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TREATMENT OF DELAYED VERTICAL CENTRAL (ZONE III) SACRAL FRACTURE

GECİKMİŞ VERTİKAL SAKRAL SANTRAL (ZON – 3) KIRIĞININ TEDAVİSİ

Akif ALBAYRAK[1],
Seçkin SARI[1],
Yunus ATICI[1],
Şükrü Sarper GÜRSU[1]
Mehmet Temel TACAL[1],
Mehmet Akif KAYGUSUZ[2]

[1]*Specialist M.S. Baltalimani Bone Hospital Orthopaedics and Traumatology*
[2]*Associate professor M.S. Baltalimani Bone Hospital Orthopaedics and Traumatology Training Officer*

SUMMARY

A 63-year-old female patient was admitted to our clinic with complaints of hip pain and difficulty in walking. She had a history of a motor vehicle accident seven months previously, which was followed up in another medical center with six weeks of skeletal traction and six months of bed rest.

Her neurological examination was normal. There was pain with hip movements. She had pathological movement and pain when pressing the iliac area, and pelvic instability.

A CT scan and X-rays showed that there was a zone III (central) vertical sacrum fracture, right ischium pubic arm fracture, left hip undisplaced acetabular fracture, and more than 5 cm of pubic diastasis. Undifferentiated acetabular fractures were again present in the left hip.

We operated on the patient due to the sacral vertical nonunion and pubic diastasis. First, the pubic diastasis was repaired using a direct anterior approach with a five-hole reconstruction plate, and then the patient was turned to a prone position and spino-pelvic fixation was done with L4, L5, S1 and iliac screws. The patient was mobilized painlessly on the first day postoperatively.

Isolated sacral fractures are not commonly seen, and they generally display a transverse orientation. Zone III (central) sacral fractures are rarely seen, and only a few cases have been reported in the literature.

Key words: Sacral fracture, nonunion, pelvic injury

Level of evidence: Case report, Level IV

ÖZET

63 yaşında bayan hasta, polikliniğimize, yürüme sırasında kalçasında ağrı ve yürümede zorluk şikayeti ile başvurdu. Özgeçmişinde 7 ay once araç içi trafik kazası geçirdiği mevcut kırıkları için 6 hafta iskelet traksiyonu ve başka bir tıp merkezinde 6 ay yatak istirahati ile tedavi edildiği öğrenildi.

Nörolojik muayenesi doğaldı. Muayenesinde kalça hareketlerinde ağrı vardı. İliak kanatlara bastırmakla patolojik hareket ve ağrı alınmakta idi. Pelvik instabilitesi vardı.

Çekilen grafiler ve BT, zon-3 (merkezi) vertikal sakrum kırığı, sağ iskion pubik kolu kırığı ile birlikte 5 cm den fazla pubik diastaz olduğunu gösterdi. Yine sol kalçada ayrışmamış asetabulum kırığı mevcuttu.

Hastayı; vertikal sakral kaynamama ve pubik diastaz nedeniyle ameliyat ettik. İlk olarak, direkt anterior yaklaşımla 5 delikli rekonstrüksiyon plağı yardımıyla pubik diastaz tamir edildi ve sonra hasta pron döndürülerek L4,L5,S1 ve İliak vidalarla spinopelvik fiksasyon yapıldı. Post-op birinci gün hasta ağrısız olarak yürütüldü.

İzole sakrum kırıkları sık görülmemektedir ve genellikle de transvers uzanım gösterirler. Zone III (santral) kırıklar çok nadir görülür ve literatürde de pek az yayına rastlanmaktadır.

Anahtar kelimeler: Sakrum kırığı, kaynamama, pelvik yaralanma

Kanıt düzeyi: Olgu sunumu, Düzey IV

Address: Akif ALBAYRAK,
Fulya Mah. Mehmetcik Cad.
Akınözyuvam Sit. D1 Blok D8,
Şişli, İstanbul.
Tel:.0532 5814629
E-mail: albayrakakif@gmail.com
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INTRODUCTION:

Posterior pelvic ring fractures are fractures that occur after high-energy trauma, and which are often accompanied by additional injuries depending on the severity of the trauma. Untreated pelvic ring fractures that are not knitted can cause serious problems. Severe and chronic pain caused by movement and the associated limitations, and progressive neurological problems, can be seen in these patients. In particular, according to the classification made by Denis, sacral zone III fractures have the worst prognosis, as the spinal canal is included among these fractures, they are difficult to diagnose by X-ray, and often lead to sphincter dysfunction and significant loss of sensation in the perineum[2,4,6,7,9,10]. In terms of surgery, the late treatment of such injuries is much more difficult. The aim of this paper is to present a patient with a sacral zone III fracture, pubic diastasis, and pelvic instability.

CASE REPORT:

A 63-year-old female patient was admitted to our clinic with complaints of hip pain and difficulty walking. During the patient examination, painful and limited walking with short steps was seen. It was learned that she had a history of a motor vehicle accident seven months ago, after which she was treated with skeletal traction for existing fractures, and rest. During examination, pain in the sacral region and iliac area and pelvic instability were detected and internal rotation movements of the right hip were found to be particularly painful. Neurological examination was normal.

On the X-rays and CT of the patient, a zone III vertical fracture of the sacrum and a right ischium pubic arm fracture, as well as pubic diastasis of more than 5 cm, were detected. Undifferentiated acetabular fractures were again present in the left hip (Figure-1,2,3).

Surgical treatment was planned, considering the patient's current symptoms and radiological findings.

