International Journal of Orthopaedics Sciences

E-ISSN: 2395-1958
P-ISSN: 2706-6630
IJOS 2024; 10(2): 01-03

https://www.orthopaper.com
Received: 02-01-2024
Accepted: 01-02-2024

Abhishek Paul
Assistant Professor, Department of Orthopaedics, Diphu Medical College & Hospital, Assam, India

Dr. Heoj Nandan Sonowal
Junior Resident, Gauhati Medical College & hospital, Guwahati, Assam, India

Dr. Soma Paul
Senior Resident, Department of Anesthesiology, Smch, Assam, India

Corresponding Author:
Abhishek Paul
Assistant Professor, Department of Orthopaedics, Diphu Medical College & Hospital, Assam, India

Dropped hallux after expert tibia interlocking nailing in proximal tibia fractures in a tertiary care hospital: A case report

Abhishek Paul, Dr. Heoj Nandan Sonowal and Dr. Soma Paul

DOI: https://doi.org/10.22271/ortho.2024.v10.i2a.3523

Abstract
In road traffic accidents, tibia fractures occur frequently. Interlocking nails are commonly used to treat fractures of the Tibial Diaphyseal. Extensor hallucis longus tendon paralysis is a rare complication following interlock tibial nailing and is rarely reported. The paralysis leads to a condition in which the ankle and other toes can be dorsiflexed, but the hallux cannot. It's a case study of this complication. Following RTA our patient developed proximal both bone leg fracture right leg and he was operated with interlock tibial nailing. Post operatively the patient had dropped hallux without any sensory deficit. At 1 month of follow up, the patient did not show any improvement.

Keywords: Proximal tibia fracture, Interlocking tibia nail, extensor hallucis longus (EHL), dropped hallux

Introduction
Isolated dysfunction of extensor hallucis longus (EHL) tendon leading to dropped hallux is rare and has been reported to occur in a variety of conditions such as interlock nailing of tibial fractures, osteotomies of tibial and fibula, proximal fibular graft harvesting, external fixator application, knee arthroscopy, compartment syndrome, prolonged traction, etc. We describe a case of isolated dropped hallux without any foot drop due to probable injury to the branch of deep peroneal nerve following interlocking nailing in proximal 1/3rd tibia fracture.

Case description
A 48Y old man was presented to Orthopaedics OPD with pain and swelling over right leg following h/o self-fall 1 day ago. Clinical examination revealed signs of tenderness and external abnormalities. There's no evidence of external injury. Active flexion and extension of the toes and ankles, a palpable pulse in the peripheral region. There were no clinical signs of compartment syndrome, nor have there been any motor or nervous symptoms. After radiological examination, a fracture of the proximal tibia and fibula was detected. The right leg was splinted with above knee slab.

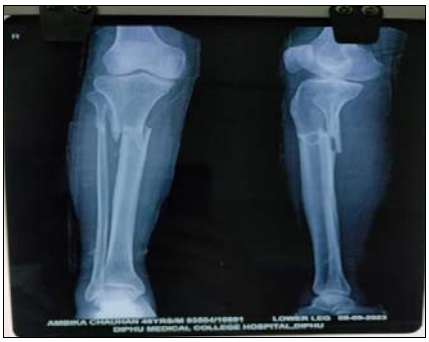

Fig 1: Pre-operative radiograph

A closed reduction and internal fixation of the antegrade tibial interlocking tibial nail with an expert nail has been performed. The position was supine, with 3 proximal locking bolts and 2 distal locking bolts, and an expert tibial nailing was performed via a patella tendon splitting technique.

Preoperatively there was no neurological injury. The patient was kept on a above knee slab. The patient complained that he could not dorsiflex her big toe on day 2 after surgery.

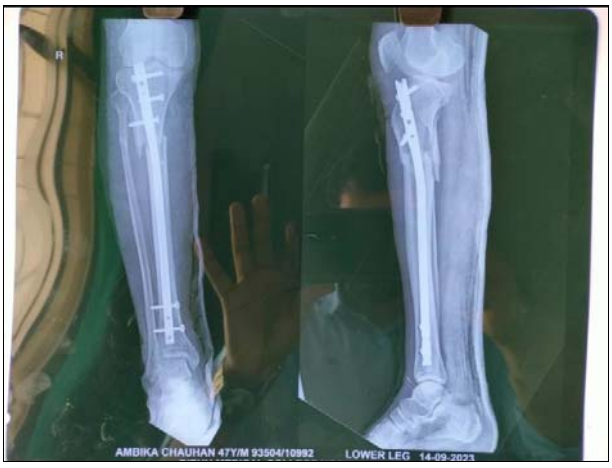

Fig 2: Post operative radiograph

Discussions

The EHL originates from the anterior surface of the fibula middle and lower third and the interosseous membrane and is grossly inserted in the base of distal phalanx of great toe and plantar plate, although there are different variations in the insertion pattern. The EHL is supplied by an isolated long motor branch from the DPN which runs inferiorly along the fibula periosteum until it reaches the muscle, therefore, is more prone to injury during its course.

