



Case Report

Gluteus maximus partial tear: A case report

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ABSTRACT

A 36-year-old male presented with a traumatic partial tear of the gluteus maximus tendon following a fall with twisting mechanism of injury. He presented with pain that did not improve despite 6 months of conservative treatment and eventually required surgical repair. He recovered fully after repair and returned to a normal lifestyle at 3-month follow-up. Gluteus maximus tendon tear is a rare injury with little published literature regarding the clinical presentation, data related to epidemiology, and treatment management options. We present our case report to shed some light on this rare pathology.

Keywords: Buttocks, Gluteus maximus, Laceration, Muscle, Twist

INTRODUCTION

The gluteus maximus is the largest muscle in the body. The muscle's primary function is to extend the hip along with external rotation and it plays an important role in gait and maintaining an erect position.^[1] The gluteus maximus originates from the posterior pelvis, the ilium, sacrum, and coccyx, with some fibers originating from local fascia and ligaments. The insertion is wide, superficially along with the posterior iliotibial band and the tensor fascia lata with a deep attachment into the linea aspera of the posterior femur.^[1,2] The blood supply arises from the superior and inferior gluteal arteries. It is innervated by the inferior gluteal nerve (L5, S1, and S2).

Tears involving this tendon are rarely seen in practice or reported in the literature. This may be for a variety of reasons, including the stout nature of the tendon structure as well as the potential for this injury to be overlooked by many treating physicians. A survey of French orthopedic surgeons with 84 respondents in 2006 reported that almost half of the reviewed surgeons were not aware that gluteus tears exist.^[3] The current focus related to so-called rotator cuff tears of the hip – pathology involving the gluteus medius and minimus with tears developing around the greater trochanter.^[4] In this case report, the tear resulted in significant functional disability as well as severe pain. Although the tear was partial, the patient-reported symptoms did not resolve until surgical intervention was performed. Increasing the awareness of such pathology can help with early detection and management as gluteus maximus tears can be misdiagnosed as hamstring sprains or bursitis.

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CASE REPORT

A 36-year-old healthy male presented to our clinic with a 2-month history of the left posterior thigh pain. The pain after falling with a twisting motion involving his left thigh. He was seen in a peripheral hospital and managed conservatively with nonsteroidal anti-inflammatory medications and physiotherapy. The patient did not notice any significant improvement and subsequently presented to our clinic for a second opinion.

He reported significant posterior upper thigh pain with sitting and driving, and milder pain with standing and walking. He had occasional limping when his pain got worse. The clinical assessment identified reproducible point tenderness in the posterior upper thigh and the patient reported pain with hip extension and external rotation at the specific point of tenderness. The remainder of his examination was unremarkable.

His pelvis and femur radiographs were normal [Figure 1]. He underwent magnetic resonant imaging (MRI) study, which showed a partial tear involving the proximal aspect of the gluteus maximus tendon with local edema [Figure 2].

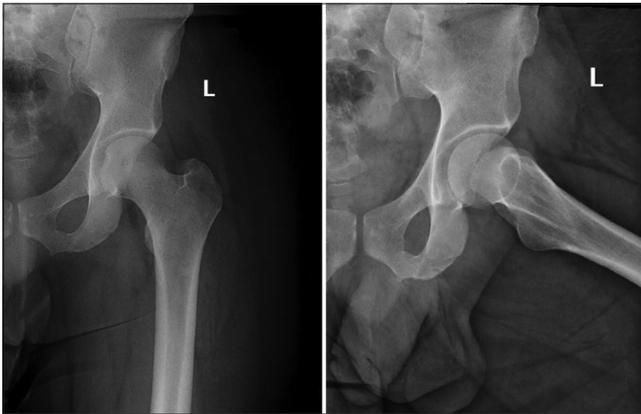


Figure 1: Pelvis and femur radiographs X-ray were normal.



Figure 2: Magnetic resonant imaging study, which showed evidence of gluteus maximus partial tear of the superior aspect of the tendon with local edema (red arrow).

The patient was advised to exhaust non-operative treatment where he was continued on physiotherapy, which consisted initially of pain modalities, massage and shockwave therapy, and range of motion for 6 weeks followed by gradual strengthening. At a later stage in the treatment course, he was also offered a steroid injection. He underwent a diagnostic and therapeutic 40 mg Depo-Medrol injection with fluoroscopy and ultrasound guidance by our interventional radiologist colleague. The patient reported complete resolution of his pain following the injection confirming the source of pain. Unfortunately, the effect of the injection lasted for approximately 4–5 weeks before the return of symptoms to his pre-injection baseline.

Having exhausted conservative treatment for 6 months from the time of injury, the patient was offered surgical intervention to repair the gluteus maximus tendon tear. Informed consent was obtained before surgical intervention. Before induction of anesthesia, the area of maximum tenderness was marked to localize the site of pathology, taking into account MR imaging, which indicated that the tear was located 10 cm from the greater trochanter. Spinal anesthesia with sedation was used. The patient was positioned in the lateral decubitus position with free prep and drape of the operative limb. A 7 cm posterolateral incision was used and centered over the pathology, and sharp dissection was performed through the skin and subcutaneous layer. A sharp incision was made in the IT at its posterior margin. A blunt elevation of vastus lateralis anteriorly was done following the gluteus maximus fibers and tendon to the bone. The leg was internally rotated, bringing the gluteus maximus insertion in full view under tension. There was an attenuation of the deep superior tendon attachment. The area was sharply incised and elevated off the bone. There was a white deposit of chalky material at the site of injury presumably related to the Depo-Medrol injection, which additionally confirmed the location [Figure 3]. The bone bed was debrided and freshened to

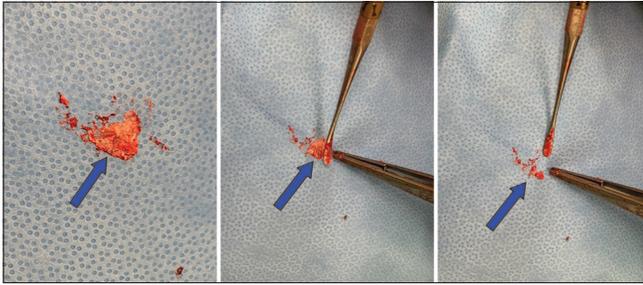


Figure 3: The chalky material which present at the location of the tear (blue arrow).

