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Case Report

A case of bilateral high division of sciatic nerve with a variant inferior gluteal nerve

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ABSTRACT

High division of the sciatic nerve was found bilaterally in a 70 year old male cadaver. Common peroneal nerve was found piercing the piriformis muscle dividing the muscle into upper and lower slips. Tibial nerve was found emerging below the lower slip of the piriformis muscle. Inferior gluteal nerve was formed by two roots one above and one below the lower slip of the piriformis muscle. Here in this case report we discuss the possible sciatic nerve entrapment due to this kind of variations and we also discuss the two conditions named sciatica and the piriformis syndrome. ***Neuroanatomy; 2006; 5: 33–34.***

Key words [sciatic nerve] [piriformis muscle] [piriformis syndrome] [sciatica]

Introduction

Sciatic nerve is the thickest nerve in the human body. Normally sciatic nerve reaches the gluteal region from the pelvic fossa by passing below the piriformis muscle. The nerve divides into tibial and the common peroneal nerve at the lower part of the posterior compartment of the thigh [1]. There are quite a number of variations reported on the high division of the sciatic nerve [2]. Here in this case report we discuss a high division of sciatic nerve with one of its branches piercing the piriformis muscle.

Case Report

During the routine dissection for the medical students, we found a high division of the sciatic nerve bilaterally in a 70 year old male cadaver. Sciatic nerve divided within the pelvic fossa in to tibial and common peroneal nerve. Common peroneal nerve pierced the piriformis muscle dividing the muscle in to an upper and a lower slip of fibres. Tibial nerve reached the gluteal region by passing between the lower slip of piriformis muscle and the gemellus superior muscle. In the same cadaver the inferior gluteal nerve was found consisting of two branches. These branches were seen one above and one below the lower slip of the piriformis muscle. The two branches united in front of the piriformis muscle and formed a common trunk and then supplied the gluteus maximus muscle (Figure 1).

Discussion

Piriformis syndrome is caused by an entrapment of the sciatic nerve as it exits the greater sciatic notch in the gluteal region [2, 3]. There are two normal variations for the exit of the sciatic nerve in this region. In the first case the sciatic nerve lies inferior to the piriformis muscle and superior to the gemellus superior muscle [3]. Entrapment in this area is likely due to a myospasm or contracture of either of these two muscles [4].

The second common site of entrapment is when the sciatic nerve or one of the branches of the sciatic nerve actually pierces the piriformis muscle similar to the one which we found in this particular case [5]. This can occur in about 1% to 5% of all humans [5, 6]. In this case myospasm and or contraction of the piriformis muscle itself can lead to pain along the back of the thigh to the knee, loss of sensation or numbness and tingling in the sole of the foot [5]. This particular syndrome can often mimic its more notorious counterpart known as sciatica, and that being the case; it is often misdiagnosed as sciatica [7]. The main difference between sciatic and piriformis syndrome is in the cause. Sciatic is directly due to a lumbar disc pressing on the sciatic nerve as it exits the intervertebral foramen in the lumbar spine. What both of these complaints have in common is that both can produce pain, numbness and tingling below the knee and into the foot [5, 8].

Spinal stenosis, trochanteric bursitis, myofascial pain syndrome, pelvic tumor, endometriosis, and conditions

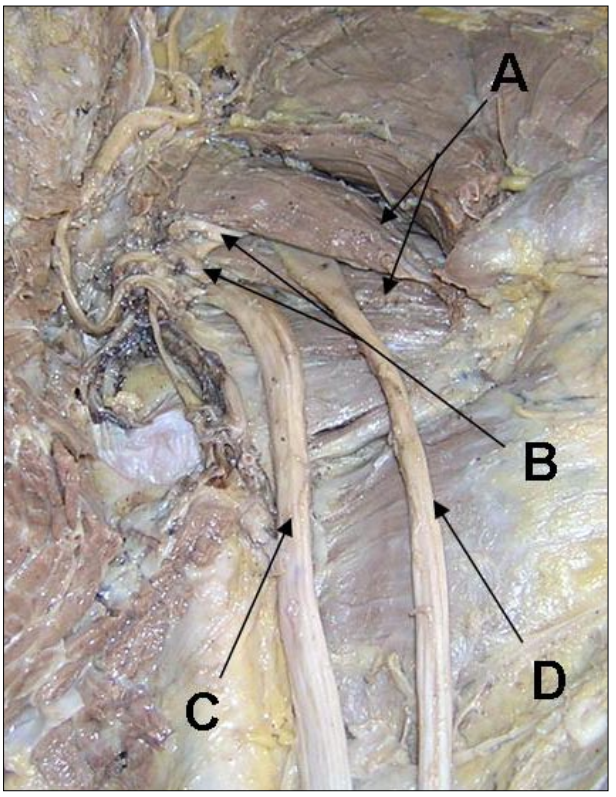

Figure 1. Gluteal region. Color version of figure is available online. *(**A:** Piriformis muscle; **B:** The two roots of inferior gluteal nerve; **C:** Tibial nerve; **D:** Common peroneal nerve)*

irritating the sciatic nerve should be considered in the differential diagnoses of the piriformis syndrome. These conditions can often be eliminated by obtaining a complete medical history and conducting a thorough physical examination [3, 4].

Some investigators consider piriformis syndrome to be a form of myofascial pain syndrome [2, 3]. A history of trauma is usually elicited in approximately 50% of cases of the syndrome. The trauma is usually not dramatic and may occur several months before the initial symptoms. It may also follow total hip replacement surgery [2].

The management of piriformis syndrome includes injection of the piriformis muscle with local anesthetic and steroid or with botulinum toxin. Some investigators also inject dilute local anesthetic and steroid in the area of the sciatic nerve. Whereas the older techniques of injection were done blindly, newer techniques involved the use of muscle electromyography or computed tomography (CT) to identify the piriformis muscle, and the use of a nerve stimulator to identify the sciatic nerve [3–5].

Surgery may be considered when there is involvement of piriformis in the sciatic nerve entrapment, in which the muscle may be thinned, divided, or excised. The obturator internus, gemelli, and quadratus femoris muscles can compensate for the loss of piriformis function, because these muscles share common insertions with the piriformis muscle [3, 4].

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