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Case report

Blunt traumatic superior gluteal artery pseudoaneurysm presenting as gluteal hematoma without bony injury: A rare case report

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ABSTRACT

Blunt traumatic injuries to the superior gluteal artery are rare in clinic. A majority of injuries present as aneurysms following penetrating trauma, fracture pelvis or posterior dislocation of the hip joint. We reported a rare case of superior gluteal artery pseudoaneurysm following blunt trauma presenting as large expanding right gluteal hematoma without any bony injury. The gluteal hematoma was suspected clinically, confirmed by ultrasound and the arterial injury was diagnosed by CT angiography that revealed a large right gluteal hematoma with a focal contrast leakage forming a pseudoaneurysm within the hematoma. Pseudoaneurysm arose from the superior gluteal branch of right internal iliac artery, which was successfully angioembolized. The patient was discharged on day 4 of hospitalization with resolving gluteal hematoma. This report highlighted the importance of considering an arterial injury following blunt trauma to the buttocks with subsequent painful swelling. Acknowledgment of this rare injury pattern was necessary to facilitate rapid diagnosis and appropriate treatment.

Introduction

Gluteal artery aneurysm is very rare, accounting for less than 1% of all aneurysms.[1] It can arise from the superior or inferior branches and rarely from persistent sciatic artery.[2] Pseudoaneurysms are more common than true aneurysms, usually associated with trauma. In the past, it was treated by surgery, but recently interventional techniques have been used.

Here we presented a case report of a 50 years old male who came to the emergency department with alleged history of road traffic injury. On evaluation, a diffuse 10 cm × 8 cm expanding swelling with overlying bruise and a few abrasions was seen in his right gluteal region without any bony injury. Ultrasonography of the gluteal region suggested a hematoma in the muscle plane. CT angiography of the pelvis indicated pseudoaneurysm arising from the superior gluteal artery (SGA). Coil angioembolization of right SGA was carried out. After operation, the recovery was uneventful and the patient was discharged on day 4 of hospitalization. To our best acknowledgment, diffuse breach of SGA branches due to falling on the buttock without pelvic fracture has not been reported previously. This case report illustrated the need to consider the diagnosis of arterial injury in blunt trauma even in absence of bony fracture and the definitive role of angiography in its diagnosis and treatment.

Case report

A 50 years old male came to the emergency department with alleged history of road traffic injury. He was a pillion rider when the bike he was riding on collided with a truck. In initial assessment according to advanced trauma life supports (ATLS) protocol, his airway was patent, breathing was normal and he was hemodynamically stable. Chest compression test, pelvic compression test and focused assessment sonography in trauma were negative. Glasgow coma scale (GCS) score was 15/15. Chest and pelvis radiographs were normal. During the secondary survey, a 6 cm × 5 cm lacerated wound was noticed over the occipital region and a diffuse 10 cm × 8 cm expanding swelling with overlying bruise and a few abrasions was seen over his right gluteal region (Fig. 1). Ultrasonography of the gluteal region suggested a hematoma in the muscle plane. CT angiography of the pelvis indicated a right gluteal hematoma with a focal leakage of contrast agent forming a pseudoaneurysm within this hematoma (Fig. 2). The

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Fig. 1. Right gluteal hematoma with overlying bruises and abrasions.

pseudoaneurysm was arising from the superior gluteal branch of the right internal iliac artery. In view of the above findings, selective cannulation and coil angioembolization of right superior gluteal artery were carried out (Fig. 3). After operation, the recovery was uneventful. A gradual decrease in the size of the hematoma was observed in the following three days and the patient was discharged on day 4 with a resolving hematoma.

Discussion

The majority of gluteal artery injuries due to trauma present as pseudoaneurysms.[3] Pseudoaneurysms have been reported with iatrogenic injuries during pelvic surgery, pelvic fractures, penetrating injuries and intramuscular injections. It may be asymptomatic but usual presentation is a painful and pulsatile swelling of the gluteal region.[4–6] Sometimes it also presents as simple pain or groin strain.[7] In clinical examination, bruise and signs of inflammation or symptoms of sciatic nerve compression may be observed.[8] Occasionally, it may be like a gluteal abscess with disastrous results.[9] The most dreaded complication is hypotension.[10,11] Rarely it may presents with profuse bleeding.

