

Reconstruction of Chronic Tendo Achilles Tear – A Novel Method

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Abstract:

Reconstruction of chronic Achilles tendon rupture is preferred over direct end to end repair or conservative management. Various techniques have been described such as v-y plasty, Bosworth repair, Modified Bosworth repair, augmentation with flexor tendons. Such reconstructive methods are not without complications. We have operated 26 cases of chronic Achilles tendon ruptures with modified turndown of Achilles tendon with plantaris augmentation. All patients returned to preactivity status on follow up. We did not have any skin related complications or re-rupture of tendon. This might be due to meticulous technique, S shaped incision, skin closure monocryl suture and turndown of tendon through its substance.

Key words: Chronic tendo Achilles tear; tendon rupture; turndownplasty

Introduction

The area proximal to insertion of tendo achilles on the calcaneal tuberosity is a vascular watershed area predisposed to degeneration and tears. Repetitive microtears which exceed the body's regenerative capacity results into a trival trauma causing complete tendo achilles rupture.(1) Many procedures have been described with varying results. Studies have favoured reconstruction rather than conservative management as it reduces the rerupture rate significantly.(2) It is our experience that chronic tendo achilles rupture results into a defect which is not amenable to direct repair. Augmentation should be a rule rather than a choice.

Material & Methods

26 patients having chronic tendo Achilles tear > 6 weeks were operated and followed up for minimum Of 6 months. Average period of follow up was 23 months. Most common age group was 30- 45 years and most of the patients were male. Diagnosis was made clinically and USG was done in all cases for medicolegal purposes. We have used a modified skin incision and a tendo Achilles turndown procedure which to our knowledge is not described before.

Surgical Procedure

Patient is operated in lateral position with affected leg up(Fig. 1). It is our experience that both the anaesthetist and the patients are more comfortable with lateral position than a prone position. A 'S' shaped incision is used to expose the tendo Achilles(Fig. 2). The proximal end of incision is medial to tendo Achilles while the distal end is lateral to the tendon. The incision crossed the tendon obliquely above the defect to be reconstructed. Lateral extension of the incision facilitates harvesting plantaris tendon if need be. Paratenon is cut, defect is exposed and debridement is done.(Fig. 3) Using a suture or tape the length of tendon to be turned down is measured and marked. Central 1/3 rd of tendon is used for the "turndown" of tendo-Achillies. The free proximal end of the tendon is passed through a tunnel made bluntly with artery forceps through the substance of the tendon.(Fig. 4) Multiple simple stitches with non- absorbable suture material (2-0 prolene) is used to attach the downturned tendon to tendo- Achilles remnant(Fig. 5). Plantaris tendon can be used to enhance the augmentation. Whenever possible distally based plantatis tendon graft was weaved through repair. Subcutaneous tissue was closed over the repaired tendon. Skin was closed using absorbable monocryl suture material(Fig. 6). A drain was kept till first check dressing. We have changed over to monocryl from nonabsorbable sutures like ethilon for skin closure. Horizontal interrupted mattress stitches with monocryl have given us the best cosmetic result as compared to other material. The advantages of using monocryl were better cosmesis, no need for suture removal and low tissue reaction. Post operatively patient was given a slab for 6 weeks in neutral position.

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Fig 1: lateral position with affected leg up



Fig 2: A 'S' shaped incision is used to expose the tendo Achilles



Fig 3: Paratenon is cut, defect is exposed and debridement is done

Result

We were able to achieve excellent results using our technique. None of our patients had delayed wound healing or reported a rerupture of tendon. All patients returned to their previous occupation. All patients were able to stand on tip toes for 30 secs

Discussion

The treatment of rupture of Achilles tendon remains controversial. Most of the authors have described various conservative and non-conservative methods for treatment(3). A lot of procedures are described for reconstruction of tendo achilles tear, including V-Y plasty, Z plasty, Bosworth and modified Bosworth technique(3)(4)(5). Taking a cue from reconstruction of boutonniere deformity where similar turndown of central slip of extensor tendon is used the author has tried turndown of tendoachilles through the substance of the tendon (Fig. 7). A direct posterior skin incision was avoided. A medial based incision has been described by many authors(6)(7). We have used a "S" shaped incision which is medially based cranial to defect and lateral caudal to defect. Crossing over laterally avoids important posteromedial neurovascular structures. Also it is easier to take a plantaris graft due to lateral extent. Many surgical techniques have been described for the management of neglected Achilles ruptures. The primary goal of any surgical treatment is to restore the function and strength of the gastrocnemius-soleus complex by recreating the optimal length-tension relationship. End-to-end repair

is ideal if the gap between tendon ends allow direct apposition after resection of the interposed scar tissue.. It is generally accepted that approximately 1-2 cm gap will allow end-to-end repair. However, primary repair is still an uncommon form of treatment for most chronic ruptures because of the potential for shortening and contracture of the gastrocnemius-soleus muscle-tendon unit. Excision of scar tissue from neglected rupture often results in a sizable gap requiring other modalities to bridge the defect. Although most surgical techniques give good results they are not without complications. If tendon is too tight patient will have difficulty in plantar flexion while a loose tendon will cause weakness. The skin over posterior heel and leg has a precarious blood supply which can be further damaged by surgical trauma. This may cause skin necrosis and delayed wound healing(8)(9). Another complication mentioned in literature is rerupture of repaired tendon. This may be due to slip of ligature or may be due to less tensile strength of healed tendon(10)(11). We did not have any case of skin necrosis, infection or rupture. This might be due to meticulous technique, S shaped skin incision, a modified turndown which is not bulky, adequate repair and use of monocryl for skin closure.

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Fig 4: Central 1/3 rd of tendon is used for the "turndown" of tendo-Achillies. The free proximal end of the tendon is passed through a tunnel made bluntly with artery forceps through the substance of the tendon



Fig 5: Multiple simple stitches with non-absorbable suture material (2-0 prolene) is used to attach the downturned tendon to tendo-Achilles remnant



Fig 6: Subcutaneous tissue was closed over the repaired tendon. Skin was closed using absorbable monocryl sutures



Fig 7: Turndown of tendoachilles through the substance of the tendon

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