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**Original Article**

# Open Tendo-Achilles injury: An Observational Study in a Tertiary Care Hospital

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**Abstract**

**Background:** The Achilles tendon is one of the most commonly ruptured tendons in the human body. Though closed Achilles tendon injury is common in developed countries as it occurs in sports injury, on the contrary, open Tendo-Achilles injury is the most common type of injury in developing countries like Bangladesh.

**Objective:** To assess the demographic and injury characteristics of Tendo-Achilles (TA) injury.

**Methods:** This Prospective observational study was carried out among 50 patients attending at the Department of Orthopaedics, Cumilla Medical College Hospital, Cumilla from January 2022 to December 2022. Ethical clearance was obtained from the Institutional Review Board (IRB) of Cumilla Medical College Hospital. Purposive sampling was done according to availability of the patients. Statistical analyses of the results were obtained by using window based computer software devised with Statistical Packages for Social Sciences (SPSS-20.1).

**Results:** The mean (±SD) age of the patients were 29.48±13.53 years. More than two-thirds of the patients 34(68.0%) were male, whereas 16 (32.0%) were female. In terms of comorbidity, DM was detected in 2 (4.0%), HTN in 2 (4.0%) and HTN+DM+COPD in 1 (2.0%). The Sharp edge of broken toilet pan was the most prevalent cause of injury 19(38.0%), followed by sharp cut 13(26.0%), tin sheet 10(20.0%), RTA 5(10.0%), digging hoe 2(4.0%), and machinery 1(2.0%). Almost two-thirds 32(64.0%) of patients had a cut level from calcaneal insertion of 3-4 cm, with 31 (62.0%) having involvement on the right side.

**Conclusion:** Tendo-Achilles injury in the Bangladesh most commonly occur in young male patients (20-39 years old), with participation in recreational sports being the most likely mechanism. Recognizing high-risk patients can help physicians counsel them and recommend strategies for injury prevention.

**Keywords:** Tendo-Achilles injury, Epidemiology

## Introduction

Tendo Achilles is the thickest and strongest tendon of the body. It's named from Greek irresistible and invincible warrior Achilles. It's also known as a Tendocalcaneus.[1] The Achilles tendon is one of the most frequent ruptured tendons in the human body,[2] and it's the 3rd most frequent major tendon injury behind those of the rotator cuff and knee extensor mechanism.[3] Though it's largest and strongest tendon, it's prone to injuries of both athletes and non-athletes due to its superficial position in the body.[4,5] However closed Achilles tendon injury is most common in developed countries but in developing & least developed countries open Tendo Achilles tendon injury is most common. Injury to Achilles tendon may occurs due to sports injury, accidental cuts by sharp household tools, penetrating injury, road traffic accident, slipping of the foot in flat toilet pans.[6]

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## Materials & Methods

This Prospective, observational Study study was carried out among 50 patients attending at the Department of Orthopaedics, Cumilla Medical College Hospital, Cumilla within the defined period from January 2022 to December 2022. Ethical clearance was obtained from the Institutional Review Board (IRB) of Cumilla Medical College Hospital. Purposive sampling was done according to availability of the patients. The collected data were entered into the computer and analyzed by using SPSS (version 20.1) to assess the demographic and injury characteristics of Tendo-Achilles (TA) injury.

## Results

Table-I shows that majority of the (n=16, 32.0%) patients belonged to age group 21-30 years. The mean age was 29.48 with standard deviation of 13.53 years.

**Table-I: Distribution of the study patients (n=50)**

| Age (years) | Number | percentage |
|---|---|---|
| ≤20 | 13 | 26% |
| 21-30 | 16 | 32% |
| 31-40 | 10 | 20% |
| 41-50 | 07 | 14% |
| >50 | 04 | 08% |
| Mean±SD | 29.48±13.53 | |

