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CASE REPORT

A rare bimuscular conglomeration *gluteopiriformis* case report

Une conglomération rare bimusculaire. Un cas de muscle gluteopiriformis

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KEYWORDS
Anomalous;
Piriformis;
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Summary The present paper reports a rare anomalous muscle in the gluteal region, which appears to be a conglomeration of *gluteus maximus* and *piriformis* muscles. The muscle was proximally attached to the *gluteus maximus* and distally merged with the *piriformis* muscle. The innervation of the anomalous muscle was derived from the inferior gluteal nerve. Recognition of such a muscle variant may facilitate early clinical diagnosis and treatment of patients with symptoms of *piriformis* syndrome or sciatica of unexplained etiology. Contraction of such an anomalous muscle could lead to altered biomechanics of the *piriformis* and the *gluteus maximus*. Such a rare muscle, which morphologically resembles the *piriformis* and developmentally appears to be a part of *gluteus maximus* could be a challenging puzzle for the present day surgeon and radiologist.

MOTS CLÉS
Anormal ;
Piriformis ;
Compression neurovasculaire ;
Gluteus maximus

Résumé Notre travail rapporte un cas d'anomalie rare musculaire de la région fessière qui semble être une conglomération des muscles *gluteus maximus* et des muscles *piriformis*. Le muscle était attaché à sa région proximale au *gluteus maximus* et il était fusionné dans sa région distale avec le muscle piriforme. L'innervation du muscle anormal provenait du nerf fessier inférieur. L'identification d'une telle variante de ce muscle peut faciliter le diagnostic et le traitement clinique des patients présentant des symptômes du syndrome du *piriformis* ou de sciatique dont l'étiologie n'est pas expliquée. La contraction d'un tel muscle peut générer une anomalie de la biomécanique des muscles *piriformis* et *gluteus maximus*. Un muscle si rare qui ressemble morphologiquement aux *piriformis* et semble être développé d'une partie de *gluteus maximus* pourrait être une énigme provocante pour le chirurgien et le radiologue d'aujourd'hui.

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Introduction

Various surgical approaches through the *gluteus maximus* to the region of the hip joint and sciatic nerve depend on knowledge of the location of the inferior border of the *piriformis*. An anomalous muscle in the gluteal region as reported in the present case, which takes attachment from the *gluteus maximus* and *piriformis* muscles would be of great advantage during such surgical procedures. The *piriformis* muscle syndrome is a controversial clinical syndrome with signs and symptoms of sciatic nerve compression in the region of greater sciatic notch. It has been attributed to spasm and irritation of the adjacent *piriformis* muscle [1]. The *piriformis* muscle syndrome although primarily involves the sciatic nerve, may also include structures in its vicinity [2]. An anomalous muscle in the gluteal region as seen in the present case, topographically related to the *piriformis* muscle, may be an important factor in the differential diagnosis of neurovascular compression syndrome of the gluteal region.

A vigilant search for entrapment of sciatic nerve by such an anomalous muscle is crucial for the present day surgeon to avoid a failed response to *piriformis* sectioning. Entrapment neuropathies [3,4] highlight the role of important anatomic findings, which may result in *piriformis* syndrome although not of the classical type [5,6].

Such an anomalous muscle should be taken into account by clinicians in diagnosis of *piriformis* syndrome of unknown etiology. Knowledge of such rare anatomic entities is imperative in CT and MRI imaging of pelvic muscles for undiagnosed cases of neurovascular compression.

Subject and methods

We encountered an anomalous muscle in the right gluteal region of an adult Indian male cadaver during educational dissection session of preclinical medical students in the department of anatomy. The muscle was present in the right gluteal region of an adult Indian male cadaver. The anatomical details of this accessory muscle were studied in detail and appropriate photographs taken.

Result

The anomalous muscle was roughly triangular in shape. Its proximal end was attached to the inferomedial part of *gluteus maximus*. The proximal end or origin was 15.1 cm from the posterior superior iliac spine and 6.9 cm from the coccyx. The distal end merged with the *piriformis* muscle, 3.2 cm from the apex of the greater trochanter of femur. This anomalous muscle was 5.1 cm long and 0.5 cm wide. It was located 0.3 cm distal to the inferior border of extrapelvic *piriformis* muscle and its fibres were directed parallel to those of *piriformis*. The inferior gluteal nerve and vessels, sciatic nerve and posterior cutaneous nerve of thigh emerged from the lower border of the extrapelvic part of *piriformis* muscle and continued to traverse behind the anomalous muscle at the junction of its lateral two third and medial one third. These structures exhibited a normal course as they emerged out of the pelvis. The midpoint of inferior border of this anomalous muscle was located 5.5 cm from the midpoint of ischial tuberosity. The anomalous muscle received its innervations from a branch of the inferior gluteal nerve as it left the inferior border of the anomalous muscle to accompany the corresponding vessel. The *obturator internus* with the superior and inferior gamelli were inferior to the anomalous muscle. The lower border of the anomalous muscle was 3.9 cm from the upper border of *quadratus femoris* muscle. The left gluteal region did not reveal any variation in the morphology of muscles.

Discussion

Muscles covering the posterior aspect of hip joint form two layers. The outer layer consists of *gluteus maximus*, which together with *tensor fascia lata* forms a continous fibromuscular sheet. The inner layer consists of short external rotators of hip; the *piriformis*, superior *gamellus*, *obturator internus*, inferior *gamellus* and *quadratus femoris* [7].

The *piriformis* muscle originates from anterior surface of sacrum by fleshy digitations from second third and fourth sacral vertebrae, upper margin of greater sciatic notch and pelvic surface of sacrotuberous ligament. It exits the pelvis through the greater sciatic foramen to insert into upper border of greater trochanter by means of rounded tendon, often in the form of conjoint *piriformis* and *obturator internus* or *gamellus* conjoint tendon. *Piriformis* acts as an external rotator of hip joint in the erect position and as abductor in supine, whereas it is a weak flexor during walking. It is innervated by first and second sacral nerves.

All neurovascular structures that enter the buttock from the pelvis pass through the greater sciatic notch, either superior or inferior to *piriformis*. Structures traversing above the muscle are the superior gluteal nerves and vessels and those below are the inferior gluteal nerves and vessels, the pudendal nerve, the internal pudendal artery, the nerve to *obturator internus*, the sciatic nerve, the posterior femoral cutaneous nerve and nerve to *quadratus femoris*.

An anatomical insight into the variations of *piriformis* muscle is important because of the prevalence of back and buttock pain secondary to sciatica and *piriformis* syndrome. A study of 240 human cadavers described six variations of sciatic nerve exit and considered that the close relationship of *piriformis* muscle and the nerve affects the latter in cases of muscle infection or generally in cases of muscle spasm [2].

In case of inflammation of *piriformis* muscle and fascia, usually secondary to trauma, the sciatic nerve can become compressed between the swollen fibers and the bony pelvis, leading to an entrapment neuropathy [5]. Some instances of sciatica may be due to the existence of a trigger area in the *piriformis* muscle [1]. An anomalous muscle as seen in the present case may be a possible cause of compression of sciatic nerve and structures in its vicinity.

The sciatic nerve may be impinged or entrapped by an anatomic variant of *piriformis* muscle [4,6,8—11]. Awareness of such anomalies as in the present case may be a cause of undiagnosed entrapment neuropathies. Several studies have been conducted to classify the *piriformis* syndrome [5].

A supernumerary *piriformis* muscle may exert pressure on the sciatic nerve and thus is of great significance for clinicians [12]. A fascial constricting band around the sciatic