

Non-traumatic Pelvic Avulsion Fracture: Case Report

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Authors' contributions

This work was carried out in collaboration between all authors. Authors BI, MSY, and MB designed the study. Authors MO and GK wrote the first draft of the manuscript. Author CK make proof reading and managed the literature searches. All authors read and approved the final manuscript.

Case Study

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ABSTRACT

Avulsion fractures of the anterior superior iliac spine are rare with a incidence 1.4% of pelvis injuries. This injury met commonly in adolescents, as an avulsion fracture of the apophyses, a result of suddenly and forcefully contraction or repetitive contraction of the sartorius and tensor fasciae latae muscles. Patients feel a severe pain localized in the anterior superior iliac spine on palpation and gait can be affected by pain. A high index of suspicion is necessary for emergency physicians to diagnose this rare injury. Treatment is mostly conservative although surgical treatment is required occasionally. We present a 46 years old man admitted to emergency department with a sudden pain on the right of pelvis after stumbling on the road. Avulsion fracture of anterior superior iliac spine detected by means of pelvis x-ray and computed tomography. Surgical intervention was preferred for this non-traumatic fracture due to bone displacement degree and milimetric exocytosis. Our case was unique according to patient's age, trauma mechanism and treatment requirement as surgery.

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1. INTRODUCTION

Avulsion fractures of pelvic skeleton are rare traumas occurring mostly in young athletes, caused by sudden trauma or unstable contraction of musculotendinous intersection during sports [1]. There are reports presenting avulsion fractures of pelvic ring in anterior inferior iliac spine (AIIS), anterior superior iliac spine (ASIS), ischial tuberosity, symphysis pubis apophysis and iliac crest [2-6]. Furthermore, although not often, avulsion injuries involving pelvic ring were reported in adults during daily actions unrelated to sports [7].

This paper represents 46 years old male presenting with a rare case of displaced anterior superior iliac spine avulsion fracture occurred while stumbling.

2. CASE

A Forty six years old white race Turkish male admitted to our emergency room with complaint of sudden onset right hip pain. Patient was strained to step on his right foot. Story reveals that patient just stumbled on road without additional trauma like strike by object or fall. In the Patient medical history he has no current medication and significant medical condition including collagenous tissue disorder, rheumatologic disease and osteoporosis. Patient reports no sportive activity including long runs or hiking as a probable cause of acute strain lately. He was a tradesman selling hardware supplies as he said. His height was 185 centimeters, weight was 89 kilograms. Physical examination shows significant pain on right iliac wing during palpation. Hip movements were painful but range of motion was full. No neurovascular injury was noted. Direct graphs point out avulsion fracture starting from ASIS reaching through AIIS (Fig. 1). Pelvic computerized tomography (CT) reveals posterior displaced fracture in right iliac wing (Fig. 2). Edges of fracture were irregular and millimetric bone fragments were noted. Focused assessment with sonography for trauma (FAST) and urine analysis shows no abdominal organ injury and hematuria respectively. On his initial blood laboratory values were; hemoglobin 15.2g/dl white blood cells 11.270 μ l, urea 37mg/dl, creatinin 1mg/dl, alkaline phosphatase 87U/L, alanine aminotransferase 24U/L, aspartate aminotransferase 14U/L, total calcium 8.7mg/dl, ionized calcium 4.37mg/dl, creatine kinase 182U/L, lactate dehydrogenase 242U/L, phosphorus 3.6mg/dl, magnesium 2mg/dl with all normal range for differential diagnosis of metabolic and endocrine diseaseses.

Internal fixation was chosen as treatment option because of separation of bone fragment was 3.2cm and there were milimetric exocytosis. In fracture reduction was achieved. 2k-wire, 5-hole plate and 1 pcslocking screw, 3 pcsunlocked screws were used for internal fixation. At 1 year follow-up, the patient had normal gait, and he had pain-free full range of movement of the hip.

