

# Common Fibular Nerve Injuries After Bimalleolar Ankle Fracture. Literature Review

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## ABSTRACT

**Keywords:** Common Peroneal Nerve; Ankle Fractures; Operative Treatment

## Introduction

The relationship between common fibular nerve injuries and a forced inversion mechanism (like in transindesmototic fractures) is not clearly established.

## Objectives:

We present two case reports and discussion of the etiologies.

## Methods

### Case 1

A 39-year-old woman without personal history of interest, which after right ankle inversion mechanism, presents bimalleolar ankle fracture (44B-2 AO classification), emergency operated by ORIF, after 6 weeks discharging maintained and although the rehabilitation treatment, presents progressive deformity with equinus-varus and positive Tinnel sign of the nerve around the head of the fibula [1].

**Additional Tests:** At 4 months EMG-ENG of CPN: Normal At 9 months RMN and EMG-ENG control: Findings of Common Peroneal

Nerve palsy with thickening and edema in the peroneal tunnel without compressive collections at that level. The EMG-ENG objectifies neuropraxia of the peroneal nerve with severe distal axonal degeneration and signs of acute pedal muscle denervation, with normal EMG of tibialis anterior, hallux extensor and peroneal muscles. Given the persistence of the clinic performs surgery: CPN decompression at the level of peroneal tunnel, osteosynthesis material extraction of healed fracture and percutaneous tenotomies of Achilles tendon and open tenotomy of posterior tibial muscle submitting samples for pathological analysis [2].

### Case 2

A 52-year-old man that after a forced inversion mechanism and low energy trauma, presents transindesmototic right ankle fracture (44A-1 AO classification) non-displaced. We opted for orthopedic treatment. When we allowed weight bearing, the patient referred hypoesthesia in the right lower extremity, which was there after a few days of the fracture and seems compatible with the sensitive territory of Peroneal Nerve [3]. The patient was treated with rehabilitation and

their symptoms improved. Three months later, he presented the same symptoms again and paralysis of the tibialis anterior muscle, exten-

sor hallucis longus and peroneus muscles, demonstrated with clinical signs and EMG.

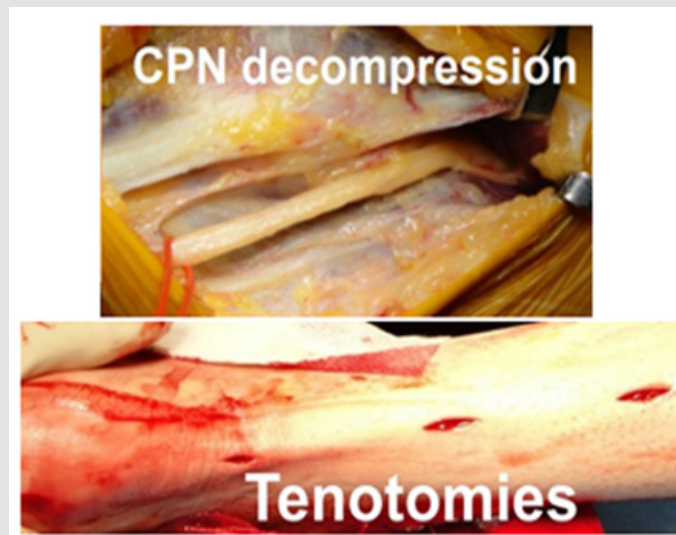


Figure 1:

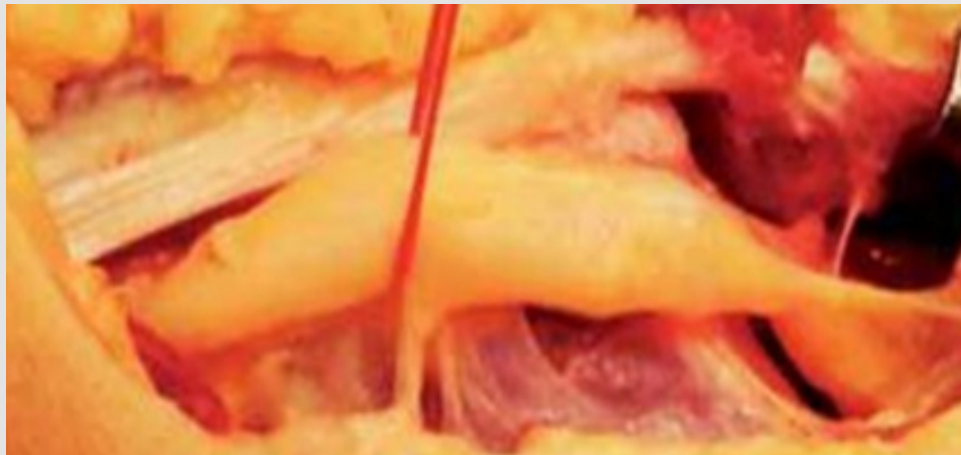


Figure 2:

**ECO:** Intra-neural lesion at the level of the fibular head compatible with the diagnosis of intra-neural ganglion. With all these tests we decided to operate the patient, finding intra-neural hematoma at the Peroneal tunnel without evidence of ganglion, we could appreciate edema and thickening of the nerve at the entrapment and we decided to open the epineuro where we found a hematoma. We removed the hematoma and we released the nerve at the peroneal tunnel [4].

## Results

### Case 1

**Pathological result:** neurogenic muscular atrophy. After six weeks of non weight bearing and immobilization, we recommended her rehabilitation with progressive correction of the deformity.

## Case 2

In the immediate postoperative hypoesthesia disappears and motor paralysis persisted. Partial weight bearing was permitted and rehabilitation treatment started after surgery. After 2 weeks he presented voluntary movements and after 12 weeks motor function was restored.

## Conclusion

The mechanism of ankle forced inversion can produce traction on the Common Peroneal Nerve at the peroneal tunnel, its traction may cause injury of the vasa nervorum forming a hematoma between the epineurium and perineurium, which affects neural transmission [5]. This complication is very uncommon and the most favourable results were achieved when a neurolysis was early performed.

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