IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 21, Issue 9 Ser.6 (September. 2022), PP 13-20
www.iosrjournals.org

"A Study on Management of Acute Tendoachilles Rupture by Closed Percutaneous Suturing"

Dr.B.Sindhura
Dr.M.Madhava Reddy
Dr.Khalid Shariff
Dr.Ranade Soham Srikant
Dr.S.S.V Ramana

Abstract:
INTRODUCTION: *Tendoachilles is a unique structure because of unparalleled strength, when severed, leads to loss of impetus for motion, and stability in standing is jeopardized. Management of Achilles tendon rupture is a controversial issue. Surgical and conservative treatments are the modalities of treatment. Operative treatment is the best involving open or percutaneous surgical techniques to repair the ruptured tendon.*
AIM : *To study and evaluate the functional results of PERCUTANEOUS SUTURING in the management of ACUTE TENDOACHILLES rupture who were treated and followed up during SEP 2018 to 0CT 2020 in Department of Orthopaedics ,Guntur.*
METHODS : *A total number of 22 patients were seen from September 2018-October 2020, with closed Tendoachilles rupture with the acute presentation, i.e., less than four weeks of duration in Government General Hospital, Guntur. All the selected patients were treated and followed up in government general hospital Guntur, and a prospective study was done in the Department of Orthopaedic Surgery. The percutaneous repair was done in all the cases of the study group, and the functional outcome was assessed. We studied the technical difficulties and complications associated with the procedure. Results of the study were compared and analyzed with other studies.*
RESULT: *Percutaneous repair is becoming a well-accepted modality in the management of acute Achilles tendon ruptures. The percutaneous repair can be performed under local anesthesia without a tourniquet and under less surgical time. The major advantages of percutaneous repair are less iatrogenic damage to normal tissues, less post-operative pain, accurate opposition of the tendon ends, minimizing the surgical incisions, thus protecting against wound breakdown and wound complications, and improved cosmesis.*
Keywords: *Achilles tendon ,Tendoachillies rupture , percutaneous repair.*

Date of Submission: 07-09-2022 Date of Acceptance: 23-09-2022

I. Introduction

Tendo Achilles is the strongest of tendons in the human body. It plays a very crucial role in bipedal human beings. It is more vulnerable to different pathogenesis due to its anatomy. It can withstand forces eight times the body weight as produced while running. Tendo Achilles ruptures are the most common tendon ruptures in the lower extremity account for nearly 40% of all operated tendon ruptures . Overuse injuries of the Achilles tendon are very common in running and other sports that involve jumping and sprinting movements. Loss of Achilles function causes a significant loss in plantar flexion strength, leading to an inability to run, stand on tiptoes, play sports, and difficulty climbing stairs. Achilles tendon rupture treatment was first reported in the literature by Ambrose Pare in 1575. Tendoachilles is a unique structure because of unparalleled strength, when severed, leads to loss of impetus for motion, and stability in standing is jeopardized. Management of Achilles tendon rupture is a controversial issue. Surgical and conservative treatments are the modalities of treatment. Operative treatment is the best involving open or percutaneous surgical techniques to repair the ruptured tendon. Percutaneous suturing of the Achilles tendon was first introduced by Ma and Griffith11 in 1977 as an alternative for open repair in order to avoid the procedure's complications. Since then, much progress has been made. Technological development brought modifications that improved the original technique, such as ultrasonography or endoscopy-assisted and mini-open technique, leading to better and more satisfying results . Percutaneous repair offers better cosmetic results, reduced costs, and yet comparably better functional outcome

and less complication rate than open repair. However, the incidence of injury to the sural nerve (3 to 10%) and the incidence of re-rupture (3 to 8%)

AIM OF THE STUDY :
To study and evaluate the functional results of PERCUTANEOUS SUTURING in the management of ACUTE TENDOACHILLES rupture who were treated and followed up during SEP 2018 to 0CT 2020 in Department of Orthopaedics ,Guntur.

OBJECTIVES:
To evaluate the rupture of tendo Achilles for the management plan.
To study the technique of the procedure.
To evaluate the technical difficulties in the procedure.
To evaluate the functional results in the procedure.
To evaluate the immediate and late post-operative complication .

