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Anomalous common peroneal nerve: An encounter during peroneal nerve decompression

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Abstract
In this case report we discuss about a rare anomaly of the common peroneal nerve. This was encountered during decompression of the peroneal nerve following a post traumatic foot drop. Here, we describe the abnormal division of common peroneal nerve and the importance of identifying it to avoid further nerve injury.

Keywords: Anomalous common peroneal nerve, encounter, peroneal nerve decompression

Introduction
The Standard text books of anatomy and other researches describe that the division of common peroneal nerve occurs at the neck of fibula [1, 2, 3]. Usually surgeons are unaware of the higher division common peroneal nerve in and around the popliteal fossa [4, 5]. Such anomalies may impact on clinical diagnosis or endanger the nerve during surgery or procedures such as surgical decompression of common peroneal nerve at the fibular head, percutaneous placement of wires in proximal tibia, high tibial osteotomy, and biopsy of proximal fibula [6, 7]. The described anomaly is rare and it may be important to clinical practice.

Case report
We report a 25-year-old male, who presented with complaints of pain in the lateral aspect of right knee and difficulty in walking for five months following a history of fall from bike. On physical examination he had a high stepping gait with right sided foot drop. There was no effusion around the knee, bony tenderness was elicited at the lateral femoral condyle and fibular head. There was palpable loose body at the lateral aspect of the knee which was bony hard in consistency. Neurological evaluation revealed a grade 0 power of the dorsiflexors and loss of sensation over the dorsal aspect of leg and foot. Distal pulses were well felt.
Further investigations with plain radiographs and ultrasound imaging for the knee was performed.
Plain radiograph of the knee demonstrates a fracture fragment just lateral and distal to lateral femoral condyle, probably from the fibular head (Figure 1)

Fig 1: Plain radiograph of knee AP & Lateral demonstrating presence of a fracture fragment just lateral to lateral condyle of femur

Ultrasound of knee joint was performed and revealed a traumatic neuroma of the common peroneal nerve which was located at the lateral aspect of femur.
With existing clinical findings and investigation reports, a diagnoses of post traumatic peroneal nerve palsy leading to foot drop was made. Hence, it was planned for an operative management with excision of fibular head fragment + exploration and decompression of common peroneal nerve was done (Figure 2).

Fig 2: Surface markings of key structures in lateral aspect of knee

A standard lateral approach was used, superficial dissection was done (Figure 2) and while performing meticulous deep dissection we observed an anomalous variation in the course of the common peroneal nerve. It was observed that the common peroneal nerve was dividing just distal to popliteal fossa and proximal to the fibular head. It divided into the superficial peroneal nerve and the deep peroneal nerve at this level (proximal to fibular head). (Figure 3 & figure 4)

Fig 3: Superficial dissection during surgical decompression.

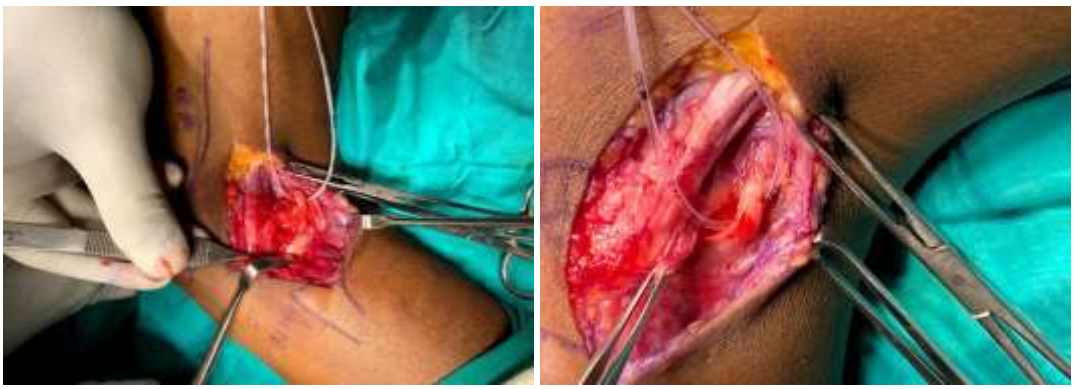

Fig 4-5: Branching of common peroneal nerve proximal to the fibular head.

An avulsed fragment of fibular head was seen proximal to the division of the nerve with a band of fibrous tissue constricting on the nerve (Figure 5).
Nerve decompression was done and fibular head fragment was excised (Figure 6 & Figure 7).

Fig 6: Excision of avulsed fibula fragment

Fig 7: After decompression of common peroneal nerve.

Post operatively he was given a foot drop splint at the time of discharge and advised for passive movements at ankle.
On follow-up at end of three months, the pain had subsided, his gait improved. There was progression of the tinels sign and had flicker of movements in his right foot and toes.