EHL weakness is not uncommon after interlocking nailing of tibial shaft fractures. It is under reported since most of it were due to transient neuropraxia and due to failure to notice it post operatively.

Case reports of dropped hallux with varied etiologies have been described in the literature. Robinson *et al* reported 5.3% developed this complication in his series of 208 patients [1]. Bryon *et al* reported 0.8% developed this complication in his series of 246 patients [2].

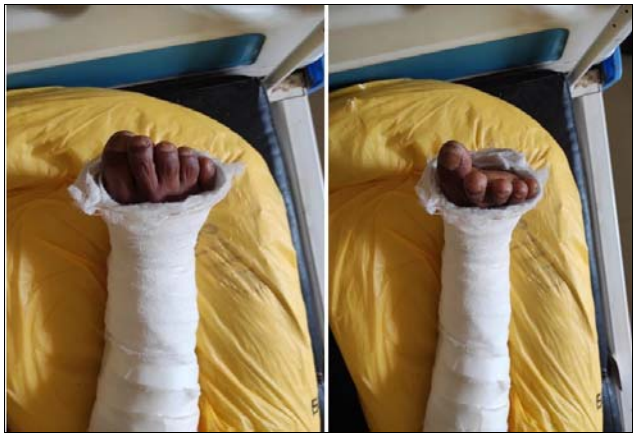

Fig 3: Immediate post-op showing dropped hallux

In Cicone *et al*., a case of distal tibia and fibula fractures treated with ORIF with dropped hallux, which was demonstrated by an electrodiagnostic study to be due to injury to the branch of the DPN supplying EHL [3], was described. The authors have concluded that nerve damage could occur intraoperatively from retraction, insertion of transverse screws, or ischemia from tourniquets, and postoperatively from the compartment syndrome or hematoma. There is another report which states spontaneous closed rupture of ehl due to talar neck osteophyte which was treated successfully with surgical repair [4].

The site of lesion of the deep peroneal nerve is probably distal to the branches to tibialis anterior, extensor digitorum longus and proximal to origin of branch to EHL. The tibialis, extensor digitorum longus and anterior EHL all have to be involved if the lesion is proximal to its origin. The patient developed EHL weakness with hallux drop without any sensory involvement. It is likely that this lesion represents the same level as described above.

Cadaveric studies performed by Shingade *et al*. [1] showed that the deep peroneal nerves give branches of anterior tibialis and extensor digitorum longus to a higher level in the fibula, which is distally originating with EHL branch. Thus, the proximal muscles are being fought. Moreover the proximal muscles receive multiple branches whereas the EHL receive a thick single branch vulnerable to ischaemia(torniquet), traction, compartment syndrome, proximal screws.

Fig 4: Post-operative clinical photograph after 1 month

Conclusion

To conclude, in case of interlocking nailing of proximal tibia fracture, the orthopedic surgeon should be aware of the possibility of peroneal nerve injury. Isolated EHL weakness is an under reported complication following tibial interlocking nailing. This is an iatrogenic injury and can be prevented by minimizing the risk factors. Though the site of lesion could be determined more studies are required to know the exact cause of this condition. This is presented to make aware of such complication to be recognized.

Limitation

- Less number of cases
- Insufficient time

Conflict of Interest

Not available

Financial Support

Not available

References

1. Robinson CM, O'Donnell J, *et al*. Dropped hallux after the intramedullary nailing of tibial fractures [Abstract]. J Bone Joint Surg Br. 1999;81-B:481-484.

DOI: 10.1302/0301-620X.81B3.0810481.
2. Chalidis BE, Petsatodis GE, Sachinis NC, Dimitriou CG, Christodoulou AG. Reamed interlocking intramedullary nailing for the treatment of tibial diaphysial fractures and aseptic nonunion. Can we expect an optimum result? Strat Traum Limb Recon. 2009;4:89-94.
3. Cicone C, Hadilaksono MG, *et al*. Dropped Hallux Following an Open Reduction and Internal Fixation (ORIF) of a Distal Tibia-Fibula Fracture: A Case Report. PM&R. 2016;8(9s):s215.
DOI: 10.1016/j.pmrj.2016.07.203.
4. Fadel GE, Alipour F. Rupture of the extensor hallucis longus tendon caused by talar neck osteophyte. Foot Ankle Surg. 2008;14(2):100-102.
DOI: 10.1016/j.fas.2007.11.004.
5. Shingade VU, Jagtap SM, Ranade AB. Weakness of extensor hallucis longus after removal of non-vascularized fibula as an autograft. J Bone Joint Surg Br. 2004;86-B:384-7.

How to Cite This Article
Abhishek Paul. Dropped hallux after expert tibia interlocking nailing in proximal tibia fractures in a tertiary care hospital: A case report. International Journal of Oncology Research. 2024;10(2):01-03.