



## Superior gluteal nerve entrapment between two bellies of piriformis muscle

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### ABSTRACT

A double belly composition of piriformis muscle with superior gluteal nerve entrapment between the two muscle masses was detected. Piriformis muscle and its relation to sciatic nerve has been suggested as a cause of piriformis syndrome. Patients suffering from buttock pain are most often diagnosed as having piriformis syndrome, where anatomical variation of the piriformis is an important contributor. The present variation showed two distinct bellies of piriformis muscle. Interestingly the superior gluteal nerve was interposed between the two bellies. Such incidental findings on cadavers may help the clinicians to establish a rare yet important cause of piriformis syndrome. Furthermore, such observations are also relevant to the radiologists while interpreting MRI scans in cases of undiagnosed chronic gluteal pain. © *IJAV*, 2010; 3: 203–204.

**Key words** [accessory belly] [piriformis] [anatomical variations] [piriformis syndrome]

### Introduction

Piriformis muscle is an important contributor to the stability of hip joint and its function is lateral rotation at the joint. It originates from the pelvic surface of sacrum by three digitations and from the capsule of the adjacent sacroiliac articulation. Piriformis syndrome –although an uncommon condition– is characterized by pain in gluteal region referred to the leg. It is caused by high division of sciatic nerve in 15% cases [1]. Even the femoral cutaneous nerve is known to pass through the substance of piriformis resulting in this syndrome.

The morphology of the piriformis may be evaluated reliably via MRI scans, and the presence of an accessory belly of piriformis may be detected timely [2]. Therefore, variations of the piriformis should be listed in clinical anatomy and radiology textbooks.

Here, we report an important variation of the piriformis muscle especially for the benefit of clinicians and radiologists.

### Case Report

During the course of routine educational dissection of the right gluteal region of a 50-year-old male cadaver, an accessory belly of piriformis was observed originating from the dorsal aspect of the innominate bone close to the margin of the greater sciatic notch. This accessory belly was superior and parallel to the main piriformis muscle (Figure 1). The accessory belly joined the main belly of piriformis at its insertion. The accessory

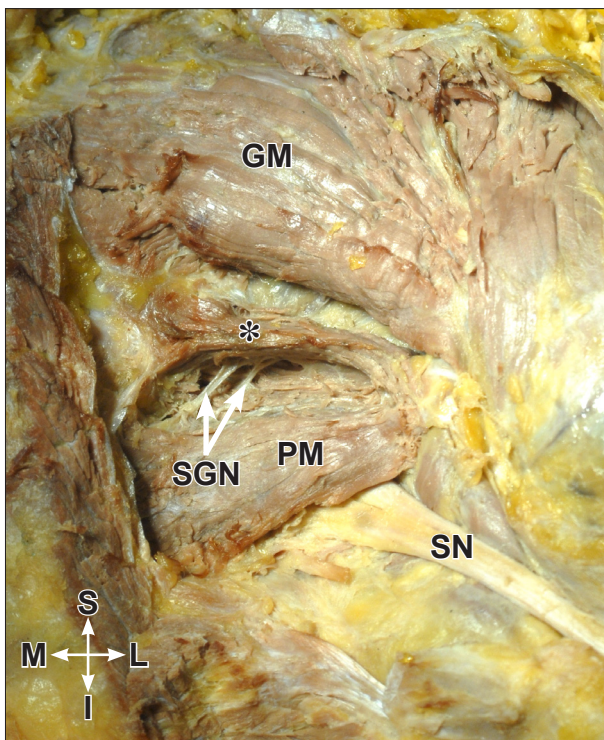
belly was 6.3 cm long and 1.4 cm wide, and was fleshy throughout. The length of the main piriformis was 7.2 cm and width was 3.6 cm. Both the bellies fused to form a common tendon and were inserted into the piriform fossa at the upper border of the greater trochanter. The innervation was derived from the dorsal rami of L5, S1 and S2 nerves. Branches of superior gluteal nerve were interposed between the two bellies of piriformis and were also found to pierce the main belly.

### Discussion

Piriformis is a key muscle of the gluteal region, therefore, any deviation from the normal morphology merits special mention in anatomical literature. Among the commonly described variations of this region are those of sciatic nerve with regard to its branching pattern [3].

Although the main belly of piriformis originated from the pelvic surface of sacrum, the accessory belly had extrapelvic origin from innominate bone. The astonishing observation in the present study was the interposition of superior gluteal nerve between the main and accessory bellies of piriformis muscle. This is an extremely rare finding, which to the best of our knowledge has not been reported previously.

There are two types of piriformis syndrome. Anatomical variants are responsible for primary piriformis syndrome, whereas the secondary syndrome is caused by ischemia and trauma [4]. Therefore, the presence of an accessory belly of piriformis muscle as found in the current case,



**Figure 1.** Dissected right gluteal region. (*PM*: piriformis muscle; *SN*: sciatic nerve; *GM*: gluteus medius; *SGN*: superior gluteal nerve; \*: additional belly of piriformis muscle)

is likely to contribute to the primary type of piriformis syndrome. Compression of the superior gluteal nerve in this case could result in functional impairment; the gluteus medius and minimus and may also influence the stability of hip joint. Additionally ipsilateral muscle

weakness may accompany the above symptomatology [5]. In the present study, presence of branches of the superior gluteal nerve piercing the main belly of piriformis was an interesting observation. We, as anatomists opine that this can be regarded as a morphological attempt to reinforce innervation of piriformis musculature composed of two bellies.

From an embryological perspective, it is known that piriformis develops from the dorsal muscle mass and comes in close contact with migrating ventral mass muscles [6]. However, separate condensations of mesenchyme from the two origin sites of piriformis muscle or persistence of undifferentiated mesenchymal cells may result in a bi-partite constitution of this muscle. Our case report conforms to the type B of the piriformis muscle variant as stated by Windisch [6], wherein there exists a short upper and long lower muscle belly. Several reports of accessory slips of piriformis muscle have been discussed earlier. These anomalous slips have been incriminated in the etiology of coccygodynia and sciatica pain, especially if the sciatic nerve is entrapped in between these slips [7].

Surprisingly in present case, the sciatic nerve was not seen to pierce or split the piriformis muscle; however, an important branch of lumbosacral plexus, i.e. superior gluteal nerve was interposed between the two bellies of piriformis. This anatomical relationship may possibly constitute a potential site for entrapment of superior gluteal nerve.

In conclusion, the present report of rare morphological variation of piriformis with superior gluteal nerve interposed between the two bellies is yet to be described in literature. This holds interest not only to anatomists but also to surgeons as well as radiologists, as a rare cause of undiagnosed chronic pain in the gluteal region.

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