II. Materials And Methods :

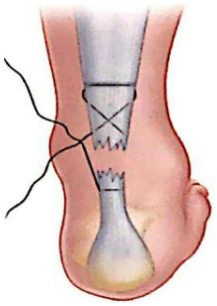
A total number of 22 patients were seen from September 2018-October 2020, with closed Tendoachilles rupture with the acute presentation, i.e., less than four weeks of duration in Government General Hospital, Guntur. All the selected patients were treated and followed up in government general hospital Guntur, and a prospective study was done in the Department of Orthopaedic Surgery under the following criteria. All the patients were followed up for a minimum duration of 6 months.

INCLUSION CRITERIA:
1) Age group: 20 to 70 years
2) Both sexes
3) Acute cases with tendoachilles ruptures less than 4 weeks duration.
4)Those who gave valid consent to participate in the study.
5) Those who are fit for surgery.

EXCLUSION CRITERIA:
1) Chronic tendoachilles ruptures.
2) Compound injuries (open injuries)
3) Those who did not give valid consent were excluded.
4) Those who are medically unfit for surgery were excluded.

CLINICAL EVALUATION :
It included local examination for skin and soft tissue changes, i.e., hyperpigmentation, hypopigmentation, bruising.
PALPATION FOR GAP: Gently palpate the course of the tendon. The gap is classified as present or absent.
CLINICAL TESTS: MATLE's TEST AND THOMPSON'S TEST.

SURGICAL PROCEDURE :
The patients were operated on the operation table in a prone position without using a tourniquet under spinal anesthesia. Palpate the tendon defect and make small stab wounds on each side of the Achilles tendon 2.5cm proximal to the rupture defect. Pass a No.1 nonabsorbable suture(Polypropylene/ Polyester)threaded on a straight needle from the lateral stab through the body of the tendon, and exit through the medial stab wound. With a straight needle on each end of the inserted suture, crisscross the needle within the body of the tendon and puncture the skin just distal to the site of tendon suture, enlarge the sites of needle puncture with a scalpel and pull the suture completely through the stab wounds, snug the suture within the proximal portion of the ruptured tendon. With the ankle maintained in equinus position, apply tension to the suture in a crisscross manner and bring the tendon ends together; tie the suture in this position and, with a small hemostat, bury the knot in the depths of the wound.Apply a sterile dressing to the stab wounds, and apply an above-knee cast in gravity equinus position.



The protocol we have followed after surgery:

Protocol	Duration
Above knee cast with the foot in 20-degree plantar flexion(non-weight bearing)	2 weeks
Above knee cast with the foot in 10-degree plantar flexion(non-weight-bearing)	2 weeks
Short knee cast with the foot in neutral position (non-weight-bearing)	2 weeks
Cast removed and weight-bearing as tolerated.	2 weeks
Complete weight bearing	3months after surgery

Preoperative:

FIGURE 22a: Thompson's test:

FIGURE 22b: Matle's test :

FIGURE 22c : Intraoperative

Post-operative:

FIGURE 22d :Immediate post-op:

FIGURE 22e: Matle's test:

FIGURE 22f: Thompson's test:

4 months follow up

FIGURE 22g: Able to stand on tiptoes:

6 months follow up

Preoperative :

FIGURE 23a : Thompson's test:

FIGURE 23b :Unable to stand on tiptoes

FIGURE 23c : Intraoperative:

Post-operative:

FIGURE 23d: Immediate post-op:

FIGURE 23e : Post-op Scar picture:

FIGURE 23f : Matle's test tiptoes.