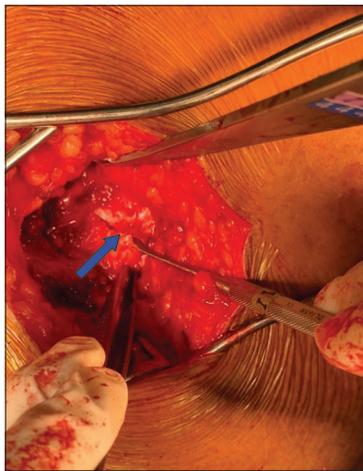


Figure 4: The tendon was repaired with #2 FiberWire suture then fixed into the bone with a PushLock anchor (blue arrow).

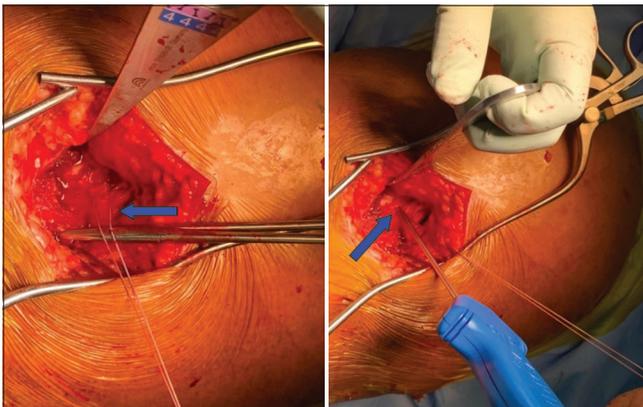


Figure 5: A PushLock anchor fixation from Arthrex (blue arrow).

a bleeding surface. The tendon was repaired with a #2 FiberWire suture [Figure 4], which was then fixed into the bone with a PushLock anchor from Arthrex [Figure 5]. A strong repair was obtained and closure was done in layers. Postoperatively, the patient was advised for protected weight-bearing with crutches for 4 weeks and gentle passive and assisted active range of motion exercises of the knee and hip and to avoid active hip extension for 6 weeks. He

progressed very well with physiotherapy. At the 3-month mark, he had a full recovery with the disappearance of his pain and recovering full motion and strength of his hip and knee with no tenderness at the repair site. At 1-year follow-up from surgery, the patient reported no pain or limitations to his daily activities, was able to tolerate prolonged standing, walking, and sitting, and was satisfied with the outcomes of the surgery.

DISCUSSION

We reviewed the current literature with an online search in PubMed, EMBASE, and Google Scholar and found limited literature related to gluteus maximus tendon tear injuries. The largest series of gluteus maximus tendon tears was reported by Cormier *et al.* in 2006. They reported on a survey of French orthopedic surgeons and found that almost half of the respondents were not aware of tears involving the gluteus maximus tendons.^[3] They reported outcomes following the repair of six cases of gluteus maximus tears, where five of them were during hip replacement procedure and one case was due to a fall. All the six repaired cases were reported with pain and weakness as pre-operative symptoms and all reported excellent outcomes after surgical repair. Unfortunately, the reported data were not enough to be able to compare tear patterns and response to the treatment of this series with our patient.

Kara *et al.* reported in a case report from Turkey, a patient who suffered a gluteus muscle tear (muscle belly non-tendinous), after landing from a jump. The tear was massive with edema and hematoma on MRI that clinically caused sciatic nerve irritation. They treated the patient conservatively with ice, nonsteroidal anti-inflammatory medications, and rest and reported complete resolution of symptoms in a few days.^[5] There was no clear explanation for the fast and short recovery time, but it could be related to the injury location being muscle belly rather than tendinous.

In the present case, the tear was suspected clinically based on the location of his pain and with a provocation test with hip extension and with the help of the radiological studies (MRI), the diagnosis was confirmed. He improved after surgical repair. It is possible that most injuries can be tolerated or heal spontaneously with conservative treatment, which explains the scarcity of literature in this regard, but in our patient, it did not. As there were no reported treatment protocols for gluteus maximus tendon tears, we opted to treat the patient initially conservatively as the tear was partial. We extrapolated the next treatment steps based on other tendons injuries, for which the patient was offered a steroid injection. Once the conservative treatment failed (including the physiotherapy and steroid injection and time and activity modifications), he was offered surgical repair, which was successful.

CONCLUSION

Although gluteus maximus tendon tears are rare, it is important for orthopedic surgeons to be aware of this pathology. While not widely prevalent in the available literature, it is reasonable to begin treatment with a trial of conservative care followed by well-planned and thoughtful surgery with the aim of tendon repair if required.

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AUTHORS' CONTRIBUTIONS

All authors contributed to drafting and writing and revising the manuscript and preparing the article for submission. All authors have critically reviewed and approved the final draft and are responsible for the manuscript's content and similarity index.

ETHICAL APPROVAL

We obtained approval from our local hospital ethics board with IRB log no: ARC-21.09.04, dated September 29, 2021.

DECLARATION OF PATIENT CONSENT

The authors certify that they have obtained all appropriate patient's consent form. In the form, the patient has given

his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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