

# CASE OBSERVATION ON THE COMMON PERONEAL NERVE INJURY

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## INTRODUCTION

Peculiar anatomical features render the common peroneal nerve and its nutrient vessels particularly susceptible to damage in injuries about the knee. Sunderland (1968) observed that, at the knee, this nerve is apposed to the neck of the fibula by the attachments of the deep fascia. In this way not only is the nerve securely fixed at this site, but it is also angulated where it turns abruptly laterally from the gastrocnemius to pass between the two heads of the peroneus longus. Here it is flattened and its constituent bundles are separated, so that the nutrient vessels are exposed and left unprotected between them. Although Lyle (1925), Perrin and Labry (1926), Woltman (1930), Selig (1938), Lewin (1943), Weddell *et al.* (1943), Parkes (1960), Barrett and Cramer Fritz (1963), Marwah (1964), Burkhart and Daly (1966), Crothers and Johnson (1973), Gloobe and Chain (1973), Mangieri (1973) and Ogden (1974) have reported the various causes of injury to the common peroneal nerve, none of them have compared the incidence and the severity between the superficial and deep divisions of this nerve.

## MATERIALS

Two patients with the common peroneal nerve injury were studied in the Orthopaedic Department, University Kebangsaan Malaysia, Kuala Lumpur.

### Case I.

The patient A.M.S. had injury to the common peroneal nerve while he was taking part in the rugby game. Foot drop was seen on the affected side with loss of touch and pain sensations over the lower third of the lateral surface of the leg and the dorsum of the foot. The intensity duration (I/D) curve taken

on stimulation of the affected peroneus longus and the tibialis anterior muscle gave signs of partial denervation in both the muscles. However, the position of the bend (kink) in the curve produced by the tibialis anterior was more towards the left when compared to that of the peroneus longus.

This indicated that nerve to the tibialis anterior, i.e. the deep peroneal division was more involved. Fifteen weeks after the injury, an almost complete recovery of the sensory loss was seen except in a small area over the cleft between the big toe and the second toe (the area supplied by the deep division of the common peroneal nerve). The I/D curve also showed the shift of the bend towards the right lower corner of the curve for the tibialis anterior, whereas that for the peroneus longus was normal.

### Case II

The patient B.H. came with the common peroneal nerve palsy due to displacement of the lateral plateau of the tibia after he fell off from the motor cycle. The position of the bends on the I/D curve taken on the tibialis anterior at the early and at the late stage were more towards the left side when compared to those produced by the peroneus longus at the respective stages. These findings indicated that the nerve to the tibialis anterior, i.e. the deep division of the common peroneal nerve was more involved than the superficial division.

## DISCUSSION

Compton (1917) demonstrated that deep peroneal, though called deep, occupies the antero-superior part of the common peroneal nerve over the neck of the fibula. So it is equally exposed to injury similar to the superficial division which occupies the postero-inferior part of the nerve trunk. In fact, as the deep division supplies more muscles, it is bigger than the superficial division and thus the chances of it getting

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injured are therefore greater. Moreover, Sunderland (1968) stated that, nerves, or those segments of nerves, which are composed of large and tightly packed funiculi; are more vulnerable to mechanical injury than those in which the bundles are smaller and are more widely separated by a greater amount of connective tissue. Thus, in the present investigation the deep peroneal division of the common peroneal nerve is not only equally exposed to the mechanical injury as the superficial peroneal division, but also it may have been composed of larger and tightly packed funiculi as it supplies more numerous and more powerful muscles than the superficial division. Therefore, the forces acting on the deep peroneal division of the nerve are more likely to affect the funiculi. The forces acting on the superficial peroneal division may, however have been broken up by the connective tissue, causing the funiculi to be spread out within the nerve and this reduced the effects of deforming forces as postulated by Sunderland (1968).

#### CONCLUSION

The available clinical data from the both cases show the lesion was selectively more common in the deep division of the common peroneal nerve. The I/D curves also corroborate these clinical observations.

#### SUMMARY

The peculiar anatomical features render the common peroneal nerve particularly susceptible to injury at the knee. The present investigation revealed that, the deep division of the nerve is more inclined to be injured when compared to the superficial division.

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