

## A RARE CASE OF SUPERIOR GLUTEAL ARTERY PSEUDO ANEURYSM AFTER BLUNT TRAUMA

Sime Trpeski<sup>1</sup>, Marija Mihajlova Ilieva<sup>1</sup>, Nina Apostolovska<sup>1</sup>,  
Alan Andonovski<sup>1</sup>, Andreja Gavrilovski<sup>1</sup>, Nada Pop-Jordanova<sup>2</sup>

<sup>1</sup> University clinic for traumatology, Skopje, Republic of Macedonia

<sup>2</sup> Macedonian Academy of Sciences and Arts, Skopje, Republic of Macedonia

**Corresponding author:** Nada Pop-Jordanova, E-mail: popjordanova.nadica@gmail.com

### ABSTRACT

Prevailing over in rotationally unstable pelvic fractures, acetabular fractures or hip dislocations, superior gluteal artery pseudo aneurysm imperceptibly could be found after blunt force trauma of the pelvic region. We present a case of superior gluteal artery pseudo aneurysm after blunt force trauma that became gradually symptomatic in two months following the prime malevolence. Non-resolving gluteal hematoma presented two months after the incident, disregarding standard treatment methods led the diagnosis to plausible entity of pseudo aneurysm. Standard protocol was followed. CT angiography was indicated and it confirmed the suspected diagnosis. Upon indication a treatment plan was established with correspondent angioembolization of the pathologic substrate. Pseudo aneurism of the superior gluteal artery should be considered as differential diagnosis for unexplained hematomas in the posterior pelvic region following a trauma regardless of its nature.

**Keywords:** pseudo aneurysm; superior gluteal artery; gluteal hematoma; blunt force trauma

### INTRODUCTION

Aneurysms involving the superior gluteal artery are a rare definite diagnosis. The majority of the findings are pseudo aneurysms caused by blunt or penetrating pelvic trauma, with other reported causes from iatrogenic, infective and atherosclerotic etiology. These lesions commonly present with gluteal swelling, which can be symptomatic weeks, months, even years after the initial trauma. Prompt diagnosis is needed to avoid further complications. First line of treatment is endovascular transcatheteric embolization (coiling). This case report puts arterial injury in consideration, even in absence of bone fracture.

### CASE REPORT

A 62 year old male was brought to the emergency department as a polytrauma case following a fall from height (5m). After hemodynamic stabilization and monitoring of the vital parameters was proceeded with initial resuscitation, all the necessary investigations were made, and hospitalization was obtained in the intensive care unit. He was diagnosed with serial fracture of 3 ribs in the left hemi thorax (9-11th), pneumothorax underlying the serial rib fracture, left humeral shaft fracture, first and third cervical vertebra fracture without dislocation, fracture of transverse processes from the second to the fifth lumbar vertebra. After the patient was stabilized, he was taken to the operating theatre, where chest

tube was inserted and osteosynthesis was made of the left humeral shaft fracture with intramedullary nailing. After the patient was stabilized from the thoracic injury and the chest tube was extracted, he was transferred to the Clinic of Traumatology. Control x-rays were obtained and the rehabilitation program started. The recovery was uneventful and the patient was discharged. One month after the discharge, on the first postoperative follow up, he presented with tender left gluteal swelling. Ultrasonography revealed hematoma in the left gluteal region. CT angiography was indicated and confirmed the diagnosis of left superior gluteal artery pseudo aneurysm (Fig.1). The patient was referred to the Clinic of Radiology, where digital subtraction angiography and transcatheteric embolization (coiling) were performed (Fig.2). After 3 days of observation of the tenderness of the hematoma, blood count tests, a repeated CT angiography confirmed exclusion of the aneurysm. Because of the potential compressive effect on important neurovascular structures, especially sciatic nerve, evacuation of the hematoma was performed. The gluteal swelling decreased in size dramatically, and the patient was discharged. Antibiotics were given in the following two weeks. Also Thrombo-prophylactic therapy with low molecular weight heparin was conducted in coordination with a transuziologist. Regular check-ups were made every week for the first month, where the gluteal swelling gradually decreased in size over the course.



