

SACROILIAC SEPARATION THAT CAN BE DIAGNOSED AFTER PELVIC FIXATION DURING SURGERY: A CASE REPORT AND REVIEW OF LITERATURE

AMELİYAT SIRASINDA PELVİK FİKSASYON SONRASI TANI KONULABİLEN SAKROİLİAK SEPERASYON: OLGU SUNUMU VE LİTERATÜRÜN GÖZDEN GEÇİRİLMESİ

İBRAHİM ALPER YAVUZ¹ İD TAHSİN AYDIN¹ İD AHMET ÖZGÜR YILDIRIM¹

¹Ankara Bilkent City Hospital, Department of Orthopaedics and Traumatology, Ankara, Turkey

ABSTRACT

Sacroiliac joint separation is a high-energy and serious pelvis injury. It must be diagnosed early and treated quickly. Although sacroiliac joint injuries can often be detected by imaging methods, in some cases the diagnosis cannot be made. We present a rare case of pelvic injury in which the sacroiliac joint was completely normal on X-ray and Computed Tomography and the patient was diagnosed with intraoperative sacroiliac separation, although a pelvic binder was not used. Pelvic injuries, especially ligament injuries, may not be detected both in physical examination and radiographic imaging methods. Therefore, orthopedic surgeons should be careful and sceptical at every stage of the diagnosis and treatment of pelvic injuries.

Keywords: sacroiliac separation, intraoperative diagnosis, pelvic fracture

ÖZET

Sakroiliak eklem ayrılması, pelvik yaralanmalarda hayatı tehdit eden ciddi bir durumdur. Erken teşhis edilip uygun şekilde tedavi edilmelidir. Bu yaralanmalar çoğu zaman görüntüleme yöntemleri ile tespit edilebilse de bazı durumlarda teşhis konulamamaktadır. Bu olgu sunumunda, röntgen ve BT'de sakroiliak eklem tamamen normalken ve hastada pelvik hamak kullanılmamışken, ameliyat sırasında sakroiliak ayrılma saptanan nadir görülen bir pelvik yaralanma vakasını sunuyoruz. Pelvik yaralanmalar, özellikle bağ yaralanmaları hem fizik muayenede hem direkt radyografide hem de BT'de saptanamayabilir. Bu nedenle ortopedi cerrahları pelvik yaralanmaların tanı ve tedavisinin her aşamasında dikkatli ve şüpheli davranmalıdır.

Anahtar Sözcükler: sakroiliak seperasyon, intraoperatif tanı, pelvis kırıkları

INTRODUCTION

Pelvic ring injuries are serious, life-threatening injuries. An incidence of 23 per 100,000 per year has been reported (1). Separation of the sacroiliac joint is often an injury caused by high-energy trauma, increasing complications and mortality in pelvic injuries (2-4). At present, fixation is performed with reconstruction plates or sacroiliac screws in sacroiliac separation treatment (5).

There are studies reported that Computer tomography (CT) should be performed in pelvic injuries and CT is superior to X-ray. CT is frequently used in the diagnosis and classification of pelvic injuries (6, 7). There are case reports in the literature stating that pelvic injuries may be overlooked in patients undergoing pelvic compression device on CT (8, 9).

We present a rare case of pelvic injury with intraoperative sacroiliac joint injury while the sacroiliac joint was completely normal on direct X-ray and CT. To our knowledge, this case is the first case in which sacroiliac separation can be detected during surgery, although the pelvic compression device was not applied to the patient and the X-ray and CT were completely normal.

CASE REPORT

A 19-year-old woman was involved in a high-energy

vehicle-pedestrian traffic accident. She was brought to the emergency room 30 minutes after the accident. At arrival, Glasgow Coma Scale (GCS) was three and pupils were reactive, she was intubated, and volume therapy was begun. Her vital signs were as follows; Heart rate 102 bpm, blood pressure 110/70 mmHg body temperature 37,2°C, oxygen saturation 96%.