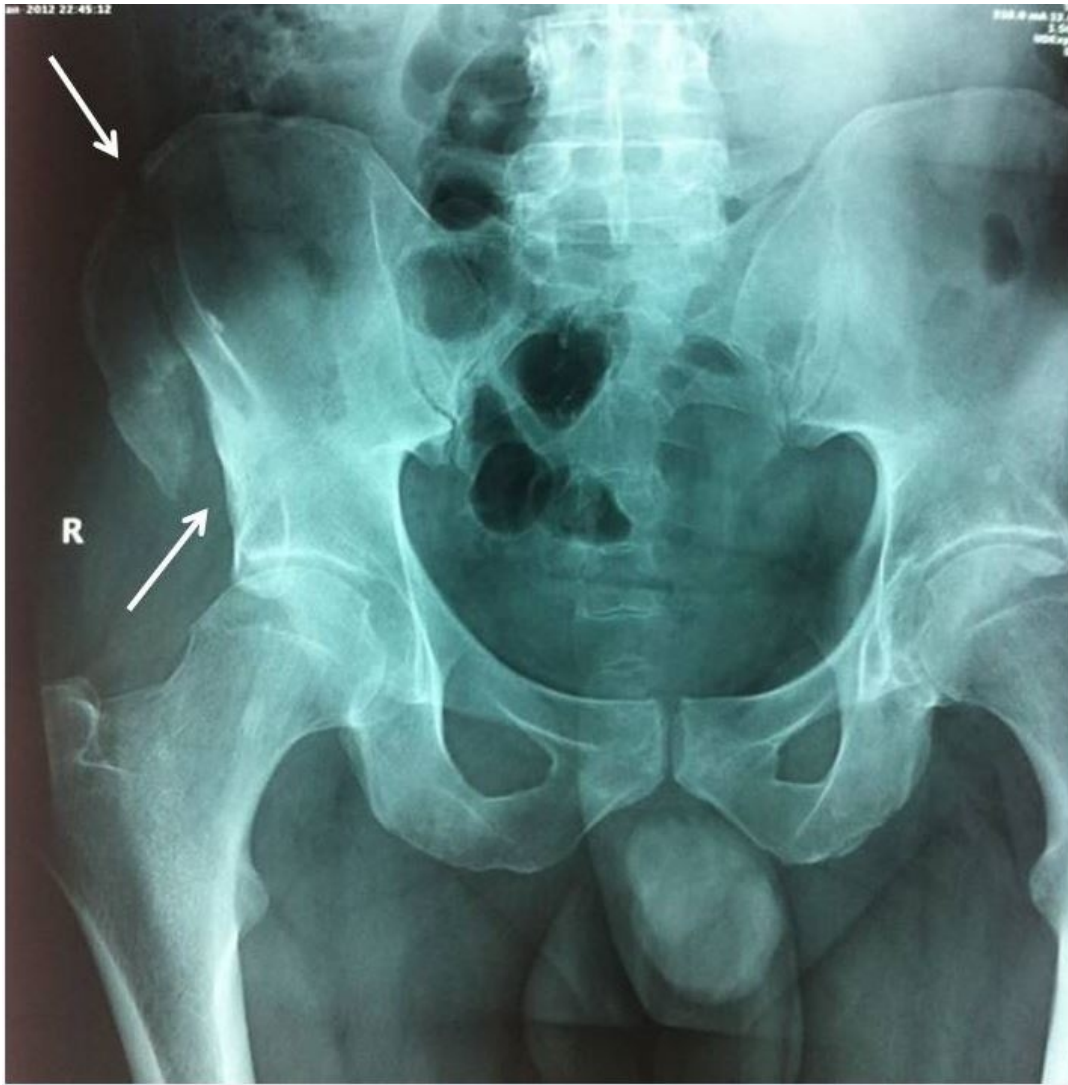


Fig. 1. Posteroanterior radiograph of pelvis showing avulsion of the anterior superior iliac spine with significant displacement

3. DISCUSSION

ASIS and AIIS avulsion fractures are caused by hip extension and knee flexion accompanied by sudden contraction of rectus femoris, sartorius or tensor facia lata. Most common apophysial injuries occur at ASIS, AIIS and ischial tuberosity [5,8,9]. Since adolescence period pelvic apophysis ossificates, therefore avulsion fractures are commonly seen in this period. Also mass muscles and muscle groups originate from these anatomical locations [10-12].

