



Management of Iatrogenically Ruptured Pseudoaneurysm of the Superior Gluteal Artery Presenting as Emergency in Low-Income-Setting: A Case Report

Etukokwu, E. O., Nwafor, I. A., Emeruem, N. U., Ezeanwu, A. S., Korzerzer, S. V., Eze, J. C.

National Cardiothoracic Center of Excellence, University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu, Nigeria

Abstract: Traumatic pseudoaneurysm of the superior gluteal artery is a rare vascular condition that may present late and mimic more common gluteal pathologies like gluteal abscess, soft tissue mass and others. Presentation is varied as it can be asymptomatic at the time of the initial trauma or present with symptoms days, weeks or years later. If ruptured, it can be fatal. We report the case of a 16-year-old girl who presented with a progressively enlarging left gluteal swelling and pain, five years after a penetrating injury sustained from a fall onto a broken metallic toilet brush while having her bath. She had been managed at a referring tertiary center as a gluteal mass, where attempted excisional biopsy of the mass resulted in torrential hemorrhage necessitating urgent referral to our centre. The patient underwent surgical treatment.

Keywords: pseudoaneurysm, traumatic fall, surgical treatment, gluteal swelling, MRI pelvis

INTRODUCTION

Pseudoaneurysms are false aneurysms occurring at the site of arterial injury from trauma or infection. They occur due to breaching and thinning of the arterial wall, after which these aneurysms are enclosed only by the adventitial layer.^{1,2} The most commonly encountered peripheral pseudoaneurysm is femoral pseudoaneurysm usually iatrogenic³. Other sites include aortic, cardiac and visceral⁴.

The aetiology can be iatrogenic or non-iatrogenic and trauma is the most common form of non-iatrogenic.

True and false gluteal artery aneurysms constitute less than 1% of all aneurysms, making pseudoaneurysms of the superior gluteal artery (SGA) a rare pathology⁵

The first case of this rare aneurysm was reported by Stokes in 1803⁶

As at 2020, Pseudoaneurysms of the gluteal arteries have been reported fewer than 50 times since 1970 in the literature with superior gluteal artery pseudoaneurysms being more common.⁵

These pseudoaneurysms are initially asymptomatic and may present after a variable delay, ranging from a few weeks to several years following the initial trauma. Life threatening sequelae from rupture of this pseudoaneurysms can occur⁶. Historically, treatment of gluteal pseudoaneurysms was surgical, but more recently, endovascular

techniques is the first line approach with reduced perioperative morbidity and comparable outcomes to surgery.⁶

This case report depicts a rare presentation of pseudoaneurysm of the SGA following a penetrating injury after a fall on the bath floor. It highlights the challenges of an emergency management of an iatrogenic rupture of delayed pseudoaneurysm of the SGA following trauma five years prior to the onset of symptoms in a low-income setting. Rupture occurred following an attempt to biopsy a presumed gluteal mass. Aneurysms have to be considered in the differential diagnosis of soft tissue masses, therefore interventions like aspiration or needle biopsy should not be tried before ruling out a possible vascular nature which will easily be revealed by ultrasound Doppler or computed tomography scans.⁵

CASE PRESENTATION

A 16 - year old secondary school girl was rushed to the emergency department(ED) with history of torrential bleeding from the left gluteal region following an attempt to biopsy a suspected left gluteal mass.



Figure 1: Showing the tight crepe pressure bandage to arrest bleeding from the ruptured aneurysm