**Fig. 1.** CT angiographic verification of the SGA pseudo aneurysm

## DISCUSSION

Pseudo aneurysm of the superior gluteal artery (SGA) is rare, with only 40 cases reported since 1970. Blunt or penetrating pelvic trauma are

the most common causes of pseudo aneurysm, but some less commonly reported ones were iatrogenic causes, infection and atherosclerosis. They occur due to breaching and thinning of the arterial wall, after which these aneurysms are enclosed only by the adventitial layer [1, 2, 3, 4]. Gluteal artery aneurysms are found to be more common on the left side with a male predominance. These lesions are considered as an emergency as they are liable to rupture at any time with life-threatening hemorrhage [3, 5]. There are two pitfalls concerning the presentation of pseudo aneurysms of the SGA. First, because all symptoms are nonspecific, such as localized swelling, pain and pressure in the buttock [8], patients may be misdiagnosed with an abscess, sciatic pain or lumbosacral plexopathy [6, 7]. 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 [9]. Thus, physicians must be aware of old trauma in the history of patients with a buttock mass.

The recent advances in computer tomography technology, with the development of CT angiography, allow detailed evaluation of vascular trauma. Digital subtraction diagnostic angiography allows further evaluation of vascular injury and simultaneous endovascular treatment. The treatment of these aneurysmal lesions has been, for a long time, exclusively surgical [11]. Advances in endovascular techniques have improved management of patients with vascular injury [10]. There are many endovascular treatment options including stent graft exclusion and embolization. Selective embolization is considered the treatment of choice, because it has minimal to no complications, and its less exposure and risk for sciatic nerve iatrogenic damage [12, 13], whereas direct gluteal surgical intervention has the major risk of severe hemorrhage and trauma to the sciatic nerve [14]. To perform embolization of a false aneurysm, selective hypogastric angiography is mandatory to localize the bleeding vessel [15]. When choosing embolization, the choice of embolic agent is equally important, as this can be a good predictor of tissue ischemia. Embolization can be performed with coils, gel foam, vascular plugs, particles or a combination of these agents. The chosen size of the embolic material should be large enough to prevent distal capillary occlusion but small enough to perform a selective embolization. Smaller the embolic agent, greater is the chance of tissue ischemia. Embolization can cause skin breakdown, poor wound healing,

lower limb paresis, bladder necrosis and rectal necrosis [16, 17]. Extravasation is diagnosed on the basis of irregular extravascular collections of high-density contrast. In order to have successful outcomes of these endovascular techniques, there must be a multidisciplinary approach in which both trauma surgeons and interventional radiologist collaborate to understand the indications and complications of embolization.



**Fig. 2.** Part of the coiling embolization of the pseudo aneurysm

## CONCLUSION

Superior gluteal artery pseudo aneurysms are rare, but yet challenging for both trauma surgeons and interventional radiologists. Combination of initial evaluation, careful follow up of the patient, CT angiography and timely embolization are the key for successful treatment without further complications and patient's faster rehabilitation.