FIGURE 23g : Able to stand on

4 months follow-up

6 months follow-up

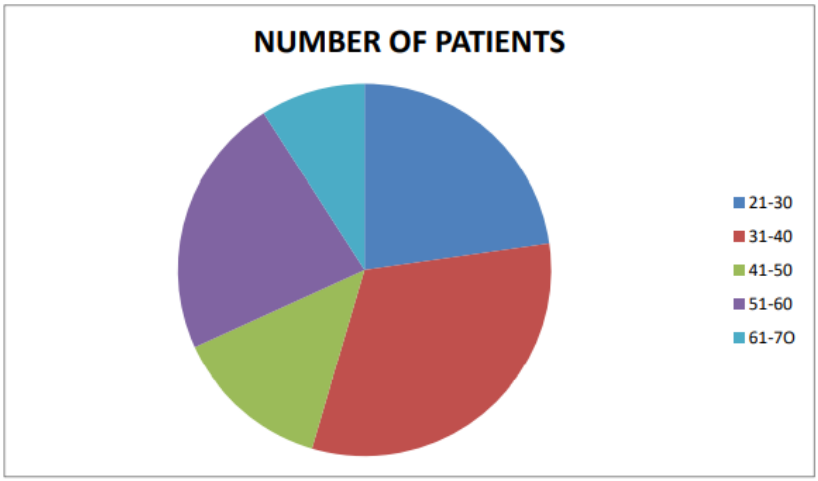
III. Results:

Duration of study: September 2018 to October 2020.

TABLE 1: AGE INCIDENCE:

AGE	NO OF CASES	PERCENTAGE
21-30	5	22.72%
31-40	7	31.81%
41-50	3	13.63%
51-60	5	22.72%
61-70	2	9.00%

CHART 1 : AGE INCIDENCE

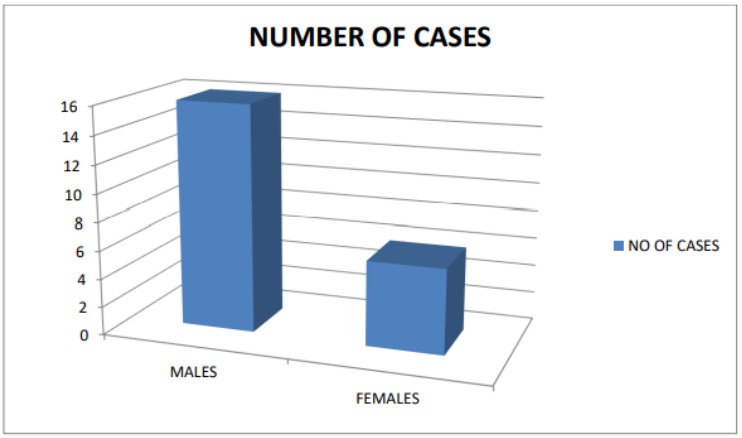


The Age group between 20 to 40 years are most affected.

TABLE 2 : SEX INCIDENCE:

SEX	NUMBER OF CASES	PERCENTAGE
MALES	16	72.72%
FEMALES	6	27.28%

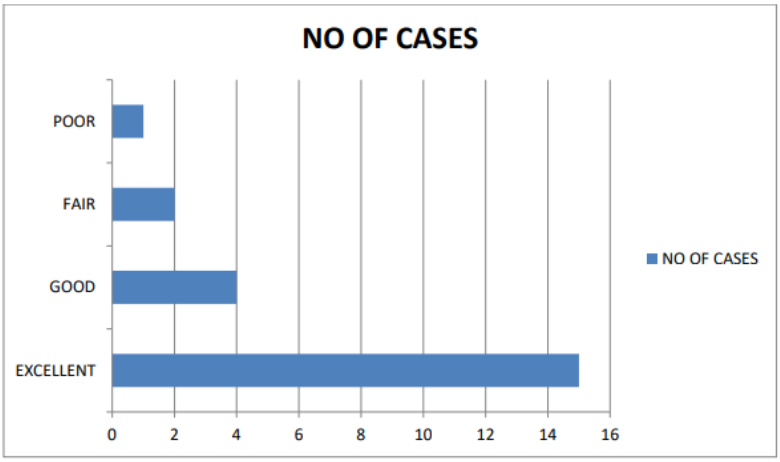
CHART 2 : SEX INCIDENCE



Males are most commonly affected.