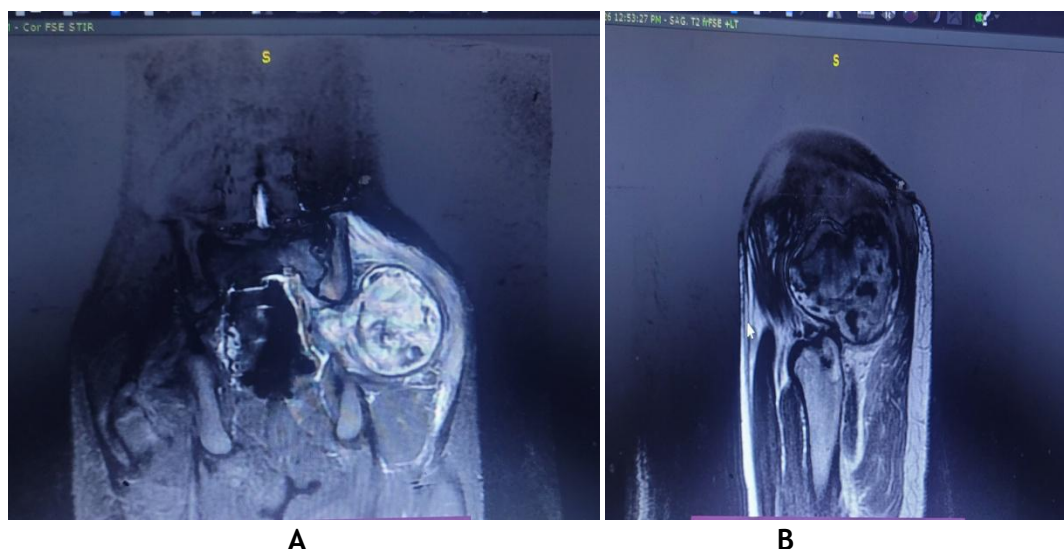
There was an initial trauma 5 years earlier when she slipped on the bath floor and landed with the left buttock onto a broken metallic toilet brush . Then, she had left gluteal bleeding and pain necessitating transfusion of 2 units of blood. She was hospitalized and had the wound sutured a few days after dressing. Following this, she remained asymptomatic until after five years when she developed gradual and progressive unprovoked left gluteal swelling and pain. For this she was seen at two hospitals within a month prior to presentation to our service.

At the first hospital, she was said to have had incision and drainage of a small quantity of clotted blood and pus following diagnosis of gluteal abscess . The post procedure period was uneventful. She subsequently had a pelvic MRI, however the patient and caregiver decided to visit the second hospital due to persistence of the swelling and pain. She was reviewed and had an attempted excision biopsy for a left gluteal soft tissue mass prior to the review of the pelvic MRI. This caused massive bleeding.

She was brought to the casualty of our hospital with resuscitation ongoing (blood transfusion) and with features of class II hemorrhagic shock with an extensive packing and bandage dressing on the left gluteal region which was soaked and severe gluteal pain. See figure 1. There was no pulsatile mass or paresthesia of the left lower limb at presentation.

The pelvic Magnetic Resonance Imaging (MRI) showed a huge dumbbell shaped pseudoaneurysm extending from the left ischiorectal fossa through the greater sciatic foramen into the left gluteal region, measuring $10.4 \times 11.5 \times 8.3$ cm with a small intra-pelvic component and large extra-pelvic component just deep to and compressing the gluteal muscles. The volume was 516 cm.³ This lesion appeared as a contrast-filled structure in direct communication with the superior gluteal artery. See figures 2 A & B.

The mass has a regular rim that is hypointense on all sequence, heterogeneously hyperintense on T2 weighted images and just mildly hyperintense to skeletal muscles on T1. The adjacent bones show no signal abnormalities within them.



Figures 2 A & B: Coronal image of the pelvic MRI showing the contrast filled structure communicating with the left superior gluteal artery

Resuscitation continued and she was worked up for an emergency vascular exploration. She had two surgeries - An initially unsuccessful ligation of the left internal iliac artery due to massive retroperitoneal bleeding. Then, subsequent re-exploration after 48 hours where she had a left internal iliac artery ligation via a transperitoneal approach and ligation of the left superior gluteal artery via the gluteal wound. The previous incision was extended transversely and laterally to assess the feeding left SGA and avoid injury to the sciatic nerve. She had a massive blood transfusion, (. about 20 units of blood from the time of admission to discharge).

Her post-operative period was prolonged due to the need for the initial wound dressing for the superficial surgical site infection of the midline abdominal wound and the gluteal wound cavity which needed time for granulation tissue formation, wound contracture and eventual healing. See figure 3 A & B.



