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(CASE REPORT)

A bipinnate gluteus maximus: A rarely described anatomical variation

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Abstract

The variations of the gluteus maximus muscle are not frequently mentioned in anatomy textbooks. These variations may be of clinical importance when surgery of this region is considered.

We report the observation of a 44-year-old patient admitted for total hip prothesis, we report the observation of a patient admitted for a total hip prosthesis in whom during the surgical approach we found a bipinnate gluteus maximus. the literature reports isolated cases in cadavers as well as the presence of the variation in the fetus but which disappeared with growth.

Keywords: Gluteus Maximus; Bipennate; Anatomical Variation; Moore Approach

1. Introduction

The gluteus maximus muscle is the largest in the body and the most powerful in the body, quadrilateral in shape, which stands above the ischial tuberosity forming a lid for the posteroinferior part of the gluteal region.[1] Structural changes in this muscle were an essential step in the evolution towards an upright position during walking. Although its bilaminar nature and its deep and superficial segmentation are part of our current knowledge, the variations of the gluteus maximus muscle are not frequently mentioned in anatomy textbooks. These variations may be of clinical importance when surgery of this region is considered.[2]

2. Observation

We report the observation of a 44-year-old patient admitted for a total hip prosthesis on ONA, the approach was made by Moore's posterolateral approach, after decision of the fascia-lata we found a real interstice within the gluteus maximus muscle itself, creating a bipinnate aspect of the muscle which served as a path for our approach of the joint.

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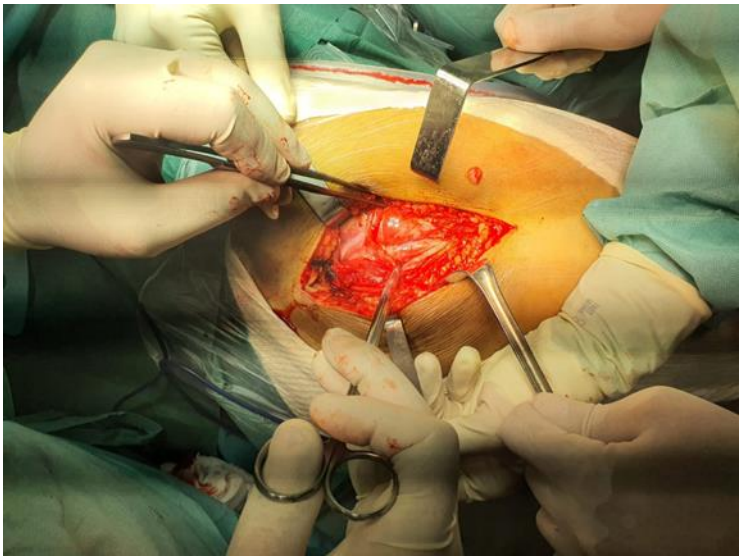

Figure 1 Muscle interstice aspect within the gluteus maximus muscle

3. Discussion

The gluteus maximus is the most superficial as well as largest of the three muscles and makes up most of the shape and form of the buttock and hip area. The gluteus maximus is a thick fleshy muscle with a quadrangular shape. It is a large muscle and plays a prominent role in maintaining the upper body in an erect posture. The gluteus maximus attaches to many bony compartments, including:

The inner upper ilium ,Ilium crest,The lower part of the sacrum and the Coccyx.

