Accessory Piriformis Muscle

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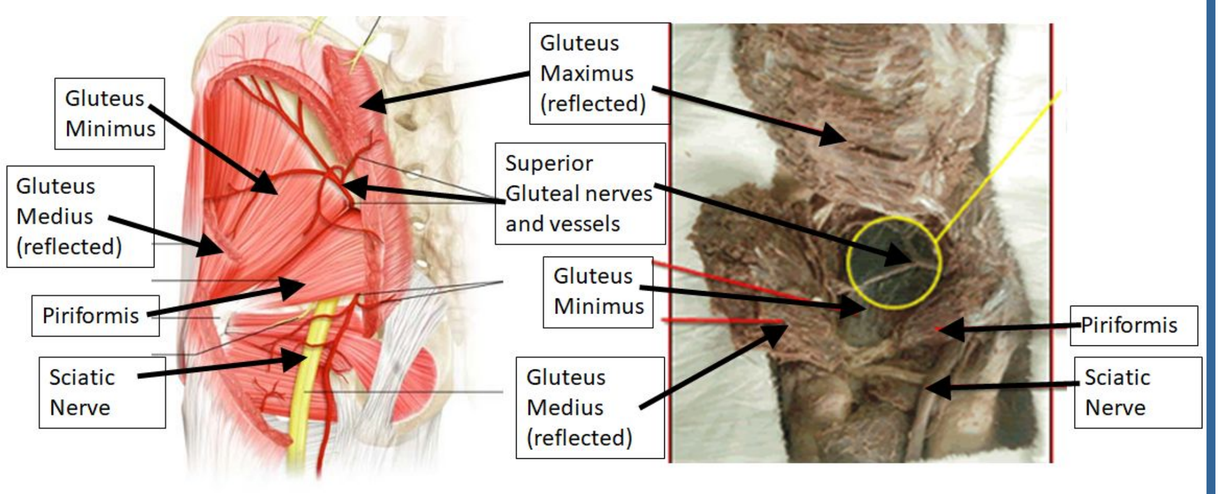
Introduction

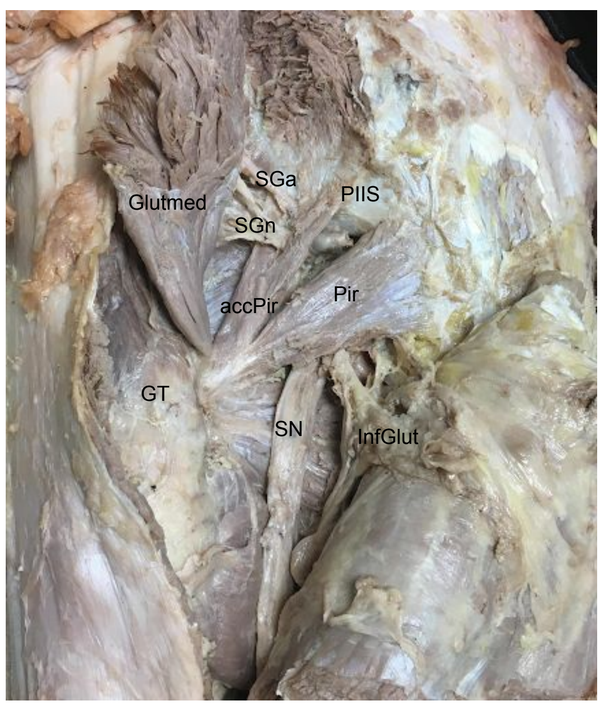
The piriformis muscle is a triangular shaped muscle located deep to the gluteal muscle group. This muscle attaches proximally to the lateral border of the sacrum and passes distally through the greater sciatic foramen to insert on to the greater trochanter of the femur.(1) The piriformis normally occupies the greater sciatic foramen with many neurovascular structures that supply the gluteal region and the posterior leg and thigh. Anatomical muscle variants in this region may impinge those same neurovascular structures resulting in pain and/or gait disturbances. During a routine cadaveric dissection of the gluteal region of a 100 year old male, we discovered a muscle variant that we describe as an accessory piriformis muscle. The muscle was located only in the left gluteal region. Significantly, the superior gluteal nerve and vessels passed directly through the accessory muscle and may have had clinical implications. The awareness of variants in this region is an important factor when diagnosing and treating hip pain and dysfunction.

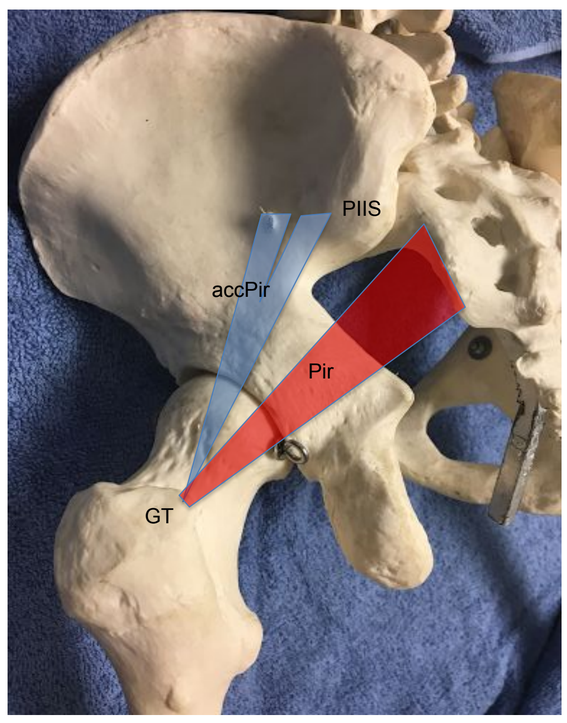
Normal Anatomy



The piriformis muscle is located in the deep gluteal region attaching to the anterolateral border of the sacrum. The muscle runs laterally from the greater sciatic foramen to insert on the greater trochanter. The superior gluteal nerves and vessels emerge superior to the piriformis muscle. This neurovasculature supplies the hip abductors; gluteus medius, gluteus minimus and tensor fascia latae muscles. The inferior gluteal nerves, vessels and sciatic nerve emerges inferior to the piriformis muscle.