Figures 3A & 3B: showing the granulating gluteal cavity and healed wound respectively

Early postoperative mobilization and physiotherapy were commenced and she is currently regaining use of the affected limb.

We planned to get post-operative CT angiography or a repeat pelvic MRI subsequently, patient care giver could not afford it due to financial constraints. She was able to do Doppler ultrasound of the left pelvic vessels. The report is hereby summarized.

'Pedis arteries are normal in course, outline, calibre and distribution, No intraluminal echogenic structures seen within them or focal area of luminal narrowing seen.'

The left gluteal artery is normal in calibre and outline. Shows normal flow and spectral waveform

There is a hypoechoic area with spiculated margins in the left gluteal region. Serpiginous hypoechoic structures are seen interspersed within the subcutaneous layer consistent with subcutaneous oedema'.

DISCUSSION

Aneurysms of the gluteal artery are very rare and represent 1% of all aneurysms⁷. They have been more commonly reported to occur in the superior gluteal artery than in the inferior gluteal artery.^{1,8} Penetrating and blunt trauma are reported to be the most common causes of gluteal pseudoaneurysm. However, iatrogenic injury during surgery, bone marrow biopsy, intramuscular injection, and more have also been reported to cause gluteal pseudoaneurysms.

Pseudoaneurysm of the Superior gluteal artery (SGA) is more common than that of inferior gluteal artery (IGA).⁸

Penetrating gluteal trauma is predominantly caused by gunshot and stab wounds and may result in a range of injuries including rectal injuries, pelvic fractures and less frequently vascular injuries.⁵ In the analytic review of 664 buttocks injury by Lunevicius et al, rectal,

superior gluteal artery and iliac artery were the most commonly damaged structures with about 19, 17.7, and 8 percent respectively.⁹

Gluteal artery aneurysms are found to be more common on the left side with a male predominance. (It is probably more common due to the mechanism of falls and injury and it is the more common site for intramuscular injection).²

While pseudoaneurysms may remain asymptomatic for years, patients often present to the emergency room with a gradually increasing painful mass in the buttock. It may be pulsating with a thrill and can compress adjacent structures such as the sciatic nerve causing neurological symptoms including paresthesias and pain in the ipsilateral extremity.⁵

Upper gluteal wounds (occurring above the level of the greater trochanter) have a higher risk of vascular, neurologic and or visceral injuries.¹⁰ For gluteal wounds, the site of entry is a pointer to a possible major injury that requires full investigation ideally with CT angiography or Magnetic Resonance Angiography as in the index case, especially because of the proximity of sciatic nerve. The course of the superior gluteal artery in the pelvis makes it prone to both blunt and penetrating injuries ^{2,8} .

The superior gluteal artery is the largest branch arising from the posterior division of the internal iliac artery. It passes posteriorly between the lumbosacral trunk and the first sacral nerve. The superior gluteal artery arises from the internal iliac artery deep in the pelvis exiting through the greater sciatic foramen inferior to the gluteus medius and superior to the piriformis muscle. It divides into the deep and superficial branches, which supply gluteus maximus⁸. Most cases of superior gluteal pseudoaneurysms develop within weeks to months of the initial insult but some may develop years later and may remain asymptomatic for a long time⁵

Ruptured superior gluteal artery can present as localized or expanding swelling as well as pain or pressure in the buttocks with rapid development of hemorrhagic shock and cardiovascular collapse with untoward outcome to the patient.⁸ The other rarer complication is gluteal compartment syndrome.¹¹ If the pseudoaneurysm extends through the greater sciatic foramen into the pelvis, it can lead to compression of the bladder, rectum, or pelvic nerves, causing a range of effects including urinary and bowel dysfunction.⁵ While pseudoaneurysms may remain asymptomatic for years, patients often present to the emergency room with a gradually increasing painful mass in the buttock. It may be pulsating with a thrill and can compress adjacent structures such as the sciatic nerve causing neurological symptoms including paresthesias and pain in the ipsilateral extremity.³

On physical examination, clues such as pulsating mass and the presence of a systolic bruit are salient clues that guides the physician towards a diagnosis of pseudoaneurysm.⁵

