

**Indian toilet seat injuries of Achilles tendon: Results of primary repair in eleven patients**

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**Abstract**

**Background:** The Achilles tendon is one of the most frequently injured tendons because of its superficial location. A fall in toilet seat is a rare cause of Achilles tendon injury.

**Objectives:** The purpose of this study is to evaluate the clinical outcomes of primary Achilles tendon repair due to fall in Indian toilet seats.

**Methods:** Eleven patients with acute Achilles tendon injury were managed by primary repair in a tertiary care centre. After surgical debridement and thorough irrigation, the skin wound was extended in a lazy-S fashion to expose the proximal and distal ends of the cut tendon. The tendon ends were mobilized and approximated using modified Kessler’s core suture technique. Below knee plaster cast was applied with ankle in plantigrade position. Patients were kept in the hospital for 3 days

**Results:** Patients were followed up for a minimum period of 14 months. Two patients had wound infection which resolved after regular dressings along with systemic antibiotics. A single patient developed

marginal wound necrosis. Final assessment was done as per Newcastle Orthopedic Foot and Ankle (NOFA) score. Five patients scored excellent, three scored very good, one scored good, one scored fair and a single elderly patient scored poor result.

**Conclusion:** Toilet seat injury is an unusual cause of Achilles tendon injury. A thorough wound debridement followed by primary repair with non-absorbable suture yields good results.

**Introduction**

Achilles tendon is the strongest tendon but it is prone to injury due to its superficial location <sup>1, 2</sup>. Open Achilles tendon injuries are uncommon in both developed and the developing countries as compared to closed ruptures <sup>3,4,5</sup>. Injury to Achilles tendon may occur due to sports injuries, accidental cuts by sharp household tools, and road traffic accidents. Accidental fall in Indian toilet seat is an uncommon cause of Achilles tendon injury <sup>5</sup>. Open Achilles tendon injuries are usually managed by surgical repair <sup>6</sup>. In this article we

present our experience in primary repair of Achilles tendon injuries due to fall in Indian toilet seats.

### Materials and Methods

Eleven patients with acute open injuries of the Achilles tendon, presenting to Government Medical College, Haldwani, during the period from March 2013 to January 2018 were included in this study. Patients offered a history of accidental fall of the foot into the hole of an Indian toilet seat, which led to an injury to the Achilles tendon. There were eight males and three females in the study.

All patients presented from 2 to 12 hours after injury. After surgical debridement and thorough irrigation of wound, the skin laceration was extended in a lazy-S fashion to expose the proximal and distal ends of the tendon (Figure 1). The cut ends of tendon were mobilized and approximated using modified Kessler's core suture technique using a Prolene suture of size 2/0 (Figure 2). Post-operatively a below knee plaster of Paris cast was applied with the ankle in plantigrade position. Patients were kept in the hospital for 3 days. They were mobilized on non-weight bearing crutches in the first 4 weeks followed by gradual weight bearing and increasing range of motion exercises. Patients were followed up weekly for one month, and then every fortnightly for next two months, and once a month, thereafter.



Figure 1: Displaying the cut ends of tendon



Figure 2: Repaired tendon

### Results

Patients were followed up for minimum period of 14 months. Two patients had wound infection which resolved after regular dressings and systemic antibiotics (Table 1). One patient developed marginal wound necrosis. At final follow up, results were assessed as per Newcastle Orthopedic Foot and Ankle (NOFA) score system which measured improvement in pain and symptoms, recovery and lifestyle improvement and motion and activity at the time of final follow up (Table 2). Five patients scored excellent, three scored very good, one scored good, one scored fair and a single elderly patient scored poor result.

Table 1: Complications

S.No.	Complications	No. of patients
1.	Wound infection	2
2.	Marginal skin necrosis	1
3.	Stiff ankle	1

Table 2-Results as per Newcastle Orthopedic Foot and Ankle (NOFA) Score

Serial no.	Results	No. of patients
1.	Excellent	5
2.	Very good	3
3.	Good	1
4.	Fair	1
5.	Poor	1

## Discussion

Available literature on open Achilles tendon injury is very sparse<sup>6,9</sup>. In recent past there has been an increase in the incidence of open Achilles tendon injury<sup>7,8</sup>. The majority of patients reported are children and young adults as they are more often exposed to accidents<sup>9,10,11</sup>. In most of the studies, mode of injury has been mentioned as motorbike and bicycle spokes injury, sharp metal injury, broken glass injury etc. In a recent report by Chatterjee SS et al<sup>3</sup> toilet seat injury (Indian lavatory pan) has been mentioned as a common mode of injury. An accidental fall in toilet seat results in slipping of one foot into the hole of the pan thereby sustaining laceration or sharp cuts of skin and the Achilles tendon. In some of the cases toilet seats are broken. In our series of cases most of the repairs were done after 12 hours of injury and none of the case suffered a failure. Complications in primary Achilles tendon repairs mentioned in literature are skin edge necrosis, superficial wound infection, seroma formation, hematoma, re-rupture, sural nerve irritation and deep vein thrombosis<sup>12,13</sup>. In our study there was minor wound edge necrosis in a single case, superficial wound infection in two cases, which resolved after series of dressings and antibiotics. One elderly patient with poor compliance to physiotherapy complained of ankle stiffness. As per Newcastle Orthopedic Foot and Ankle (NOFA) Score<sup>14</sup>, five patients scored excellent, three scored very good, one scored good, one scored fair and a single elderly patient scored poor result. Malik et al<sup>15</sup> have also reported similar results. Repair of Achilles tendon may be difficult if treatment is delayed or if wounds are untidy. In delayed cases The repair may require augmentation with a turndown flap (gastrocnemius-soleus muscle<sup>17,18</sup>, gastrocnemius fascial flaps<sup>19</sup>) or tendon transfer (peroneus brevis<sup>20</sup>,

flexor digitorum longus tendon<sup>21</sup>), tendon graft (free semi-tendinous<sup>22</sup>) or synthetic materials (carbon fibre<sup>23</sup>).

## Conclusion

Toilet seat injury is an unusual cause of Achilles tendon injury. In this article we have shared our experience in the management of acute Achilles tendon injuries due to fall in Indian type of toilet seats. Primary repair with Prolene suture yields good results.

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