**Figure-I shows that more than two third (68.0%) patients were male and 16(32.0%) were female.**

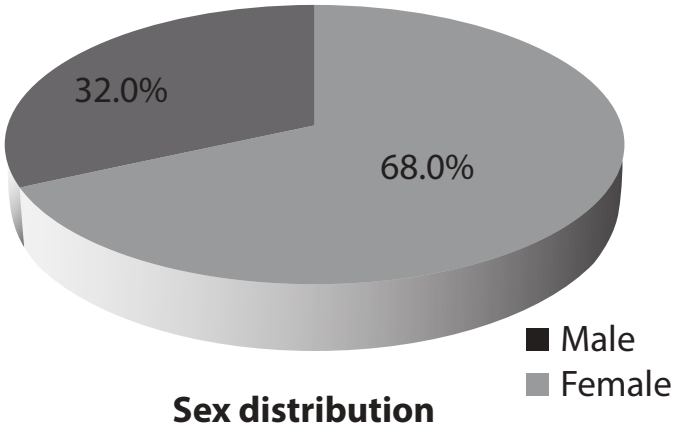


**Figure-I: Distribution of the study patients by sex (n=50)**

Figure-II shows that, regarding causes of injury, the sharp edge of a broken toilet pan was the most common cause of injury 19(38.0%) followed by sharp cuts 13(26.0%), tin sheets 10(20.0%), RTA 5(10.0%), digging hoes 2(4.0%) and machinery was 1(2.0%).

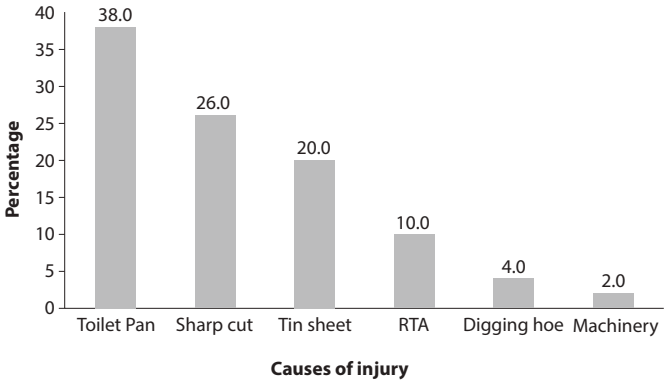


**Figure-II: Distribution of the study patients by causes of injury (n=50)**

Table-II shows that, almost two third (64.0%) patients had level of cut 3-4 cm from calcaneal insertion of Tendo-Achilles; the mean level of cut was 3.05 with standard deviation of 0.76 cm.

**Table-II: Distribution of the study patients by level of cut (n=50)**

| Level of cut (cm) | Number | percentage |
|---|---|---|
| <3 | 16 | 32% |
| 3-4 | 32 | 64% |
| >4 | 02 | 4% |
| Mean±SD | | 3.05±0.76 |

Table-III shows that, right side involvement was found in 31(62.0%) and left side was 19(38.0%).

**Table-III: Distribution of the study patients by side of involvement (n=50)**

| Side of involvement | Number | percentage |
|---|---|---|
| Right side | 31 | 62% |
| Left side | 19 | 38% |

## Discussion

The majority of the (n=16, 32.0%) patients in this study were between the ages of 21 and 30. The mean age was 29.48 years, with a standard deviation of 13.53 years. The peak incidence of Achilles tendon ruptures occurs in the middle age group rather than in the older population. Ahmed et al.[7] reported the mean age was 30.02 years with a standard deviation of 7.71 years. In terms of gender, this study observed that about two-thirds (68%) of patients were male and one-third (32%) were female, which is consistent with other