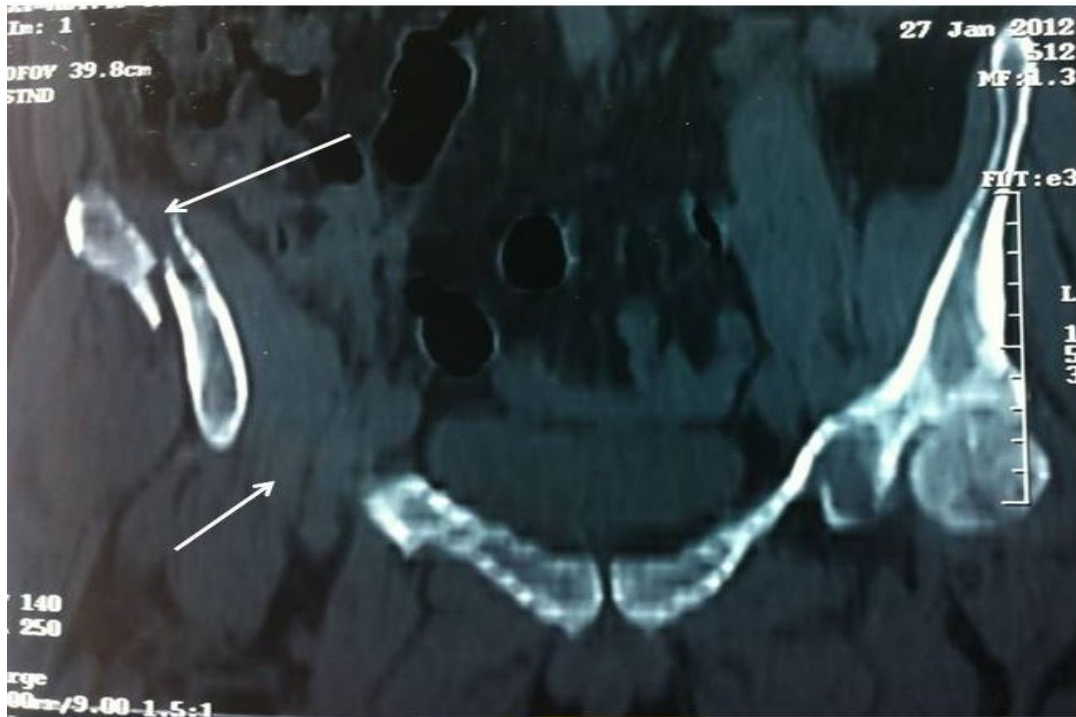


Fig. 2. CT image of pelvic avulsion fracture

In our case avulsion fracture occurred in ASIS due to sudden contraction of sartorius, tensor fascia lata and rectus femoris muscles. ASIS avulsion fracture is rarely encountered and constitutes 1.4% of total hip and pelvis injuries [13]. Diagnosis is based on story, physical examination and direct graphies. CT is warranted to detect separation degree of bone fragments [14]. Treatment options vary due to size; localization and displacement extend of fractures. Conservative methods like bed rest, management of pain and physical rehabilitation is chosen in minimally displaced fractures while surgical therapy, although rarely needed as in our case, is necessary for non-union, separation of bone fragment more than 2cm and exocytosis formation [4,8,12,13]. Open reduction and internal fixation indications are shift of bone fragment longer than 3cm, non-union and desire of short recovery period by patient [2].

4. CONCLUSION

Avulsion fractures of pelvis are rare but clinically significant injuries. Emergency physicians should be aware of this clinical condition in patients without considerable blunt trauma. In order not to ignore any patients with this rare entity careful medical history must be gained. Physical examination should lead to direct graphs and CT, where necessary, to confirm diagnosis especially in chaotic emergency rooms.

CONSENT

All authors declare that 'written informed consent was obtained from the patient for publication of this case report and accompanying images.

ETHICAL APPROVAL

All authors hereby declare that this manuscript have been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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