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Case report

Gluteal compartment syndrome secondary to superior gluteal artery injury following pelvis fracture: A case report and review of literature

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ABSTRACT

Acute gluteal artery syndrome secondary to superior gluteal artery injury following pelvic fracture is a rare entity with potential for significant morbidity and mortality. In this report we present such a case resulting with a favorable outcome with prompt diagnosis and appropriate treatment.

1. Introduction

Hemodynamic instability is a frequent cause of mortality following pelvic fractures. However, acute gluteal compartment syndrome secondary to injury of the superior gluteal Artery (SGA) following pelvic trauma is rare.[1–3] In this case presentation, we aim to review current literature as well as present a gluteal compartment syndrome case secondary to an SGA injury following pelvic trauma that was treated at our clinic.

2. Case report

A 21 year-old male patient was brought to our emergency unit 2 h after bales of hay fell on him from a height of 2 m. The physical examination of the patient performed in the emergency service revealed pain, swelling and minimal stiffness of the left hip, with no neurological deficit observed. The patient's blood pressure was 90/110 mmHg, hemoglobin level was 12.1 g/dl and the patient was conscious. Radiographs and tomography of the spine, lungs and pelvis showed a compression fracture in the L2 vertebra, and fractures on the left ilium, ischium and pubic ramus (Fig. 1). The patient was admitted to our clinic for conservative treatment. An emergency fasciotomy was performed 2 h later with the suspicion of compartment syndrome because the patient had developed swelling and increased stiffness, extreme pain with passive hip flexion, no reduction in pain despite pain killers (10 mg of morphine), hip extension and abduction deficits and weakness in sciatic motor function. During the fasciotomy, about 800 cc's of hematoma was drained from the deep compartment. Muscle tissue was observed to be healthy. On the first day following decompression, despite given 2000 cc/24hr intravenous saline, the blood pressure was 40/70 mmHg, hemoglobin was 7.7 g/dL and approximately 600 cc of blood seeped through the drain. Therefore, with the early diagnosis of a rupture of the superior gluteal artery, an emergency angiogram was performed. The angiogram revealed a pseudo-aneurysm and discontinuity in the mid-half section where the superior gluteal artery passed the greater sciatic foramen (Fig. 2). When efforts for selective catheterization of the injured artery were unsuccessful, it was embolized with 3 hydrocoils. On the first day following the angiogram, the patient's blood pressure was 70/100 mmHg and hemoglobin was 9.6 g/dL. The patient, who

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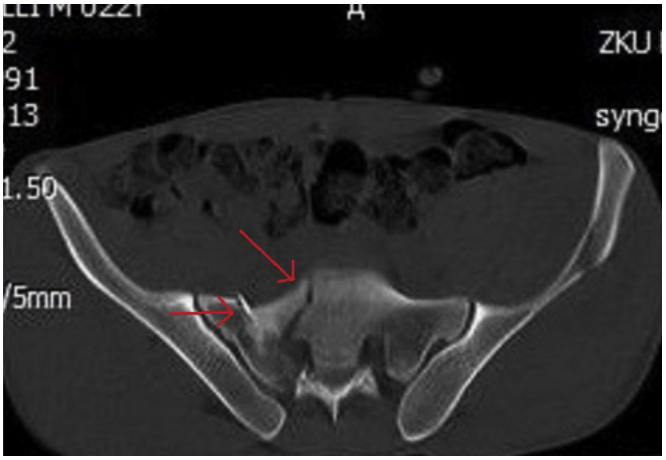

Fig. 1. Axial tomography image showing a lateral compression type injury.

did not present with incision site problems, was allowed to bear weight on the sixth week. In the postoperative six month examination, the Harris hip score was determined to be "good" with a value of 89.025. The patient returned to work. No additional problems were observed.

3. Discussion

Compartment syndrome is a microvascular phenomenon that leads to cellular hypoxia and death following a pressure increase in a closed environment between the bone and fascia. The increase in pressure could arise from internal (tissue edema), external (tight casting) or both. As in this case, it is characterized by extreme pain and stiffness resistant to analgesics and pain with passive movement. In late stages, neurological deficit is also present.[4]

The gluteal region is one of the rare sites where compartment syndrome is seen. Gluteal syndrome is frequently seen before or after surgery, after excessive medication, alcohol intoxication or long term immobilization due to obesity. Other causes are trauma, complications of hip replacement surgery, intramuscular injections and infection.[5,6]

The superior gluteal artery (SGA) passes through the greater sciatic foramen at a distance of 60 mm to the posterior superior iliac crest and 42 mm to the posterior inferior iliac crest on average into the posterior compartment, branching to supply the gluteus medius and minimus muscles.[7] SGA injuries may occur with sacral fractures, stable or unstable pelvic fractures, acetabular fractures, blunt or penetrating trauma, iliosacral screw placement or as an iatrogenic injury during posterior iliac crest bone graft harvest.[8–12] Cases may present with early or late hemodynamic instability and clinical findings (such as sciatic dysfunction or pain) arising from pressure created by the pseudo-aneurysm developed at a later stage.[13]

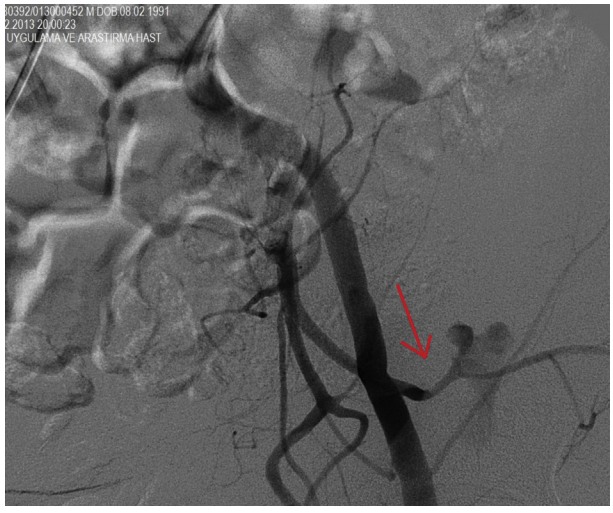

Fig. 2. A superior gluteal artery injury and pseudo-aneurysm.

There are three gluteal compartments, namely, gluteus maximus, gluteus medius and minimus, and tensor fasciae latae. All three compartments must be opened for proper treatment. Studies have revealed that a 4 h ischemia leads to irreparable muscle damage.[14] If there is suspicion of compartment syndrome clinically, fasciotomy must be performed immediately.[15]

In case of hemodynamic instability, diagnosis must be made with an angiogram and it must be remembered that compartment syndrome may develop without instability.[3]

Three incidences of acute gluteal compartment syndrome secondary to traumatic superior gluteal artery injury have been reported previously. Two of these had occurred due to blunt trauma without fractures while one had occurred following a traumatic hip dislocation.[1–3] Because gluteal compartment syndrome is considered secondary to pelvic ring injury, the case we present is a first in the literature. Although it has not previously been defined in the literature, we believe that such cases actually occur frequently but that they are either overlooked or result in the loss of the patient.

4. Conclusion

Gluteal compartment syndrome must be kept in mind in the differential diagnosis of patients who apply to the emergency service with a pelvic fracture and who have swelling and taut skin in the gluteal region. Because our patient was thin and conscious, the swelling and tautness was easily recognized and diagnosed. Gluteal compartment syndrome and superior gluteal artery injury is easy to overlook, especially in overweight or unconscious patients and requires attention.

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