

Ganglion Cyst Associated with a Displaced Transverse Acetabular Fracture: A Case Report

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Summary

Open reduction and internal fixation is the standard of care in the treatment of displaced fractures of the acetabulum. Displacement in the anterior column is usually addressed with direct reduction through a traditional or limited ilioinguinal approach. This case report describes a patient with a displaced transverse posterior wall acetabular fracture with a soft tissue mass near the anterior hip joint noted during an ilioinguinal exposure. Surgical exploration through the middle window of an ilioinguinal approach revealed an apparent ganglion cyst arising from the anterior extent of the displaced transverse fracture. Excision was performed and pathology confirmed a ganglion cyst. To our knowledge, this is the first report of a ganglion cyst of the hip joint associated with acetabular fracture and surgeons should be aware of this pathology when treating acetabular fractures and review soft tissue windows of preoperative computed tomography scans for soft tissue abnormalities of the inguinal canal.

Keywords: Acetabular fracture; Ilioinguinal; Ganglion cyst

Introduction

Open reduction and internal fixation has become the standard of care for the treatment of younger patients with displaced fractures of the acetabulum [1,2]. Displaced fractures of the acetabulum also frequently involve damage to the acetabular labrum [2]. Ganglion cysts can arise from the joint capsule of synovial joints or synovial tendon sheaths [3]. They are commonly found near the hand and wrist [4]; however, there are several reports of ganglion [paralabral] cysts associated with acetabular labral pathology. We describe a patient with a displaced transverse-posterior wall acetabular fracture with associated posterior hip dislocation found to have a large ganglion cyst in the inguinal canal at the time of open reduction and internal fixation. This case report demonstrates pathology not previously reported with acetabular fractures and suggests a possible etiology for hip pain or leg swelling in the postoperative period.

Case Report

A 46 year-old gentleman presented to our institution after a motor vehicle collision. He sustained multiple injuries including a left transverse-posterior wall [AO/OTA 62-B1.3, a4] acetabular fracture with associated posterior dislocation of the femoral head (Figure 1). Other injuries included a sternal body fracture with retrosternal hematoma, omental hematoma, traumatic left elbow arthrotomy, and closed right perilunate dislocation. Physical exam of the left lower extremity demonstrated decreased sensation and weakness in the peroneal distribution of the sciatic nerve with intact posterior tibial nerve function. There were palpable pulses in the left foot equal to the contralateral limb. The patient reported no complaints with his left hip

prior to this injury. A closed reduction of the left hip joint was performed and the patient was placed in distal femoral skeletal traction to maintain reduction of the joint and to lateralize displacement of the transverse fracture line. The left foot drop persisted after closed reduction of the left hip. Cystogram demonstrated displacement of the bladder toward the contralateral hemipelvis without evidence of bladder rupture (Figure 2). Computed tomography of the pelvis was obtained after reduction of the hip joint which revealed a transtectal transverse fracture line with a large posterior wall fragment with marginal impaction (Figures 3 a-b).



Figure 1: AP pelvis at presentation

The patient underwent debridement and irrigation with closure of the left elbow traumatic arthrotomy and open reduction percutaneous pinning of his right perilunate dislocation on the day of presentation after evaluation and clearance by the general surgery trauma service. He remained in distal femoral skeletal traction for his left acetabulum fracture for five days prior to definitive fixation. Deep venous thrombosis prophylaxis was administered with sequential compression device and lovenox 30 mg twice daily.

Due to the significant displacement and the transtectal nature of the transverse component of the acetabular fracture, combined ilioinguinal and Kocher-Langenbeck approaches were chosen.



Figure 2: Cystogram after closed reduction of left hip dislocation. There is a shift of the bladder towards the contralateral hemipelvis indicating a large hematoma in the left hemipelvis



Figure 3a: Bony windows of axial CT scan. (A) A displaced transtectal transverse fracture line is seen.

An ilioinguinal approach was performed in a supine position with intraoperative distal femoral traction on an OSI flat top table with traction arc [Mizuho OSI, Union City, CA, USA]. Upon dissection of the middle window, a large cystic, soft tissue mass approximately 5 x 6 cm was encountered just lateral to the iliopsoas muscle and anterior to the superior pubic ramus (Figure 4). The femoral vessels were dissected and did not communicate with the mass. Blunt dissection around the mass was carried out and the mass originated from the anterior portion of the hip joint. The mass was excised and the stalk near the anterior hip joint was ligated. Fluid within the mass was consistent with a ganglion cyst. The mass was sent to pathology for examination. A labral tear was noted associated with the anterior portion of the transverse fracture. No formal repair was performed. The transverse portion of the acetabular fracture was then reduced and fixed with an anterior column screw prior to closure of the ilioinguinal approach. A Kocher-Langenbeck approach was subsequently performed under the same anesthetic for fixation of the posterior

components of the fracture. Neurolysis of the sciatic nerve was performed and the nerve was found to be in continuity. Traumatic disruption of the superior gluteal system at the greater sciatic notch was found intraoperatively. Internal fixation for the posterior wall component consisted of two lag screws and a buttress plate.