True gluteal artery aneurysms are rare and occur secondary to atherosclerosis, polyarteritis nodosa and infection.[12] The main arteries to the gluteal region are the inferior gluteal artery (IGA) and SGA. However, it is demonstrated that the dominant IGA pattern shows higher frequency than the dominant SGA pattern does.[13,14] Among the four gluteal artery patterns, the branches of IGA distribute blood to a larger area than those of SGA do.[14] The course of muscular branches of SGA and IGA are in the lateral or inferolateral direction. The SGA perforators are found adjacent to medial two-thirds of a line drawn from posterior inferior iliac spine to greater trochanter of the femur while the IGA perforators are concentrated along a line in the middle third of the gluteal region

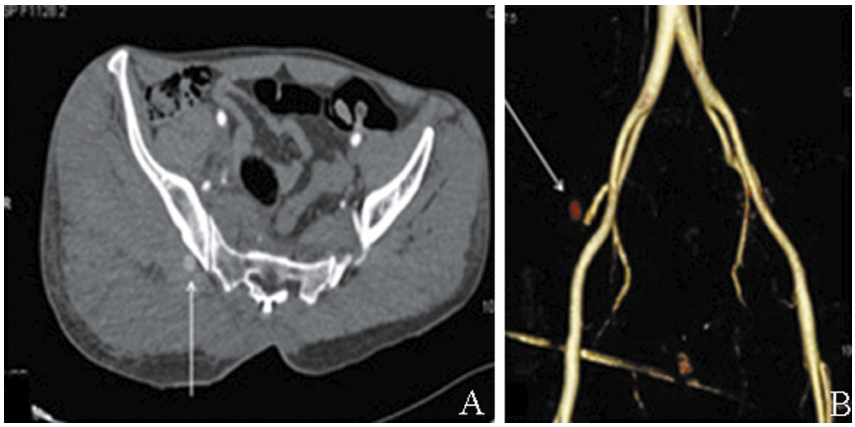

Fig. 2. CT angiography. A: Axial CT angiography image shows right gluteal hematoma with a focal contrast leakage forming a pseudoaneurysm (arrow) within the hematoma; B: The volume rendered reformatted coronal CT angiographic image clearly shows the pseudoaneurysm (arrow) arising from the superior gluteal branch of right internal iliac artery.

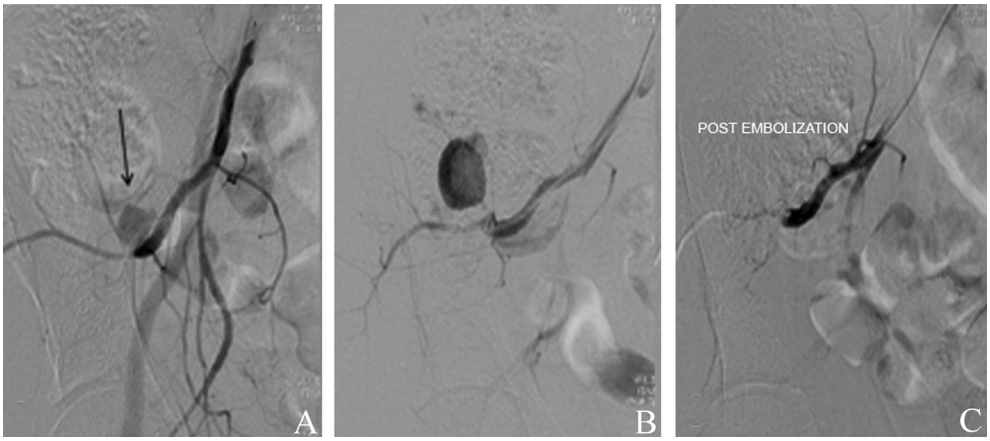

Fig. 3. Digital subtraction angiography. A: The focal pseudoaneurysm (arrow) is well seen in the angiographic runs from right internal iliac artery; B: Selective cannulation of superior gluteal artery; C: The image after coil embolization shows complete obliteration of the pseudoaneurysm.

above the gluteal crease.[15] The course of IGA perforating vessels is more oblique through gluteus maximus muscle than the course of SGA perforators. When falling down onto the ground, the IGA and its branches are anatomically at higher risk than the SGA.[16] Helical CT or CT-angiogram can be applied to determine vascular hemorrhage.[15,17] If a high-flow hemorrhage is being considered, vascular injuries should be evaluated and treated urgently.