Pelvic instability was detected in the first physical examination of the unconscious patient. In the trauma series taken in the emergency department, left iliac bone fracture and ipsilateral superior and inferior pubic ramus fractures were revealed on Pelvis X-rays (Figure 1). The preliminary diagnosis was confirmed with the Pelvis CT (1.25 mm section thickness) (Figure 2). Pelvis injury was evaluated as type 2 according to the Young-Burgess classification of type B2 according to the Tile classification. However, no sacroiliac injury findings were seen on both x-ray and CT of the patient. The patient also had left subdural hematoma, grade-1 liver laceration, bilateral hemopneumothorax, and maxillofacial fractures. The patient's first arrival haemoglobin was 15.1 and lactate was 3.5. The patient's injury severity score was calculated as 41.

The patient was taken to the intensive care unit by applying thoracic tube. The patient was followed in the intensive care unit until she became hemodynamically stable and prepared

Corresponding author: İbrahim Alper Yavuz, Associate Professor, Ankara Bilkent City Hospital, Department of Orthopaedics and Traumatology, Ankara, Turkey.

E-mail: dribrahimyavuz@hotmail.com

ORCID: <https://orcid.org/0000-0002-5287-7934>

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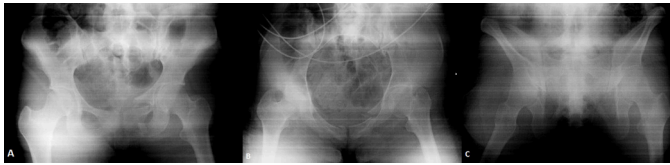


Figure 1. Direct radiographs taken in the emergency department with a portable x-ray machine (a) AP pelvis radiograph (b) Pelvis inlet view (c) Pelvis outlet view.

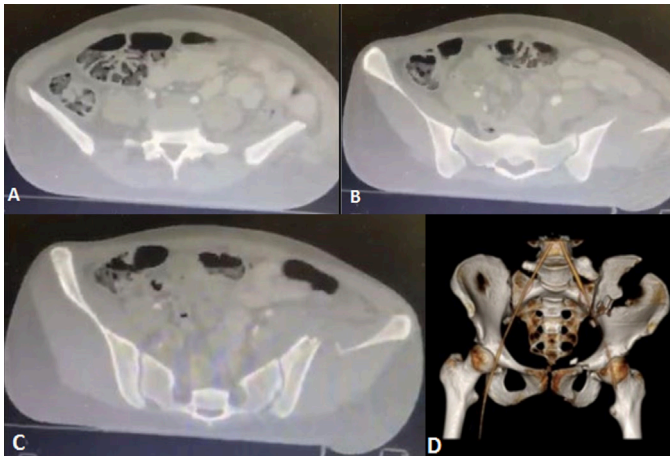


Figure 2. CT images taken in the emergency department (a-c) Pelvic CT horizontal images (d) Pelvic CT-3D image.

for orthopaedic operation. During the period until surgery, the patient was extubated, the GCS increased to 15 and the lactate value was measured as 1.4 on the fifth day. The patient, who was hemodynamically stable, was operated under general anaesthesia on the fifth day of hospitalization.

First, a retrograde screw was applied to the patient with a mini-incision under fluoroscopy for fixation of the superior pubic ramus. Afterwards, the fracture was fixed with three reconstruction plates using lateral window for the iliac wing fracture. Dislocation was observed in the ipsilateral sacroiliac joint in the control fluoroscopy and x-ray images of the patient after fixation (Figure 3). The patient's sacroiliac dislocation was reduced, and the joint was fixed with one cannulated screw and washer. The operation was ended after control fluoroscopy and x-ray (Figure 4). The patient was not give full weight bearing until the 12th week. Outpatient clinic controls of the patient were performed at 6-12-24 weeks (Figure 5). The patient and her family were informed that radiographic images would be submitted for publication.