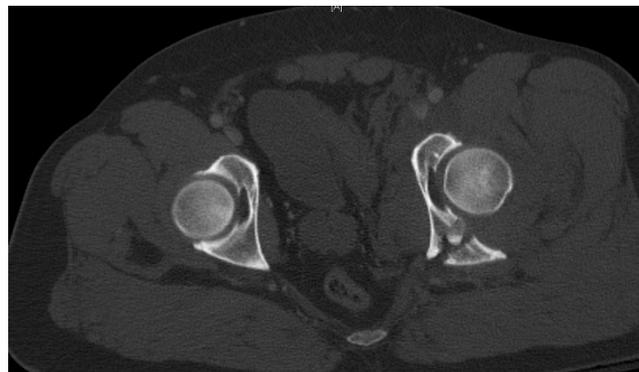


Figure 3b: Bony windows of axial CT scan. (B) A comminuted posterior wall fracture is seen.

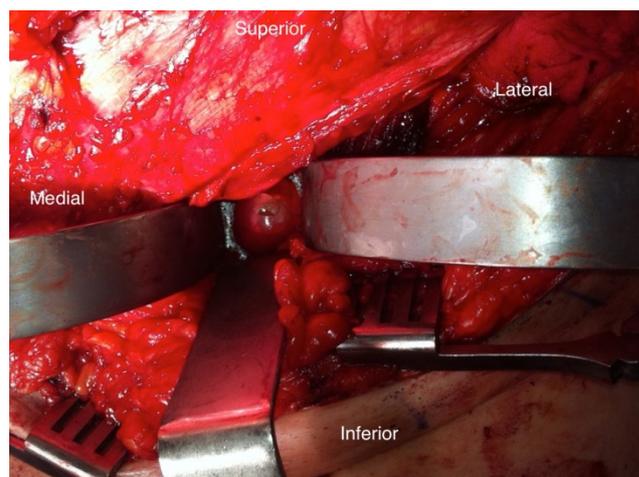


Figure 4: Intraoperative photo of cystic mass found in the middle window between the femoral vessels and iliopsoas muscle/femoral nerve.

Soft tissue windows of the original CT scan of the pelvis were reviewed postoperatively and a soft tissue mass (Figures 5) was noted just lateral to the femoral vessels consistent with our intraoperative findings.

Postoperative management included posterior hip dislocation precautions for 4 weeks and touchdown weight bearing to the left lower extremity for a total of 12 weeks. An ankle-foot orthosis was ordered for the left foot drop. Surgical pathology of the mass was read as "consistent with ganglion cyst".

The patient had an uneventful postoperative course. He was advanced to weight bearing as tolerated 12 weeks after fixation and his sciatic nerve function gradually returned to normal over six months.

At six months follow-up, the patient's hip is asymptomatic without evidence of posttraumatic arthritis or avascular necrosis.

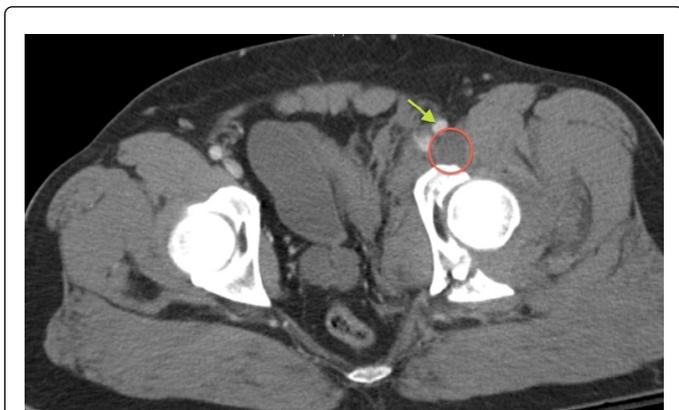


Figure 5: Axial soft tissue window of preoperative CT scan demonstrating mass just lateral to femoral vessels. Green arrow demonstrates femoral artery. Cystic mass demonstrated inside red circle.

Discussion

Ganglion cysts are relatively common masses frequently found arising from the joints of the wrist and hand [3,4]. Reports of ganglion cysts around the hip joint are rare and have not been previously associated with acetabular fracture. Previous reports have been associated with mass effect and/or compression of neurovascular structures both anterior and posterior to the hip joint [5-11]. Another series of 6 ganglion cysts was reported in association with chronic tears of the acetabular labrum [12]. Labral tears have been associated with acetabular fractures and all patients in a series of 15 displaced transverse fractures had labral tears discovered with capsulotomy at the time of open reduction and internal fixation [13]. To our knowledge, this is the first report of a ganglion cyst associated with acetabular fracture.

We cannot be sure that this ganglion cyst was not present prior to our patient's injury; regardless, its presence had implications for the surgical approach. A review of the soft tissue windows of the computed tomography scan of the pelvis demonstrated the mass, which was not recognized preoperatively. We feel that appropriate attention to bony and in addition, soft tissue windows on preoperative computed tomography scan is important in preoperative planning. Careful review of soft tissue windows can also demonstrate other pathologies such as abdominal wall hernias [14], which again, will impact an anterior approach to the acetabulum.

Ganglion cysts likely occur with some regularity after acetabular fracture given the association with labral tearing; however, most are probably asymptomatic. They should be considered in the differential diagnosis of unexplained hip symptoms in the postoperative period.

Conclusion

Degenerative tears of the acetabular labrum have been associated with ganglion [paralabral] cyst formation. Traumatic tears of the labrum are commonly found in the setting of an acetabular fracture, and the acetabular surgeon should be aware of this pathology and its implications for surgical approach and as a potential etiology of unexplained postoperative pain or compression of surrounding neurovascular structures. Preoperative planning should include a detailed review of soft tissue windows for aberrant anatomy of the inguinal canal.

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