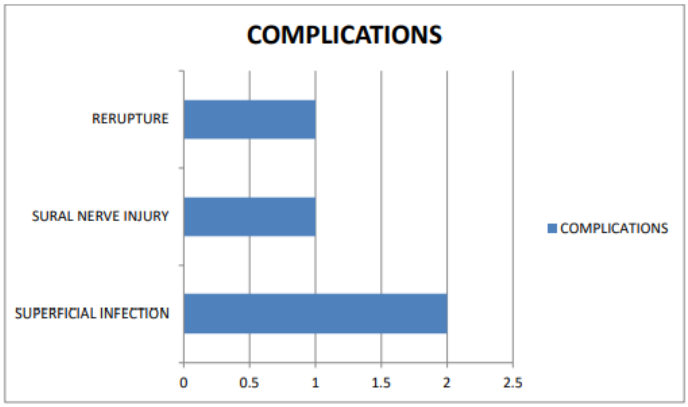
RESULTS	NO. OF CASES	PERCENTAGE
Excellent	15	68.18%
Good	4	18.18%
Fair	2	9.00%
Poor	1	4.50%

CHART 7 : QUIGLEY'S SCORING SYSTEM :



COMPLICATION	NO. OF PATIENTS	PERCENTAGE
Superficial infection	2	9.00%
Sural nerve injury	1	4.54%
Rerupture	1	4.54%

CHART 8 : COMPLICATIONS :



IV. Conclusion:

We can conclude that:

- Achilles tendon ruptures are more common in males.
- Acute Achilles tendon injuries are most common in the 20 – 40 years age group.
- The most common etiology in acute tendo Achilles is accidental fall and slipping in the Indian closet.
- Most ruptures of the tendon Achilles occur at 2-6 cms from the insertion of the tendon.

• Percutaneous repair is becoming a well-accepted modality in the management of acute Achilles tendon ruptures.
• The percutaneous repair can be performed under local anesthesia without a tourniquet and under less surgical time.
• The major advantages of percutaneous repair are less iatrogenic damage to normal tissues, less post-operative pain, accurate opposition of the tendon ends, minimizing the surgical incisions, thus protecting against wound breakdown and wound complications, and improved cosmesis.
• Sural nerve injury has been a potential complication of percutaneous repair , but proper intraoperative care and new techniques have minimized the risk of damage to sural nerve.

V. Discussion:

1) The percutaneous repair was described in 1977 by Ma and Grittith as a solution to the difficult choice of the higher complication rate associated with the open repair or the higher repeat rupture rate associated with non-operative treatment.
2) In our series, the majority of cases, i.e., 12 cases, were seen with the age group of 21-40. (54.5%) There were 5 cases in the age group of 50 to 60 years and 2 cases with age > 60 years. The incidence in our study was similar to the studies of Gaiani et al., Doral et al. , Halasi et al. , Cretnik et al . All the studies supported a higher incidence in the age group<40years.
3) According to Lagergran and Lindholm, the tendon Achilles is divided into three zones. They are:

- Zone - I < 3 cm from calcaneal insertion.
- Zone - II 3 to 6 cm from calcaneal insertion.
- Zone - III > 6 cm from calcaneal insertion.

5) Most of the ruptures in our series occurred at Zone 2, i.e., 15 (68.19%) in correlation with Lindholm that Zone II has the least vascular supply and the usual site of rupture is 2 to 6 cms from calcaneal insertion.
6) Though we had limitations in the study, especially with the sample size being only 22 cases, we could achieve good to excellent results in 86.6% of the cases with a very less complication rate.

References:

[1]. Nicola Maffuli Tendon injuries basic science and clinical medicine 2004 springer.
[2]. L. Klenerman The early history of tendo Achilles and its rupture journal joint Bone Joint Surg [Br] 2007;89-B:545
[3]. Bosworth DM: Repair of defects in Tendoachilles, JBJS. 38-1:111,1956.
[4]. Arner O, Lindholm A (1959) Subcutaneous rupture of the Achilles tendon: a study of 92 cases. Acta Chir Scand Suppl 116S239.
[5]. Forward, A.D.; Cowan, R.J. tendon suture to bone. J. Bone and Joint Surg. Vol. 45, (807), 1963.
[6]. Lynn TA. Repair of the torn Achilles tendon, using the plantaris tendon as a reinforcing membrane. J Bone Joint Surg Am. 1966; 48:268-272.
[7]. Bugg EI, Boyd BM (1968) Repair of neglected rupture or laceration of the Achilles tendon. Clin Orthop 56: 73–75
[8]. Abraham, E. & Pankovich, A. (1975). Neglected rupture of the Achilles tendon.

Dr.B.Sindhura, et. al. "A Study on Management of Acute Tendoachilles Rupture by Closed Percutaneous Suturing"." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 21(09), 2022, pp. 13-20.