DISCUSSION

Sacroiliac joint dislocation is a high-energy injury and must be surgically treated for good functional results (10). Patients can usually be diagnosed with X-ray and CT. However, there are studies reporting that Sacroiliac joint injuries may be overlooked in the presence of minimal separations and pelvic compression device (8, 9). In the current study, without any pelvic compression device, sacroiliac joint injury



Figure 3. Direct radiographs taken after pelvic fixation in the surgery room. Sacroiliac separation had been diagnosed (a) AP pelvis radiograph (b) Pelvis inlet view (c) Pelvis outlet view.

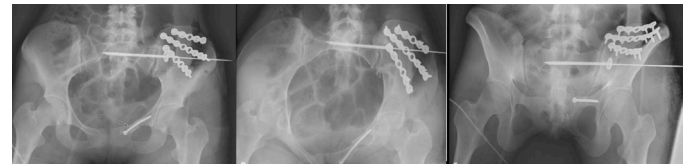


Figure 4. Direct radiographs taken after sacroiliac fixation with cannulated screw (a) AP pelvis radiograph (b) Pelvis inlet view (c) Pelvis outlet view.

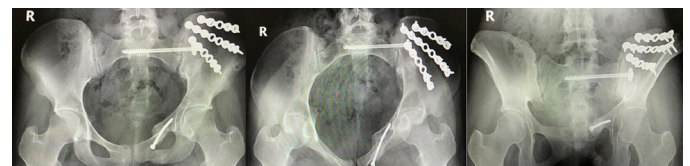


Figure 5. Direct radiographs taken 6 months after surgery (a) AP pelvis radiograph (b) Pelvis inlet view (c) Pelvis outlet view.

findings could not be detected with X-ray and BT images of the patient. Sacroiliac joint dislocation was observed after fixation of the anterior pelvic ring during surgery. To our knowledge, this case report is the first in the literature.

The reliability of physical examination and x-ray imaging is low in pelvic injuries. Sauerland et al. stated in a meta-analysis that they found false-negative results in 9% (49 out of 549) after physical examination. They also stated that 3 of 49 (6%) patients had an indication for surgical treatment (11). In another study, it was reported that the sensitivity of pelvic radiography was less than pelvic CT in diagnosing pelvic injuries and it was stated that 33% of fractures missed (7). In the current case, the patient had pelvic instability on physical examination and ipsilateral superior and inferior pubic ramus fractures were seen on pelvis AP inlet and outlet direct radiographs taken in the emergency department. There were no findings suggestive of sacroiliac separation in both physical examination and direct radiographs.

Most pelvic injuries can be diagnosed with CT imaging. However, there may be difficulties in both diagnosis and classification in the presence of pelvic compression devices. Clements et al. reported that pelvic injury was overlooked in CT due to the application of a pelvic binder in two cases they presented. Also, these cases were type II and type III AP compression injuries according to the Young-burgess classification that required surgery (9). In another case report, Jamme et al. reported that X-ray and CT imaging were completely normal in a 49-year-old patient who had a pelvic

injury after a traffic accident and underwent pelvic binder. However, they suspected that there was a pain in the pubic symphysis of the patient and reported that when the pelvic binder was removed and CT was performed again, it was an AP type 2 open book injury according to Young Burgess classification (8). Gabbe et al. reported in their article that the use of pelvic binders makes it difficult to classify pelvic injuries correctly (12). In the current study, although a pelvic binder was not used in the patient, no evidence of sacroiliac joint injury was found in the physical examination and radiological imaging including x-ray and CT. However, after the fixation of the superior pubic ramus and iliac bone fractures during surgery, sacroiliac joint separation was detected. Due to this situation, this case report is considered the first and only in the literature.

CONCLUSION

Pelvic injuries, especially ligament injuries, may not be detected both in physical examination and in radiological imaging such as X-ray and CT. Therefore, orthopaedic surgeons should be careful and sceptical at every stage of the diagnosis and treatment of pelvic injuries.

Informed Consent: No descriptive information about the patient was included in the written explanations and photographs. The patient and her family allowed the case report to be presented in the literature.

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