However, these maybe absent. For diagnosis, color Doppler ultrasound, computerized tomography, or magnetic resonance imaging may all be used to diagnose pseudoaneurysms and should be done as soon as possible if pseudoaneurysm is suspected.^{5,12} Doppler Ultrasound is a cheaper, first-line investigation that can reveal characteristics blood flow within a pseudoaneurysm CT angiography however, is the diagnostic tool of choice.⁵ It is a diagnostic and therapeutic modality.⁷ Imaging ideally should be done for diagnosis and to rule out differentials before any invasive procedure on gluteal swellings or even commencement of anticoagulant where indicated.⁵

Where it is un-ruptured, modalities of treatment include endovascular treatment with embolization, ultrasound guided thrombin injection, or surgery with arterial ligation.⁵ Endovascular treatment with coil embolization has become the first line of management in pseudoaneurysms without complications.¹ It is less invasive, with less blood loss and is considered the first-line approach.^{6,8}

However, open surgery is indicated in cases of rupture with hemodynamic instability like in our patient and where there is limited endovascular access.⁸ Surgery is lifesaving in resource limited setting like in this index case. The operative steps is technically challenging and include proximal control, evacuation of hematoma and repair or ligation.¹³ Following rupture, retroperitoneal or transperitoneal ligation of the internal iliac artery is a crucial step prior to gluteal exploration because of the attendant bleeding and difficulty to control the feeding vessel from an extrapelvic access.¹³ This was the case in the index patient who had an intrapelvic extension of the aneurysm making gluteal control only almost impossible. This however should be followed by gluteal exploration with pseudoaneurysmorrhaphy of the vessel^{1,2} as extensive collateralization provides blood to the aneurysm.¹³

..

There are two pitfalls concerning the presentation of pseudo aneurysms of the SGA¹. Firstly, because all symptoms are nonspecific, such as localized swelling, pain and pressure in the buttock, patients may be misdiagnosed as a case of an abscess, sciatic pain or lumbosacral plexopathy.⁸ The second pitfall is the variable time of presentation. The symptoms may occur at any time after initial trauma, even weeks, months or years later. Physicians should therefore be aware of old trauma in the history of patients with a buttock mass.² There is also delayed presentation to the healthcare setting and delay in making diagnosis. Delayed diagnosis, together with insufficient haemostasis, directly impacts the overall severity of the injury. Survival from this type of injury is dependent on factors including haematoma volume, low haemoglobin levels and advanced age.

Consequently, early recognition is vital to prevent significant complications, such as compartment syndrome and hypovolaemic shock. There is a large potential space within the buttock and minimal overlying fascia, so tamponade does not regularly occur and massive haemorrhage can ensue when there is rupture. This compartmental effect can also lead to sciatic nerve compression.

Selective angiography of the internal iliac artery is the best choice for definitive diagnosis and provides an opportunity for endovascular treatment¹. There are two procedures for treatment of pseudoaneurysm: open surgery and endovascular therapy. The surgical approach was first developed by Battle in 1898. The basic principle of this approach is proximal control coupled with endoaneurysmorrhaphy. In following years, various modifications have been developed, but the basic principles remain the same. Endovascular therapy with coil embolization has been used during the last two decades as an alternative to a surgical treatment. Mortality following aneurysmal rupture is estimated to be 50 to 75% (Dongola) ? ref. However, the mass may not be pulsatile which usually makes the attending clinician to consider gluteal tumors and abscesses on their differential lists.⁶

Our patient presented as an emergency with active bleeding and in shock and a previous pelvic MRI imaging prior to intervention.

Treatment of our patient was complicated by the initial misdiagnosis of the SGA pseudoaneurysm as a left gluteal soft tissue mass . Initially, an attempt was made to biopsy the presumed mass , which led to uncontrolled bleeding from iatrogenic rupture of the pseudoaneurysm.

CONCLUSION

Pseudoaneurysms of the SGA following trauma are rare and usually misdiagnosed in clinical practice. This case is unusual as patient presented five years after the initial trauma. This report highlights the need for the appropriate imaging before attempting drainage of a presumed abscess or any atypical gluteal swelling to forestall catastrophic hemorrhage from a potential pseudoaneurysm.