In 1898, Battle[18] described the approach for gluteal artery exploration involving transperitoneal or retroperitoneal approach for proximal control and this technique has undergone various modifications over years. Arterial lesions may be repaired using either surgical or less invasive techniques, such as embolization during angiography. With the advent of interventional radiology, angioembolization has been the mainstay of treatment because of the strategic anatomical location.[19] The advantages of angioembolization include less scar, decreased risk of infection, the avoidance of opening the retroperitoneal space, and decreased risk of iatrogenic nerve, arterial injuries and decreased hospital stay. A selective angiographic embolization of such cases is an effective and reliable method to stop arterial bleeding, especially in the pelvic region, with minimal invasion and improved outcomes.[19] In the present case, embolization was performed urgently to decrease bleeding and avoid potential permanent damage to the sciatic nerve consequent to compression from the expanding gluteal hematoma. The only concern associated with this procedure was the possible development of gluteal ischemia and sciatic nerve paresis.[6,20]

Superior gluteal artery injuries remain a rare, yet challenging problem for both the trauma surgeons and interventional radiologists. In differential diagnosis of any acutely expanding gluteal mass following blunt trauma, we should consider the possibility of arterial injury. Immediate angiography is regarded as a diagnostic and therapeutic tool. A combination of thorough initial evaluation, careful patient selection and judicial and timely embolization may provide a safe and effective alternative to standard surgical drainage, vascular repair or rarely, ligation of the bleeding vessel.

References

1. Vasseur MA, Doisy VC, Prat AG, et al. Coil embolization of a gluteal false aneurysm in a patient with Marfan syndrome. *J Vasc Surg*. 1998;27:177–179.
2. Hessling KH, Szkandera J, Theron L. Pulsatile gluteal mass revealed as a false aneurysm of a persistent sciatic artery. A case report. *S Afr Med J*. 1988;73:245–246.
3. Matas R. Surgery of the vascular system. In: Keen WW, DaCosta J, eds. *Surgery, its Principles and Practice*. 5th ed. Philadelphia: WB Saunders; 1909:340.
4. Stephen DJ. Pseudo-aneurysm of the superior gluteal arterial system: an unusual cause of pain after a pelvic fracture. *J Trauma*. 1997;43:146–149.
5. Marković DM, Davidović LB, Lotina SI, et al. Pseudoaneurysm of the gluteal artery: 2 case reports. *Srp Arh Celok Lek*. 1998;126:145–147.
6. Vauthey JN, Maddern GJ, Balsiger D, et al. Superselective embolization of superior gluteal artery pseudoaneurysms following intramuscular injection: case report. *J Trauma*. 1991;31:1174–1175.
7. Barker SG, Anthony AA, Pillay SS, et al. Sporting 'groin strains': not always muscular! *Aust N Z J Surg*. 1995;65:451–453.
8. Bernstein EF. Aneurysms of the gluteal and persistent sciatic arteries. In: Yao JST, Pearce WH, eds. *Arterial Surgery: Management of Challenging Problems*. Stamford: Appleton & Lange; 1996:327–334.
9. Smyth NP. Gluteal artery rupture. *Ann Surg*. 1968;167:273–276.
10. Kligman M, Mahrer A, Avi E, et al. Hypotension as a delayed complication of rupture of a branch of the superior gluteal artery, following buttock contusion. *Injury*. 2002;33:285–287.
11. Belley G, Gallix BP, Derossis AM, et al. Profound hypotension in blunt trauma associated with superior gluteal artery rupture without pelvic fracture. *J Trauma*. 1997;43:703–705.
12. Lee D, Legiehn GM, Munk PL. Pseudoaneurysm of the superior gluteal artery following polytrauma. *Skelet Radiol*. 2007;36:875–878.
13. Song WC, Bae SM, Han SH, et al. Anatomical and radiological study of the superior and inferior gluteal arteries in the gluteus maximus muscle for musculocutaneous flap in Koreans. *J Plast Reconstr Aesthet Surg*. 2006;59:935–941.
14. Zhang Q, Liu H, Smith WR, et al. Blunt injury to the inferior gluteal artery: case report of a rare "near miss" event. *Patient Saf Surg*. 2008;2:27.
15. Bakker KW, Gast LF. Retroperitoneal haemorrhage from the superior gluteal artery: a late complication of total hip arthroplasty. *Clin Rheumatol*. 1990;9:249–253.
16. Rankin RN, Youngson GG, McKenzie FN. Management of superior gluteal artery aneurysm by percutaneous balloon catheter occlusion: a case report. *Surgery*. 1979;85:235–237.
17. Romano L, Pinto A, De Lutio Di Castelguidone E, et al. Spiral computed tomography in the assessment of vascular lesions of the pelvis due to blunt trauma. *Radiol Med*. 2000;100:29–32.
18. Battle WH. Case of traumatic gluteal artery aneurysm. *Br Med J*. 1898;2:1415.
19. Dongola NA, Giles JA, Guy RL. Embolisation of a post-traumatic superior gluteal artery aneurysm: case report. *East Afr Med J*. 2004;81:433–435.
20. Keeling AN, Naughton PA, Leahy AL, et al. Traumatic inferior gluteal artery pseudoaneurysm and arteriovenous fistula managed with emergency transcatheter embolization. *Cardiovasc Interv Radiol*. 2008;31:S135–S139.