

INTRAPELVIC INTRUSION OF THE LUMBOSACRAL SPINE

CHR. VAN DER WERKEN, W. F. VAN TETS

A 34-year-old female fell 7 meters onto her lower back and side, and sustained a nondislocated fracture of the 7th thoracic vertebra, a complex pelvic fracture with symphysiolysis and a left acetabular fracture in combination with a bilateral comminuted sacral fracture and downward intrusion of the lumbosacral spine. There was also a cauda equina-syndrome. Laparotomy with exploration of the lumbosacral area was terminated early because of hemorrhage. Later internal fixation of the fractures was performed by an anterior approach with complete reduction of the bilateral sacral fracture and the lumbosacral spine intrusion. We conclude that an anterior approach to this area gives good visualization, but is hazardous owing to the close proximity of the fractures to the central vessels and retroperitoneal muscles. A posterior approach gives less good visualization but may cause less hemorrhage.

Keywords : lumbosacral spine ; intrapelvic intrusion.
Mots-clés : colonne lombo-sacrée ; protrusion intrapelvienne.

INTRAPELVIC INTRUSION OF THE LUMBOSACRAL SPINE

A 34-year-old female with a history of psychiatric illness attempted suicide by jumping from a window 7 meters high and hit the ground on her lower back and side.

In the emergency room she was conscious and experienced extreme low back and pelvic pain. Blood pressure was 130/80 mm Hg ; thorax, abdomen and upper extremities were normal on physical examination, but neurological examination revealed signs of a cauda equina syndrome : absent anal sphincter reflex, hypesthesia and hypalgesia up to the L4-L5 dermatome, and absent

sensation and motor function in both lower extremities. The urine showed no signs of blood, and peritoneal lavage was negative. X ray examination revealed a nondislocated fracture of the 7th thoracic vertebra, a complex pelvic fracture with symphysiolysis and a left acetabular fracture in combination with bilateral comminuted sacral fractures and downward intrusion of the lumbosacral spine. The 4th lumbar vertebra was at the original level of the S-I joints (fig. 1a, b).

The patient was sedated, intubated and ventilated with positive end expiratory pressure (PEEP) as prophylaxis against an adult respiratory distress syndrome. Low hemoglobin concentration due to blood loss from the fractures was treated by transfusion.

Laparotomy with exploration of the lumbosacroiliac area was performed. Due to severe venous hemorrhage from fracture sites and an iatrogenic lesion of the left iliac vein the operation had to be terminated, and the fracture area was packed with gauze. The abdominal wall was closed with Teflon mesh. During the following days repeated laparotomies were performed to change the gauze packs.

On a second attempt, more than one week later, internal fixation of the fractures was successfully performed by an anterior approach (fig. 2). The bilateral sacral fracture and lumbosacral spine intrusion were completely reduced and fixed with combined screw and plate osteosyntheses. Intraoperatively the majority of the lumbosacral nerve

Department of Surgery, St. Elisabeth Hospital, P.O. Box 90151, 5000 LC Tilburg, The Netherlands.

Correspondence and reprints : Chr. van der Werken.

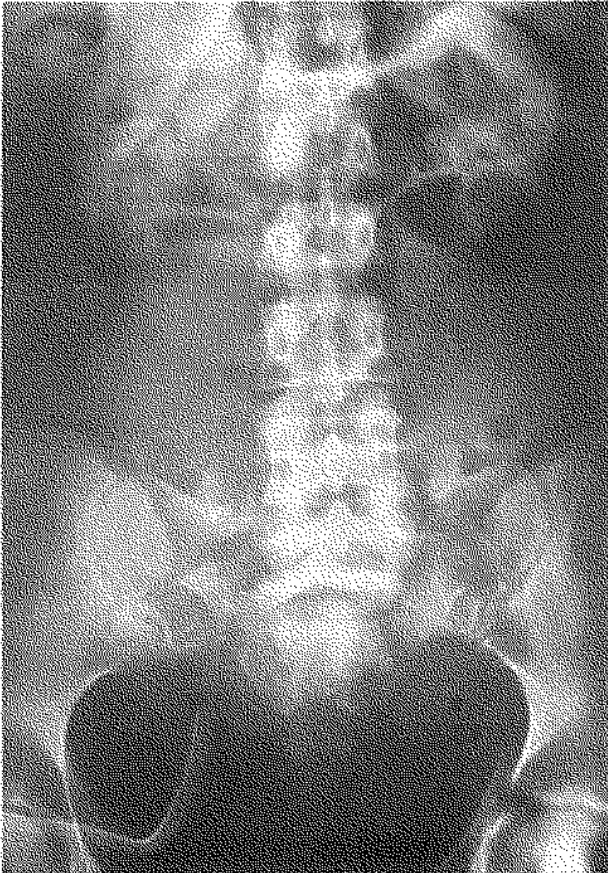


Fig. 1a. — Radiograph of lumbosacral spine. Note the intrusion into the pelvic ring.



Fig. 1b. — CT-scan illustrating that the 4th lumbar vertebra is at the level of the S-1 joint.