Anatomical Case



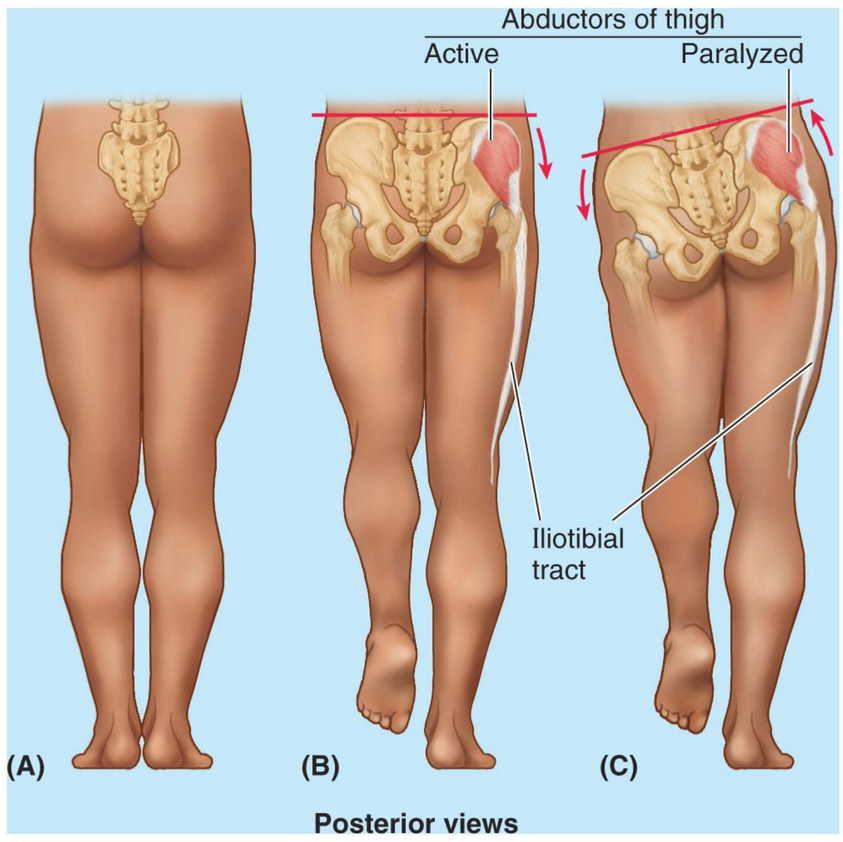


Left: Posterior view of the left gluteal region showing an accessory muscle (accPir) associated with the piriformis muscle (Pir). The accessory muscle originates from the ilium superior to the greater sciatic notch and anterior to the posterior inferior iliac spine (PIIS). Distally, the muscle attaches to the tendon of the piriformis muscle near its attachment to the greater trochanter (GT) of the femur. The superior gluteal nerve (SGn) and artery (SGa) can be seen piercing the accessory muscle prior to supplying the gluteus medius muscle (Glutmed). (SN: sciatic nerve; Glutmax: gluteus maximus muscle) **Right:** A model of the pelvis and femur illustrating the approximate attachments of the piriformis (Pir) and accessory piriformis (accPir). (PIIS: posterior inferior iliac spine; GT: greater trochanter)

Clinical Significance

Compression of the superior gluteal nerve and/or vessels is possibly an overlooked explanation for intermittent buttock claudication (3) Symptoms of superior gluteal nerve compression may include, spontaneous gluteal pain, weakness in hip abduction and pain upon palpation of the area.(4) The hip abductors are mainly responsible for hip stability during the stance phase of the gait cycle. Weakness of the hip abductors may manifest itself in a Trendelenburg Gait (see below). The main concern with this Trendelenburg gait would be abnormal wear and possible arthrosis of the hip and/or knee.(2)

Trendelenburg Gait



McKay Criteria for Hip Function

Grade	Criteria
Excellent	Negative Trendelenburg sign, stable, no hip pain & full range of motion
Good	Slight limp, stable, no hip pain & slight decrease in range of motion
Fair	Positive Trendelenburg sign, stable, no hip pain, slight limp & limited range of motion
Poor	Positive Trendelenburg sign, unstable & hip pain

Discussion

Reported cases of pain and gait syndromes that involve variants of the piriformis muscle are typically linked to compression of the sciatic nerve.(1) Significantly, in our case we found an accessory muscle that likely affected the function of the superior gluteal nerve and/or vessels. The superior gluteal nerve and vessels supply the hip abductor muscles and compression of these are a likely cause of pain and gait disturbances. The most effective treatment for superior gluteal nerve compression is surgical decompression or in our case removal of the accessory muscle. Recognition that an accessory muscle as a cause for compression could however inform more conservative treatment options such as physical therapy, massage, trigger point therapy and EMG biofeedback.(5) Identification of muscle variants in the gluteal region is important to inform better treatment options and outcomes.

References

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