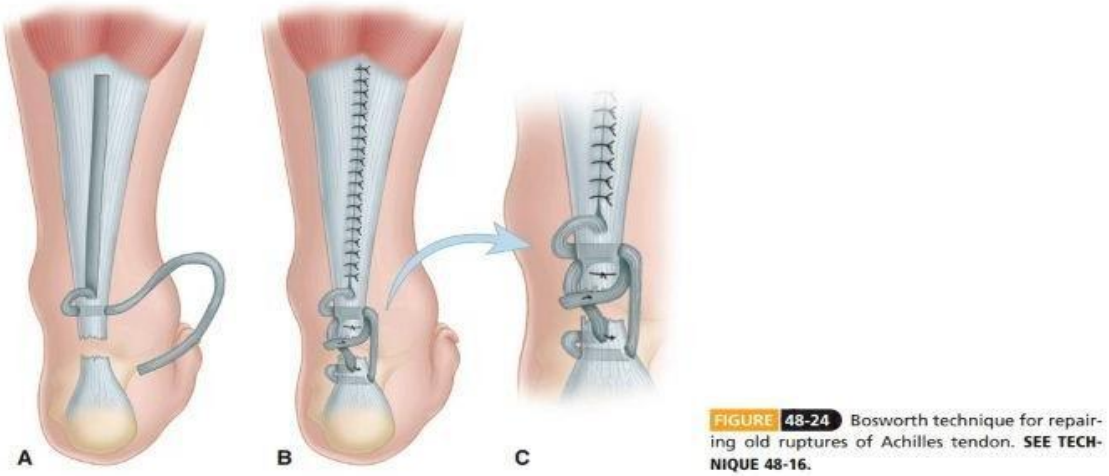

FIGURE 48-24 Bosworth technique for repairing old ruptures of Achilles tendon. SEE TECHNIQUE 48-16.

Figure 1: Bosworth technique.

Figure 2: Image showing in the right ankle a gap in the Achilles tendon approximately 3 cm proximal to the calcaneal insertion.

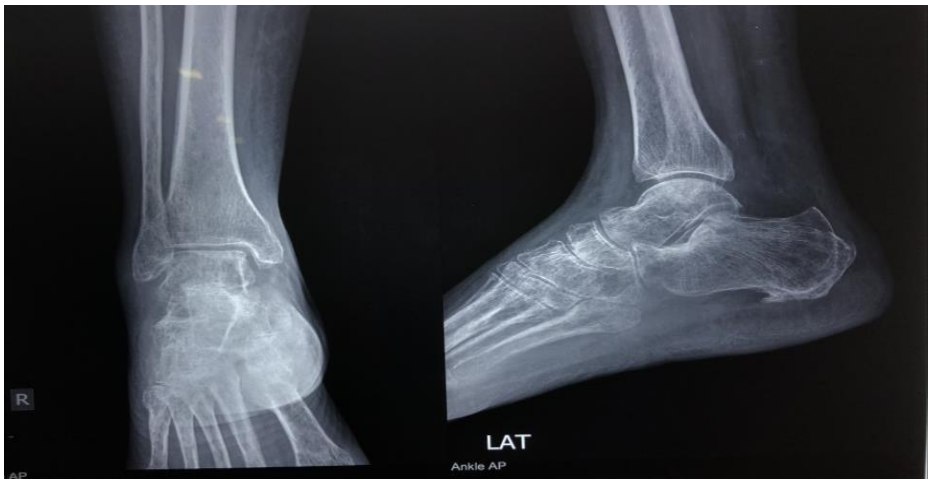

Figure 3: X-ray showing no bony lesion.

Figure 4: Intraoperative image showing a gap with interposed scar tissue of right ankle.

Figure 5: Intra operatively, a proximal portion of the gastrosoleal complex has been mobilized and sutured to the distal stump of the Achilles of right ankle.

DISCUSSION

Despite being the largest and strongest tendon in the human body, Achilles tendon ruptures are the most common tendon rupture of the lower extremity and may account for up to 40% of all tendon injuries.[4,5] However, bilateral rupture is uncommon and usually occurs in patients receiving long-term corticoid treatment or have had hydrocortisone injection locally for retrocalcaneal bursitis. The effects of glucocorticoids on cell, and tissue are highly specific. Wong et al. postulated that the suppressed cellular activity and collagen synthesis in human tenocytes may lead to disturbed tendon structure, thus predisposing the tendon to spontaneous rupture.[6]

Clinically, patient with rupture of Achilles tendon is usually unable to stand on the tip toes and their active plantar flexion is limited with a palpable gap on physical examination. However, 20-25% cases are misleading due to scare tissue.[7] In this condition, careful digital palpation combined by Ultrasound as well as MRI are useful tools in confirming the clinical diagnosis. If undiagnosed for 4 weeks, the rupture is classified as neglected.

Management of neglected rupture of the Achilles tendon represents a special challenge. Various methods have been described to treat those injuries, but there is no established superiority between them.

Conservative treatment is an option for partial Achilles tendon tear. It is aim to restore and maintain alignment and contact between the two ends of the ruptured Achilles tendon to facilitate healing by braces, splints or Orthotics which provided good outcome and the risk of wound breakdown is thereby eliminated. Weber et al. postulated that conservative management with an equinus ankle cast and boot for 12 weeks was as effective as surgical treatment in return to sports and ultimate strength as operative treatment.[8] However, this attitude may lead to stiffness and weakness due to muscle atrophy, with chances of re-rupture.

Regarding the surgical treatment, various surgical techniques among them local tendon transfer, free tissue transfer, and synthetic augmentation are more popular. However, there is currently no consensus on which technique may lead to better outcomes. Several authors suggest that surgical option is the treatment of choice in neglected rupture of the Achilles tendon. Khan et al.[9] performed retrospective met analysis of twelve randomized controlled and concluded that open operative treatment was associated with a lower risk of re- rupture compared with conservative management (relative risk, 0.27), and plantar flexion strength was higher in the operated group (75% of uninjured side) than the conservative group (65% of uninjured). Although it provides increased strength of tendon and allows earlier motion, surgical treatment is associated with a large number of complications, such as wound breakdown and infection rates.

In this article, the patient had a history of steroid consumption, and she presented with heel pain and loss of plantar flexion in the last 3 months. Intraoperative, the quality of tendon stump is insufficient, and reconstruction was required. We used a Bosworth technique with augmentation by plantaris tendon. During the course of therapy and recovery, we observed

superficial wound breakdown successfully managed by regular dressing and oral antibiotics. Early rehabilitation is advocated by most of the authors.[10] Whether the treatment is surgical or conservative, the rehabilitation progresses slowly into strengthening, gait and balancing activities and individual patients will progress at different rates depending on preinjury function, the extent of the injury and the commitment to the rehabilitation program.

CONCLUSION

Achilles tendon rupture is a serious complication of corticosteroid therapy. It frequently occurs in the elderly patients. Currently, there is quite controversy about suitable option to manage those injuries. However, surgical repair is considered the treatment of choice. Several surgical techniques have been described to repair neglected Achilles tendon ruptures and they varied between classic options including augmentation, local tendon transfer, and the new ones with synthetic augmentation, and free tissue transfer recently, biologic adjuncts, such as Platelet-Rich Plasma (PRP) and bone marrow–derived stem cells, have been used in efforts to optimize postoperative tendon healing, they have yet to show substantial differences in outcome.

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