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Conservative Treatment for Acute Achilles Tendon Rupture: Survey of Current Practice

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ABSTRACT

Background:-*There is an endless argument about the best option for the management of acute Achilles tendon rupture, with solid views held about interventional or conservative management. Those supporting the surgical approach sense that the correct tendon tension can be attained only by direct visualization and further suggest that surgical renovation results in a low proportion of re-rupture.* ***Aims of study***:-*to evaluate the outcome of conservative treatment for rupture of Achilles tendon.* ***Patients and methods***: - *A total of sixty patients (46 males and 14 females) with Achilles tendon rupture who met the inclusion criteria of study who were treated conservatively and followed up for six months in Al-Wasti Teaching Hospital between 1st of Jan.2016 to 1st of Jan.2018 were included in this study.* ***Results:-****The mean age of included patients was 26.3±2.4 years, 46(76.7%) were males, 14(23.3%) were females, 60% belonged to age group of 40-60 years .Re-rupture, stiffness of ankle joint, significant weakness of planter flexion and flat sore was reported in 3.3%, 8.3%, 6.7%, 5.0% respectively, in addition, DVT and foot drop were reported with one case for each.Excelent outcome was reported with 21.7% of cases only.* ***Conclusions***:-*The incidence of re-rupture with non-operative treatment for Achilles tendon rupture was low but the incidence of other suspected complications were slightly higher so the excellent outcome cannot be proved with all cases*

Keywords: *Achills tendon rupture, DVT, Foot drop*

1.INTRODUCTION

The Achilles tendon of the gastrocnemius and soleus muscles which transfers the force to the calcaneus is the strongest and thickest tendon in the human body but it is also susceptible to acute and overuse injuries such as a complete rupture(1). In spite of that most of Achilles tendon ruptures occurred during activities of sporting, other factors may also contribute to these injuries such as gender, medications, intrinsic structural variations and biomechanical alterations related to ageing process(2).

The incidence of Achilles tendon rupture (ATR) has progressively increased worldwide over the past years and anticipated to rise further on the next years, especially among the middle-aged, likely due to higher proportions of recreational sports participation and obesity. Achilles tendon injuries are common in middle-aged who may not exercise regularly or take time to stretch effectively prior to an activity (3).The incidence of rupture the Achilles tendon is lower in females in comparison to males, with a ratio ranged from 1.67/1 to 6.90/1(4). .Unfortunately, there was no dependable statistics about the incidence of ATR in Iraq. In addition to the rising incidence, ATRs can considerably burden patients, with more than half showing functional impairment and/or continued complaining of pain even 12 months post injury, and many are not capable to return to their pre-injury level of activity(5). A palpable gape and positive Thompson test as well as Ultrasonography and magnetic resonance image is applied to the diagnosis of ATR (6). There are many studies in the literature related to the treatment for Achilles tendon tears. However, optimal treatment methods and postoperative rehabilitation programs are still part of a debate (7).Although several studies have revealed faster returns to pre-injury activity levels after surgical treatment in athletes, there is currently no gold standard for the treatment of Achilles tendon ruptures(8).The only available guidelines are those of the American Academy of Orthopedic Surgeons (AAOS) and have limited or inconclusive recommendations for the role of imaging, choice of treatment (non-surgical/ surgical) and rehabilitation methods as a result of either lacking or unconvincing scientific evidence. The process of tendon healing occurs in three distinct phases: inflammation, proliferation, and remodelling. The primary goals of the management of acute Achilles tendon ruptures are to ensure a rapid return to full function and to prevent complications (9,10).

The treatment of ATR either conservative or surgical, Conservative treatment is often associated with a higher rerupture rate (6). Deng et al (11) discovered that re-rupture occurred in 3.7% surgically treated patients and 9.8% nonsurgical treated patients with statistical significance.

The surgical management of a ruptured Achilles can be divided into four categories: open repair, percutaneous repair, mini-open repair, and augmentative repair. In general, operative intervention is usually preferred for younger patients and those patients who demand greater function (12). Patients with significant medical comorbidities or those with relatively sedentary lifestyles are often recommended for non-operative management .Chronicity of the injury as well as soft tissue/skin integrity is also given consideration (13). The aim of non-operative means of treatment is to restore and maintain contact between the two ends of the ruptured Achilles tendon to facilitate healing. Conservative treatment regimens vary greatly but commonly involve immobilization with rigid casting or functional bracing. The foot is initially placed in full equinus (30° namely full plantar flexion). The foot is then brought into neutral sequentially over a period of 8-12 wk. Once ankle position permits it, weight bearing is allowed. (14)

Hence, the present study aimed to assess the outcome of conservative treatment of acute rupture of Achilles tendon