The gluteus maximus has two insertion points: superficial fibers to the greater trochanter and a band of the fascia lata and the deep fibers that insert into the gluteal tuberosity between the adductor magus and vastus lateralis. It originates in the gluteal surface of the ilium.[1]

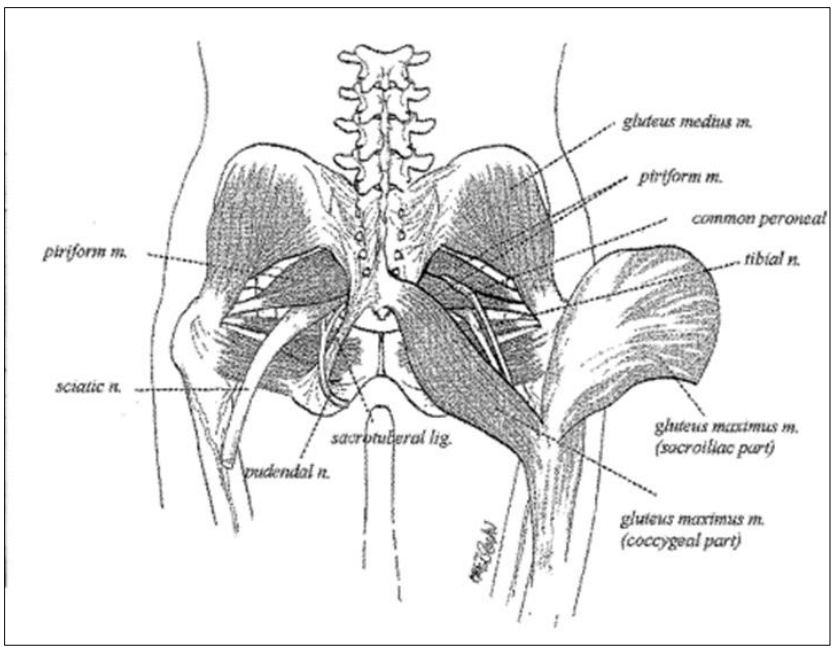

Figure 2 Diagram showing the appearance of a duplication of the gluteus maximus muscle[3].

Phylogenetically, the gluteus maximus is thought to be derived from two primordial muscles: the fetal gluteus maximus and the coccygeofemoral muscle, which gradually fuse during prenatal life. The pars sacroiliaca of the postnatal gluteus maximus corresponds to the fetal gluteus maximus itself, and the pars coccygea represents the coccygeofemoralis muscle of the fetus in the adult, the two muscles are completely fused [2] (Figure 2)

The superficial (cranial) part inserts into and around the iliotibial tract and the deep (caudal) part into the femur and the lateral intermuscular septum of the thigh.[2]

Puzannova has shown that the two parts of the gluteus maximus m. are separated in the fetus and subsequently fuse [4].

Histological studies in fetuses by Shiraishi et al[5] have shown that the gluteus maximus arises from two masses: a large proximal mass and a smaller distal one, both of which are inserted at the gluteal tuberosity of the femur.

The developmental model described for the gluteus maximus demonstrates that adult muscles can be formed by the fusion of several fetal muscles and that this fusion, when incomplete, gives rise to these variations in the form of a duplicated bifid or bipinnate appearance.

The variation found during a dissection described by Krici et al [3] as never being reported in the literature, Tuncalli et al [2] found the variation in 1 of 57 cadavers during a routine dissection.

According to Alezais (1900), the distinct mammalian "coccyofemoral" muscle is innervated by a branch of the inferior gluteal nerve. Studies on the innervation of the gluteus maximus muscle in adults have shown that this muscle receives two or three main branches of the inferior gluteal nerve.

To our knowledge, no description has yet been made in a living patient during a surgical approach.

4. Conclusion

The variations of the gluteus maximus are accompanied, according to the authors, by variations involving the pelvic muscles, the vessels and the gluteal nerves responsible for certain clinical manifestations such as the piriformis syndrome. These are inconstancies that a surgeon must be aware of when approaching the gluteal region.

Compliance with ethical standards

Acknowledgments

Author should write about third party like funding agencies, institution where experiment is carried out or who help in the experiment apart from authors.

Disclosure of conflict of interest

All the authors of must disclose the possible conflicts of interest/ Competing Interests they may have with publication of the manuscript or an institution or product that is mentioned in the manuscript and/or is important to the outcome of the study presented. Authors should also disclose conflict of interest with products that compete with those mentioned in their manuscript.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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