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Outcome of surgical management of ruptured Achilles tendon

Balakrishnan M Acharya,[1] Pramod Devkota,[1] Amrit Shrestha,[2] Abhishek Kumar Thakur,[2] Toya Raj Bhatta,[3] Bidur Gyawali[3]

[1]Associate Professor, [2]Lecturer, [3]Assistant Professor, Department of Orthopedic and Trauma Surgery, Patan Academy of Health Sciences, Lalitpur, Nepal

Correspondence
Dr. Balakrishnan M Acharya
Department of Orthopedic and Trauma Surgery, Patan Academy of Health Sciences, Lalitpur, Nepal
Email: balakrishnanmacharya@pahs.edu.np

Peer Reviewers
Asst. Prof. Dr. Ashis Shrestha
Patan Academy of Health Sciences

Prof. Dr. Jay Narayan Shah
Patan Academy of Health Sciences

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Abstract

Introductions: The incidence of Achilles tendon rupture has been increasing worldwide. The optimal management of this problem is controversial but the surgical intervention is being applied widely.

Methods: We retrospectively analyzed patients who had Achilles tendon (AT) rupture treated surgically at Patan Academy of Health Sciences from January 2010 to December 2015. Functional outcome assessment of ankle was done by using American Orthopedic foot and Ankle Society Score (AOFAS).

Results: Total 71 patients (male 45, female 26) had surgery for AT, 38 right and 33 left side. The mean age of the patient was 36.14 years (range 18-67 years). The mean AOFAS score was 83.32 (range 75-93) after first year follow up and 90.36 (range 80-99) after second year, difference was statistically significant ($p<0.05$).

Conclusions: The study showed high AOFAS score for surgical management of ruptured Achilles tendon.

Key words: Achilles tendon rupture, American Orthopedic foot and Ankle Society Score (AOFAS),

Introductions

Achilles tendon (AT) is the strongest tendon in ankle and foot of the human body.[1] The AT injury may occur due to sports, accidental rupture, road traffic accidents, slipping of foot etc.[2-3] Among all the tendon injuries that come in Orthopedic department, AT injury accounts for approximately 35%, mainly due to recreational activities, more in males of 30 to 40 years of age.[4-6] It has a prolonged recovery and there is 10% to 30% reduction in the calf muscle strength and planter flexion.[7-11]

The injury can be managed by both conservative and operative procedures. However, conservative management has shown poor outcome than surgical repair.[10-12] Surgical repair is increasingly used due to early recovery, lower re-rupture rate, better range of motion, better functional outcome and lower calf atrophy.[12-13] This study aims to evaluate functional outcome of patient after surgical repair of AT.

Methods

This cross-sectional study was conducted at the department of orthopedics and trauma surgery of Patan Hospital, Patan Academy of Health Sciences (PAHS), Lalitpur, Nepal. The study was approved by the institutional review committee (IRC) of PAHS. The data of AT patients operated from January 2010 to December 2015 were analyzed. All patients above 16 years of age, who had AT rupture due to recreation activities were included in this study. Patient less than 15 years, diabetic foot, associated neurovascular injury and cut injury of AT by sharp object were excluded. Diagnosis was made mainly based on positive Thompson test[14] and ultrasound of the AT. Radiological examinations were done to rule out associated fractures around the ankle. Operative procedure was performed by end-to end repair of ruptured AT using two-stranded single Krackow suturing technique.[15]

Postoperatively, patients were put on below knee plaster cast for six weeks. Followup for functional outcome was done at one and two years. Since the patient do not come exactly at one and two years, their visit after one year and before two year were categorized as followup point A and the visit after two years as point B. Functional assessment of ankle was done by using American Orthopedic Foot and Ankle Society Score (AOFAS).[16] Statistical analysis was carried out using the SPSS 20 software.

Results

There were 71 patients of AT rupture who were treated with surgery. Out of them male were 45 (63.3%) and female were 26 (36.7%). Rupture on right side was 38 (53.5%) and left side was 33 (46.5). The mean age of the patient was 36.14 years (18-67), mean duration of symptom presented was 6.08 days (1 to 18). The average hospital stay after surgery was 5.56 days (4 to 11), and mean follow up at point A was 14.14 months (12-18) and at point B was 30.76 months (24-39).

The mean AOFAS score was 83.32 (75-93) at point A and 90.36 (80-99) at point B. The difference was statistically significant ($p<0.05$). No complain of difficulties in daily activities was reported. Fourteen patients (19.72%) complained that they were unable to perform running and jogging like they used to do before injury.

Four patients had swollen foot and cellulitis after surgery, 9/71 (12.68%) had infection at surgical sites which resolved on antibiotics and dressing. Ten patients complained of pain over scar site which resolved after physiotherapy. There were no other post-operative complications like re-rupture of AT, pain, numbness, neurovascular injury.

Figure 1. a) Achilles tendon rupture showing Thompson test positive in left leg, b) Intra operative picture showing Achilles tendon rupture with retracted plantaris tendon, c) Healed Scar (left leg)

Discussions

The mean AOFAS score was 83.32 (75-93) at point A, and 90.36 (80-99) at point B, the difference was statistically significant ($p<0.05$). A similar study published in 2017[17] got AOFAS score of 92.4 at one year; we were able to attain this score over two years period. This possibly suggest that the functional outcome of surgery is comparable but with longer rehabilitation that we need to look into. Our study also suggested statistically significant improvement between point of followup A and B. This suggest that longer rehabilitation, and comparison between these points was appropriate.

A prospective randomized trial reported the average AOFAS score of surgical treatment to be 86.7 and non-operative to be 55.0.[18] The score for surgical treatment is consistent with our study, supporting that operative management is better than non-operative management as in our setup. Operative treatment of AT rupture provides superior results as compared to non-operative treatment in terms of complications like re-rupture, decreased plantar flexion strength of ankle muscle and its endurance.[13] Our study shows 14 (19.7%) patients were unable to perform running and jogging like they used to do before injury. This is consistent with other studies which has reported that 85% to 100% patients returned to their recreational activities.[19-21] This further supports surgical management is equally good in our setup like others.

In our study male patient got rupture of AT more often than female and more on right side. The other studies also showed the injury was more in male, however involved side varies in different studies.[22-23] The surgical site infection rate in this study was 7/71 (12.67%), higher than others reporting 3% infection.[24] Possible reason could be the less hygienic environment and nutritional status of our patients. We did not encounter other complications like numbness of the foot and ankle, re-rupture of the repaired Achilles tendon. Numbness of the foot due to sural nerve injury in 9.6% and deep vein thrombosis (DVT) after surgery in 6.45% have been reported by some other studies.[22]

The management of AT is a challenging task for Orthopedic surgeon.[25] After tendon rupture, the strength of plantar flexion of the ankle is reduced, and the patients are not able to perform a single-limb heel rise with the injured lower extremity.[26] This is regarded as the vital indication for surgical intervention in ruptured tendon. The return to daily activities after the surgery is an important indicator for the success of surgical intervention.[22]

Conclusions

The overall outcome of the surgical repair of Achilles tendon rupture was safe and effective with good functional outcome and minimal minor complications.

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