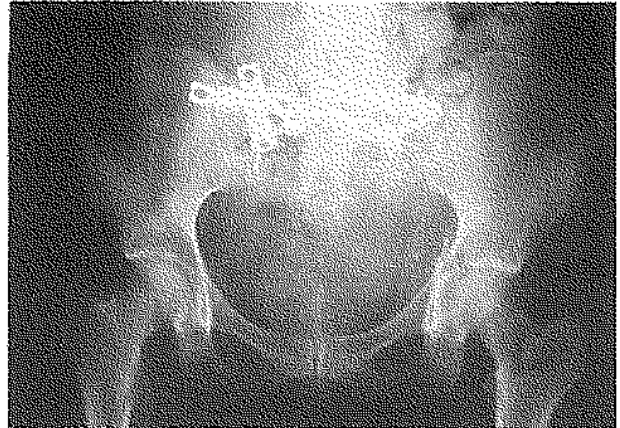


Fig. 2. — Radiograph of the affected area after reconstruction.

roots appeared to be divided or at least severely crushed. During this complex procedure a cell-saver autotransfusion device was used.

After this last operation the patient stayed on PEEP ventilation. She developed atelectasis of the lower lobe of the right lung and pneumonia with *Pseudomonas* species. After several days the lung problems resolved, and the patient was weaned from the ventilator.

Intensive physiotherapy was started, but as might be expected the paralysis remained complete. She was mobilized in a wheelchair and transferred to a psychiatric hospital after 8 weeks.

DISCUSSION

Complex pelvic fractures with lumbosacral intrusion are rarely mentioned in the literature. Torok (1) described two patients with intrapelvic intrusion of the sacrum combined with fractures of the pelvic ring. Both these patients were hit by a posterior-anterior force to the sacral area. Randall (2) described a patient with bilateral fracture-dislocation of the sacrum who had no associated pelvic or extrapelvic injuries and had unremarkable neurologic findings.

In our case there was complete loss of neurological function because of destruction of the nerve roots of the lumbosacral plexus at the level of the bilateral fracture running through the sacral foramina. The anterior approach was selected to

achieve good visualization of the fracture area in order to save as many damaged neural structures as possible. This approach is hazardous because of the close proximity of the fractures to the retroperitoneal muscles and central vessels, and in our case it resulted in severe intraoperative blood loss. Gauze packing and autotransfusion may be lifesaving in these particular cases.

It is likely that a posterior approach would have caused less hemorrhage, but the main disadvantages are inability to control the reduction and the considerable difficulty in providing sufficient stability by internal fixation and in visualizing the nerve roots.

The most important steps in treatment are shock management, intensive respiratory care and stabilization of the fractures.

LITERATURE

1. Torok G. Bilateral sacroiliac joint dislocation with intrapelvic intrusion of the intact lumbosacral spine and sacrum. *J. Trauma*, 1976, 11, 930-934.
2. Randall E., Hansen S. T. Bilateral fracture-dislocation of the sacrum. *J. Bone Joint Surg.*, 1984, 66-A, 1297-1299.

SAMENVATTING

CHR. VAN DER WERKEN en W. F. VAN TETS.
Intrapelvische intrusie van de lumbosacrale wervelkolom.

Een 34-jarige vrouw viel van een hoogte van 7 meter op haar rug en flank en liep daarbij een niet verplaatste fractuur in de 7de thoracale wervel op, evenals een complexe bekkenfractuur met symfyseolyse en een linkszijdige acetabulum fractuur. Tevens bestond er een bilaterale comminutieve sacrum fractuur met intrusie van

de lumbosacrale wervelkolom en een cauda equina syndroom als gevolg.

Laparotomie met exploratie van het lumbosacrale gebied moest voortijdig worden beëindigd vanwege ernstig bloedverlies. In tweede tijd werd osteosynthese verricht via een ventrale benadering waarbij het gelukte om de dislocaties en intrusie op te heffen.

Geconcludeerd moet worden dat een transabdominale toegang tot het lumbosacrale gebied weliswaar een goed overzicht geeft maar dat de risico's zeer hoog zijn vanwege de nauwe relatie tussen fractuurgebied enerzijds en centrale vaten en retroperitoneale musculatuur anderzijds. Een dorsale toegang biedt minder overzicht maar zal met minder bloedverlies gepaard gaan.

RÉSUMÉ

CHR. VAN DER WERKEN et W. F. VAN TETS.
Protrusion intrapelvienne de la colonne lombo-sacrée.

Chez une femme de 34 ans, la chute d'une hauteur de 7 mètres sur le dos et le côté provoqua une fracture sans déplacement de la 7^{ème} vertèbre dorsale ainsi qu'une fracture compliquée du bassin, avec disjonction de la symphyse pubienne et fracture du cotyle gauche. Une fracture comminutive bilatérale du sacrum y était associée, avec protrusion intra-pelvienne de la colonne lombo-sacrée et un syndrome de la queue de cheval. Une laparotomie avec exploration de la région lombo-sacrée dû être interrompue par suite d'une hémorragie grave. En un deuxième temps antérieur, la protrusion fut réduite et stabilisée par une ostéosynthèse. Les auteurs concluent que la voie antérieure donne une bonne exposition de la colonne lombo-sacrée, mais que les risques sont importants par suite de la proximité des gros vaisseaux et de la musculature rétro-péritonéale. Un abord dorsal donne un jour plus limité, mais une perte sanguine nettement moindre.