Physicians must note histories of old trauma while evaluating a patient with buttocks mass and considering that presentation may occur after many years, a high index of suspicion should always be kept throughout the patient's life time.

REFERENCES

1. Corbacioglu KS, Aksel G, Yildiz A. Ruptured superior gluteal artery pseudoaneurysm with hemorrhagic shock: Case report. Turk J Emerg Med. 2016 Mar 10;16(1):26-8. doi:10.1016/j.tjem.2015.10.002 PubMed PMID: 27239635; PubMed Central PMCID: PMC4882201.
2. Trpeski S, Ilieva M, Apostolovska N, Andonovski A, Gavrilovski A, Pop-Jordanova N. A Rare Case of Superior Gluteal Artery Pseudo Aneurysm after Blunt Trauma. PRILOZI. 2019 Oct 1;40:99-102. doi:10.2478/prilozi-2019-0020
3. Henry JC, Franz RW. Pseudoaneurysms of the Peripheral Arteries. Int J Angiol Off Publ Int Coll Angiol Inc. 2019 Mar;28(1):20-4. doi:10.1055/s-0039-1677676 PubMed PMID: 30880887; PubMed Central PMCID: PMC6417897.
4. Rivera PA, Dattilo JB. Pseudoaneurysm. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 [cited 2026 Apr 11]. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK542244/> PubMed PMID: 31194401.
5. Coste M, Yoon D, Noory M, Roudnitsky V. Superior gluteal artery pseudoaneurysm after a gunshot wound to the buttock: A case. Int J Surg Case Rep. 2020 Nov 8;77:341-4. doi:10.1016/j.ijscr.2020.11.016 PubMed PMID: 33212307; PubMed Central PMCID: PMC7683236.
6. Dabachi H, Chaouche I, Bouardi NE, Akoudad I, Naouli H, Jiber H, et al. Ruptured pseudoaneurysm of the superior gluteal artery: Case report. World J Adv Res Rev. 2025 Oct 30;28(1):1337-41. doi:10.30574/wjarr.2025.28.1.3415
7. George N, Abdelghany M, Stark O, Joshi M. Spontaneous Rupture of a Superior Gluteal Artery Mycotic Aneurysm. Cardiol Res. 2015 Oct;6(4-5):316-8. doi:10.14740/cr414w PubMed PMID: 28197249; PubMed Central PMCID: PMC5295570.
8. Burton H, Mossadegh S, McCarthy R. Hockey: a pain in the butt! Isolated superior gluteal artery rupture following blunt pelvic trauma - an unusual case. Ann R Coll Surg Engl. 2021 Mar;103(3):e91-3. doi:10.1308/rcsann.2020.7045
9. Lunevicius R, Schulte KM. Analytical review of 664 cases of penetrating buttock trauma. World J Emerg Surg. 2011;6(1):33. doi:10.1186/1749-7922-6-33

10. Mercer DW, Buckman RF, Sood R, Kerr TM, Gelman J. Anatomic considerations in penetrating gluteal wounds. *Arch Surg.* 1992 Apr;127(4):407-10. doi:10.1001/archsurg.1992.01420040049008 PubMed PMID: 1558492.
11. Smith: Acute gluteal compartment syndrome: superior... - Google Scholar [Internet]. [cited 2026 Apr 11]. Available from:
https://scholar.google.com/scholar_lookup?title=Acute+gluteal+compartment+syndrome%3A+superior+gluteal+artery+rupture+following+a+low+energy+injury&author=A+Smith&author=V+Chitre&author=H+Deo&publication_year=2012&journal=BMJ+Case+Rep&pages=bcr2012007710&doi=10.1136%2Fbcr-2012-007710&pmid=23257274
12. Dongola NA, Giles JA, Guy RL. Embolisation of a post-traumatic superior gluteal artery aneurysm: case report. *East Afr Med J.* 2004;81(8):433-5. doi:10.4314/eamj.v81i8.9207
13. Schorn B, Reitmeier F, Falk V. aneurysm of the superior gluteal artery: report and review of the literature.