2. PATIENTS and METHODS

A cross sectional study was conducted at Al-Kindey Teaching Hospital and AL-Wasity Teaching Hospital for the period from 1st Jan.2016 to 1st Jan.2018. Sixty candidate patients of both gender and different ages with acute rupture of Achilles tendon of different causative factors were included in this study. Clinical assesment, sonography and MRI were used to confirm diagnosis. Patients with partial rupture, unfit for surgical interference or they refused the surgery were included in this study while previous Achilles tendon rupture and athletic young patients were defined as exclusion criteria .The patients were immobilized by complete POP in planter flexion position for 45 days, then heal rising (2 cm) was used for two months after removal of POP. Patients were followed up for six months for the assesment of walking status and power of planter flexion using other feet as control .Antithrombotic agent (hexane)was used with patients older than 4o years in dose ranged from 4000-6000 IU according to body weight.Aproval was obtained from concerned authorities to conduct this study and the patient's names were kept hidden. SPSS version 23 was used for data entry and analysis.

3. RESULTS:

A total of sixty patients with mean age of 26.3±2.4 years, 46(76.7%) were males, 14(23.3%), 60% belonged to age group of 40-60 years as it shown in (**Table 1**).

The findings revealed that 43.3% of injuries were caused by sport injuries followed by sickle injuries (23.3%), glass piece injuries (18.3%) and caused to less extent by other causes as seen in (**Table 2**)

The results of current study showed that the Stiffness of ankle joint was the commonest reported complication with our cases where reported with 5 patients (8.3%) followed by weakness of planter flexion that reported with 4(6.7%) of the cases and plaster sore as it was seen with 3 patients (5%).The DVT, re-rupture and foot drop also reported but in lower incidence at the end of 6 months of follow up as illustrated in (**Table3**). The DVT was reported with young and old patients, flat sore was reported with old patients only, the foot drop was seen with patients of third and fourth decades, weakness of planter flexion and stiffness of ankle joint was seen more with middle age patients and old age group while re-rupture was reported with young patients.no significant association was reported between the incidence of complications and age groups of the patients (P=0.3), (**Table 4**). The finding concerning the end outcome of treatment revealed there was a high percentage of had satisfactory but not excellent outcome and less than third of the patients had excellent outcome (21.7%) and there was 33.3% of patients had poor outcome due to different reasons as not functioning properly or had complication which indicated that the conservative treatment was not considered an optimum choice for treatment of Achilles injuries as seen in (**Table 5**)

Table.1.Discrptive characteristics of the patients

Variable		No.	%
Age groups/years	<20	4	6.7
	20-40	36	60
	>40	20	33.3
Mean age (SD)	26.3 (2.4)		
Gender	Male	46	76.7
	Female	14	23.3
SD: Standard deviation			

Table.2. Causative factors of injuries of the studied group (N = 60)

Causative factor	No.	%
Sports injury	26	43.3
Sickle injury	14	23.3
Glass piece	11	18.3
Sharp machine part	4	6.7
Accident	3	5
Subcutaneous rupture	2	3.3

Table.3. Frequency distribution of complications among the studied group (N = 60)

Complication	No.	%
DVT	2	3.3
Plaster sore	3	5%
Foot drop	1	1.7
Significant weakness of planter flexion	4	6.7
Stiffness of ankle joint	5	8.3
Re-rupture	2	3.3

Table 4. Distribution of complication according to age of the patients

Complication	Age (year)					
	<20		20-40		>40	
	No.	%	No.	%	No.	%
DVT	1	50.0	0	0.0	1	50.0
Flat sore	0	0.0	0	0.0	3	100.0
Foot drop	0	0.0	1	100.0	0	0.0
Significant weakness of planter flexion	0	0.0	2	50.0	2	50.0
Stiffness of ankle joint	1	20.0	1	20.0	3	60.0
Re-rupture	1	50.0	1	50.0	0	0.0
None	0	0.0	0	0.0	0	0.0