First, the patient was laid on the operating table in a supine position, and a 10 cm transverse incision was made over the pubic junction. Fibrous tissue and pathological movement were seen on the fracture line of the ischium pubic arm. The fibrous tissue was removed, pubic diastasis was reduced in a manner containing the fracture line, and stabilization was achieved with a reconstruction plate containing five holes. Then, the patient was turned to a prone position and a longitudinal midline incision was made through the center of the lumbosacral junction. The fracture line was revealed. The fracture line and sacroiliac area were fixed with polyaxial screws thrown into the iliac wing with the L5 and S1 vertebrae. The L4 vertebrae were involved in fusion with two polyaxial pedicle screws to increase the stabilization, as the patient was osteoporotic, and bilateral instrumentation was interlinked. The patient walked on day 1, and was discharged from hospital on day 3 (Figure-4,5).

DISCUSSION:

Sacrum fractures are divided into three groups by Denis. Fractures within the sacrum area are classified as zone I, fractures including the sacral foramen are zone II, and fractures associated with the midline channel are zone III[4].

Sacrum fractures are fractures resulting from high-energy trauma.

They are generally missed at a high rate at first contact, because the majority of patients have polytrauma, are intubated or have difficultly cooperating[6,7]. Zone III fractures, in particular, are rare, but it is highly probable that they will cause neurological damage, such as sphincter loss and perineal hypoesthesia[2,9,10]. The case presented here was neurologically intact.

Figure-1. Preoperative lumbar AP-LAT X-ray, radiolucent line can hardly be seen at the sacrum midline

Figure-2. Preoperative pelvic AP X-ray showing decomposition in symphysis pubis

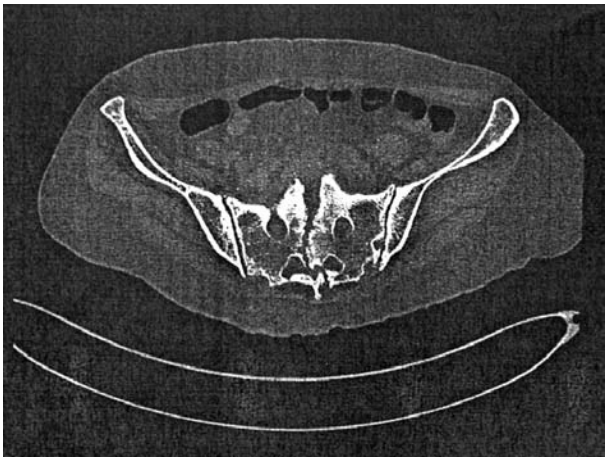

Figure-3. Preoperative CT showing central sacral fracture

Figure-4. Postoperative AP X-ray

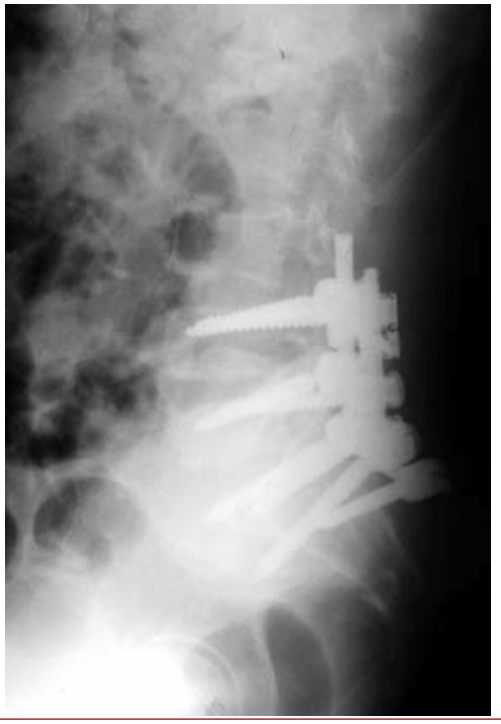

Figure-5. Postoperative lateral X-ray

Diagnosis with radiographs of zone III fractures is difficult, and computed tomography is the best diagnostic tool[3,6,8]. A vertical sacral fracture in this case had been overlooked at other institutions. The presence of a vertical fracture of the sacrum was noticed seven months after the trauma.

When planning the treatment of fractures of the sacrum, any neurological damage in the foreground and/or the presence of any deformity is decisive. However, life-threatening hemorrhage and conditions such as nonunion or malunion should also be considered in the treatment indications. Nowadays, the traditional treatment for sacral fractures is conservative. However, early movement as a result of surgery and stabilization in the early period, in particular, reduce the morbidity of polytraumatized patients[6,7]. In our case, surgery was planned due to the patient's pelvic instability, the development of nonunion of the sacrum, and the patient's activity. Laminectomy is recommended if there is pressure inside the channel or radicular pressure in the radiological findings of a conscious patient with a sacral fracture, or if there is neurological damage or the patient is unconscious[9,10]. In our case, as the patient was neurologically intact, laminectomy was not required.

Surgical techniques used to ensure the stability of the posterior sacral fracture are percutaneous transiliac transsacral screwing, open reduction transiliac plating, posterior instrumentation with pedicle screws, posterior instrumentation, and anterior plating[5,6,10]. Percutaneous screwing is not a recommended technique for unstable fractures with high pelvic separation. In such cases, there have been positive results from studies including stabilization by long screws provided from the transiliac to transsacral[1,5]. In our case, posterior instrumentation was placed at the iliac crest with polyaxial screws into the L5 and S1, and the L4 vertebrae were

included in the instrumentation to strengthen the stabilization as the patient was osteoporotic.

As a result, successful and rigid fixation was obtained with surgical treatment in our neurologically-intact case with an overlooked but severely morbid zone III fracture, and early mobilization and rehabilitation of the patient were provided. We believe that our experiences contribute greatly to the knowledge surrounding the surgical treatment of these polytraumatized patients, for whom early mobilization is very important.

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