Discussion

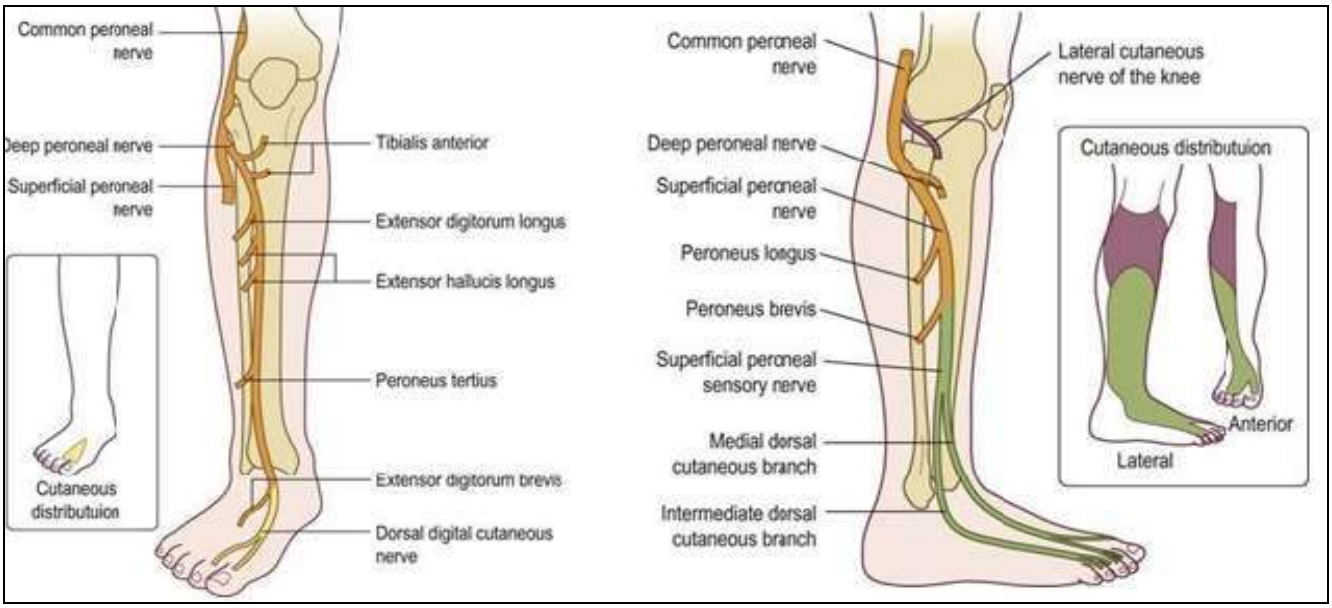

Fig 8: Normal course of the common peroneal nerve

Surgical procedures are commonly performed at the proximal end of fibula [8, 9]. Understanding the anatomical distribution of the common peroneal nerve is essential to give regional blocks [10, 11] (Figure 8). Decompression of the common peroneal nerve at the fibular head is usually performed to release the fascia of the peroneus longus muscle is also a common procedure [12]. Orthopedic surgeons should be aware of anomalous divisions of the common peroneal nerve while performing decompression of peroneal nerve [4] (Figure 9).

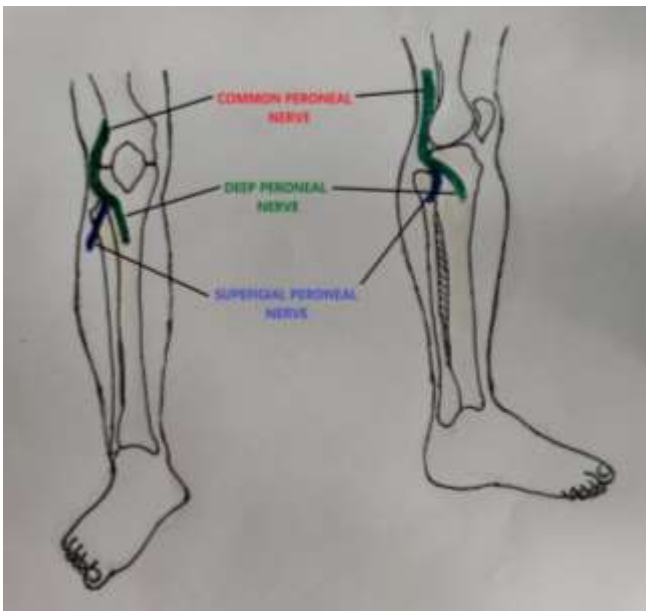

Fig 9: Illustration of the anamalous course and branching of the common peroneal nerve.

Emergency physicians and other clinicians working in acute care settings frequently encounter patients who have trauma to or pathology of the dorsum of the foot and require anesthesia for treatment and repair. Regional block of the superficial peroneal nerve allows for rapid anesthetization of the dorsum of the foot, which allows for management of lacerations, fractures, nail bed injuries, or other pathology involving the dorsum of the foot. Percutaneous placement of wires in the proximal fibula is gaining increased usage with the application of the techniques of Ilizarov, Monticelli, and Spinelli [13, 14]. Biopsy of proximal fibula and division of fibula during high tibial osteotomy are also commonly performed procedures in which a good understanding of the anatomy of common peroneal nerve is important [15]. Not many variations regarding the common peroneal nerve and the deep common peroneal nerve are documented in the standard anatomical textbooks. In the case, we report the common peroneal nerve dividing into superficial peroneal nerve and deep peroneal nerve at the level higher to the fibular head and its knowledge is clinically relevant to surgeons operating on the proximal fibula in routine clinical practice.

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