Table.5.outcome of treatment on 6 months of follow-up

Outcome	No.	%
Excellent	13	21.7
Satisfactory	27	45.0
Poor	20	33.3

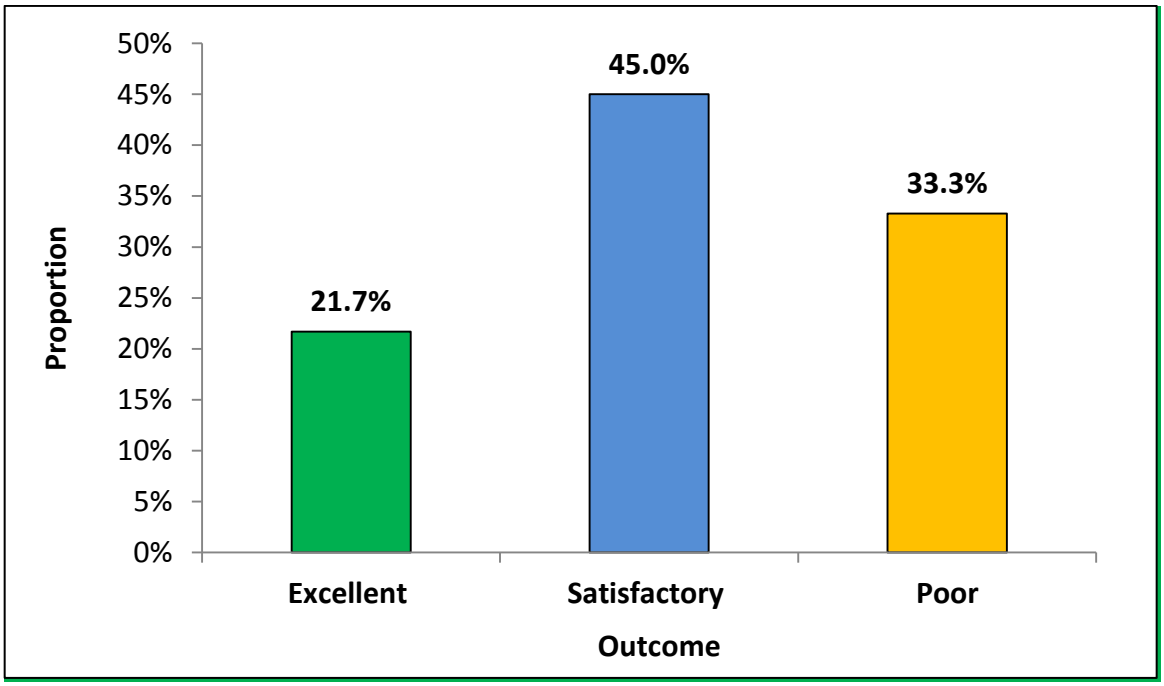

Figure 1. Proportional distribution of the outcomes among the studied group (N = 60)

4. DISCUSSION

The discussion of whether to treat acute Achilles tendon rupture operatively or non-operatively was persistent since the first printed series in 1929 which compared the findings of 29 conservatively treated and 39 surgically treated patients (15) .There is growing evidence supporting conservative treatment as a safe and recommendable treatment for acute Achilles tendon rupture (16,17)

Concerning complications, our data indicated that the re-rupture was reported with 2 cases which represented 3.3% of cases but higher incidence of other complications were reported with our cases such as stiffness of ankle joint that seen with 5 cases (8.3%), significant weakness of planter flexion that reported with 4 cases (6.7%), flat sore which seen with 3 cases (5.0%), in addition DVT and foot drop were reported with one case for each. These findings indicated that the non–operative treatment for Achilles tendon rupture is unsafe approach and not free of risky complications even that the probability of re-rupture was not high. The results of current study also showed there was a high percentage of patients experienced poor outcome and not satisfied with the results of conservative treatment due to the accompanied complications or presence of functional impairment. A meta-analyses demonstrated evidences concluded that the non-operative treatment increased risk of re-rupture2-3 times in comparison to operative treatment and a 4-5 times decreased risk of other complications(18,19,20).Considering the functional results no clinical relevant differences are found in the metaanalysis(18,19,21,22) .The few studies that have assessed the patient perception through a PROM have not found any differences either(23,24) . Soroceanu A et al (25) were stated; If functional rehabilitation with employing range of motion early, rupture rates were equal for surgical and conservative treatment(risk difference = 1.7%, p = 0.45). If early range of motion was not employed, the absolute risk reduction achieved by surgery was 8.8% (p = 0.001 in favor of surgery). Surgery was associated with an absolute risk increase of 15.8% (p = 0.016 in favor of non-operative management) for complications other than rupture. There was no significant difference between the two treatments with regard to calf circumference (p = 0.357), strength (p = 0.806), or functional outcomes (p = 0.226).The choice to treat operatively or non-operatively depend on an assessment of the severity of complications, in particular re-rupture and deep infection. The only published assessment of severity of complications was performed by Pajala et al. (26) .They established that the outcome after a simple re-rupture without infection was satisfactory, whereas the outcome after a deep infection often was devastating.

Conclusions:

Conservative treatment for Achilles tendon rupture is not free of risky complications but the incidence of re-rupture was low.

Ethical clearance:

Was taken from the scientific committee of the Iraqi Ministry of health

Conflict of interest: The authors declared none

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