## REFERENCES

1. Ge P.S., Ng G., Ishaque B.M., Gelabert H., de Virgilio C. Iatrogenic pseudoaneurysm of the superior literature. *Vasc Endovascular Surg.* 2010; 44: 64–68
2. Fujimura N., Obara H., Matsumoto K., Kitagawa Y. Mycotic aneurysm of the superior gluteal artery in a patient with bacterial endocarditis: case report and review of the literature. *Vascular.* 2011; 19: 47–50
3. Katz J.R., West D.L., Bui J.T., Knuttinen G., Chejfec G., Owens C.A. Endovascular treatment of intimomedial mucoid degeneration. *J Vasc Interv Radiol.* 2008; 19: 1765–1768
4. Yurtseven T., Zileli M., Goker E.N., Tavmergen E., Hoscoskun C., Parildar M. Gluteal artery pseudoaneurysm, a rare cause of sciatic pain: case report and literature review. *J Spinal Disord Tech.* 2002; 15: 330–333
5. Sueyoshi E, Sakamoto I, Nakashima K, Minami K, Hayashi K. Visceral and Peripheral Arterial Pseudoaneurysms. *Am J Roentgenol* 2005; 185: 741–9
6. Taif S., Derweesh A., Talib M. Superior gluteal artery pseudoaneurysm presenting as a gluteal mass: case report and review of literature. *J Clin Imaging Sci.* 2013; Oct 29; 3: 49.
7. Schorn B., Reitmeier F., Falk V., Oestmann J.W., Dalichau H., Mohr F.W. True aneurysm of the superior gluteal artery: case report and review of the literature. *J Vasc Surg.* 1995 May; 21: 851–854
8. Gilroy D., Saadia R., Hide G., Demetriades D. Penetrating injury to the gluteal region. *J Trauma* 1992 Mar; 32(3): 294–7
9. Blin V., Picquet J., Jousset Y., Papon X., Enon B. Aneurysm of the superior gluteal artery. *J Mal Vasc.* 2004 Oct; 29: 213–215
10. Hu DK, Watkins JR, Mani US, Slonim SM, Amos JD, et al. Superior Gluteal and Inferior Gluteal Artery Pseudoaneurysms Following Blunt Traumatic Pelvic Ring Disruption. *J Emerg Trauma Care.* 2018; Vol.3 No.1:2.
11. Zimmerman LM, Veith I. (1961) *Great Ideas in the History of Surgery.* Williams & Wilkins Co. Baltimore.
12. Kocalkowski A, Colton CL, Gregson RHS. Fracture of the pelvis associated with the gluteal artery false aneurysm. *Injury: the British Journal of Accident Surgery* 1990; 21: 189–190.
13. Mavili E, Donmez H, Ozcan N, Akcali Y. Endovascular treatment of lower limb penetrating arterial traumas. *Cardiovasc Intervent Radiol* 2007; 30: 1124–1129.
14. Goktay AY, Secil M, Dicle O, Pirnar T. Color-dopplersonography in the follow-up of giant glutealaneurysm embolization. *Computerized Medical Imaging and Graphics* 2001; 25: 353–356.
15. Panetta T, Sclafani SJ, Goldstein AS . Percutaneous transcatheter embolization for massive bleeding from pelvic fractures. *J Trauma* 1985; 25: 1021–1029.
16. Wilkins L R, All J, Angle J F. Transcatheter embolization for trauma of the pelvis. *Endovascular Today* 2014: 60–66.
17. Suzuki T, Kataoka Y, Minehara H, Nakamura K, Uchino M, et al. Transcatheter arterial embolization for pelvic fractures may potentially cause a triad of sequela: Gluteal necrosis, rectal necrosis, and lower limb paresis. *J Trauma* 2008; 65: 1547–1550.

**Резиме****РЕДОК СЛУЧАЈ НА ПСЕВДОАНЕВРИЗМА  
НА ГОРНАТА ГЛУТЕАЛНА АРТЕРИЈА ПО ТАПА ТРАУМА**

**Симе Трпески<sup>1</sup>, Марија Михајлова Илиева<sup>1</sup>, Нина Апостоловска<sup>1</sup>,  
Алан Андоновски<sup>1</sup>, Андреја Гавриловски<sup>1</sup>, Нада Поп-Јорданова<sup>2</sup>**

<sup>1</sup> Универзитетска клиника за трауматологија, Скопје, Република Македонија

<sup>2</sup> Македонска академија на науките и уметностите, Скопје, Република Македонија

Ацетабуларните фрактури или дислокации на колкот превалираат при ротациски нестабилните фрактури на карлицата; псевдоаневризмата на горната глутеална артерија може да биде најдена по тапа траума на карличната регија.

Прикажуваме случај на псевдоаневризма на горната глутеална регија по тапа траума, која стана постепено симптоматична во рок од два месеци по примарното оштетување.

Нересорбиран глутеален хематом, кој се јави по два месеци од инцидентот, покрај стандардните методи на третман, доведе до дијагноза на соодветен ентитет – псевдоаневризма. Беше следен стандарден протокол. КТ-ангиографијата беше индицирана и таа ја потврди дијагнозата. Во планот за лечење се индицира ангиоемболизирање на патолошкиот супстрат. Псевдоаневризмата на горната глутеална артерија треба да се земе како диференцијална дијагноза.

**Клучни зборови:** псевдоаневризма, горна глутеална регија, глутеален хематом, тапа траума