studies that found a higher prevalence of tendo Achilles injuries in males. Rayhan et al.[8] observed that out of 30 patients, 25 were male and 05 were female. In our study, broken toilet pan was most common cause of injury 19(38.0%) followed by sharp cut 13(26.0%), tin sheet 10(20.0%), RTA 5(10.0%), digging hoe 2(4.0%) and machinery was 1(2.0%). Baindoor et al.[9] reported most common mode of injury was agricultural field injuries, followed by road traffic accidents. Awe et al.[10] reported the leading cause of the Achilles tendon injuries in the study is road traffic accidents especially motorcycle spoke injuries which accounted for 25(48.1%). In terms of the level of the cut, this study found that almost two-thirds (64%) of patients had a cut that was between 3-4 cm above the calcaneal insertion of Tendo Achilles, with a mean level of cut at 3.05 cm. Other studies have also reported similar findings regarding the level of the cut. Ahmed et al.[7] reported median level of cut was 3.0 cm where interquartile range was 2.5 to 3.5 cm. Rayhan et al.[8] series median level of cut was 2.8 cm where interquartile range was 2.42- 3.28 cm. Awe et al.[10] reported the injuries in the patients were located 3 -8 cm proximal to calcaneal attachment; this had also been documented in literature. This is the area that is more mobile and subcutaneous, so exposing it to injury or trauma. This has been reported in literature especially in open Achilles tendon lacerations following broken toilet lavatory in India and the Middle-East.[11,12] The current study found that injuries were more commonly seen on the right side (62%) compared to the left (38%). There was no bilateral involvement in any case. There were no partial tears in the series. Rayhan et al.[8] reported the right side was more affected by 60% than the left side by 40%. Awe et al.[10] reported the cases were unilateral; the injuries involved the right side in 32 (61.5%) patients and the left side in 20 (38.5%) patients. Baindoor et al.[9] reported that there were fourteen (60.8%) right feet and nine (39.2%) left feet affected.

## Conclusion

Tendo-Achilles injury in the Bangladesh most commonly occur in young male patients (20-39 years old), with participation in recreational sports being the most likely mechanism. Recognizing high-risk patients can help physicians counsel them and recommend strategies for injury prevention.

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## Conflict of Interest

Authors declare no conflict of Interest.

## Reference

1 Maffulli N. Current concepts review-rupture of the Achilles tendon. JBJS. 1999; 81(7):1019-36.

2. Leppilahti J, Puranen J, Orava S. Incidence of Achilles tendon rupture. Acta orthopaedica Scandinavica. 1996; 67(3): 277-9.

3. Lesic A, Bumbasirevic M. Disorders of the Achilles tendon. Current Orthopaedics. 2004; 18(1): 63-75.

4. Nistor L. Surgical and non-surgical treatment of Achilles Tendon rupture. A prospective randomized study. The Journal of bone and joint surgery American volume. 1981; 63(3): 394-9.

5. Möller M, Movin T, Granhed H, Lind K, Faxen E, Karlsson J. Acute rupture of tendo Achillis: a prospective, randomised study of comparison between surgical and non-surgical treatment. The Journal of bone and joint surgery British volume. 2001; 83(6): 843-8.

6. Sasanka SC, Arindam S, Ashutosh M. Management of acute open tendo-achilles injuries in Indian lavatory pans. Indian Journal of Plastic Surgery. 2006; 39(01): 29-33.

7. Ahmed SU, Hasan MH, Haque MA, Haque ME, Imam Z. Evaluation of the Result of Surgical Repair of Open Achilles Tendon Injuries by Pulling Down of The Proximal Tendon. TAJ: Journal of Teachers Association. 2021; 34(2): 15-23.

8. Rayhan F, Rezwan M, Sarker M. Evaluation of the result of early repair of open tendo achilles injury. MOJ Orthop Rheumatol.2022; 14(1): 24-7.

9. Baindoor P, Gumaste A, Jeevannavar S, Kumar S. Full thickness open tear of the tendoachilles-Functional outcomes following a stable, single stage repair. Journal of Clinical Orthopaedics and Trauma. 2021; 14:132-8.

10. Awe AA, Esezobor EE, Aigbonoga QO. Experience with managing open Achilles tendon injuries in a tertiary hospital in southern Nigeria. Journal of the West African College of Surgeons.2015; 5(4):30.

11. Dar TA, Sultan A, Dhar SA, Ali MF, Wani MI, Wani SA. Toilet seat injury of the Achilles tendon a series of twelve cases: Foot Ankle Surg. 2011; 17(4): 284-86.

12. Langer V. Toilet seat injury of the Achilles tendon: Another culprit. 2013; 19(1): 65–69