

ISOLATED SACRAL FRACTURE WITH NEUROLOGICAL COMPLICATION

BARTL V.¹, SKOTÁKOVÁ J.²

¹Department of Paediatric Surgery, Orthopaedics and Traumatology, Faculty Hospital, Faculty of Medicine, Masaryk University in Brno

²Department of Radiology, Faculty Hospital, Faculty of Medicine, Masaryk University, Brno

Received after revision September 2004

Abstract

Sacral fractures are rare injuries that are often neglected because of the severity of the patient's injuries. They are typical injuries in patients with polytrauma (11). The literature on isolated sacral fractures with complications is limited to a few case reports (5, 8, 10). Sacral fractures may be slightly more common than reported, but because they are well obscured by the bony pelvis and soft tissue shadows of the abdominal viscera, and because they are rarely displaced, they may be overlooked (2). These fractures are significant because they may impair the sacral nerves, resulting in loss of bladder and bowel function (5).

Key words

Sacral fracture, Neurological complications

CASE REPORT

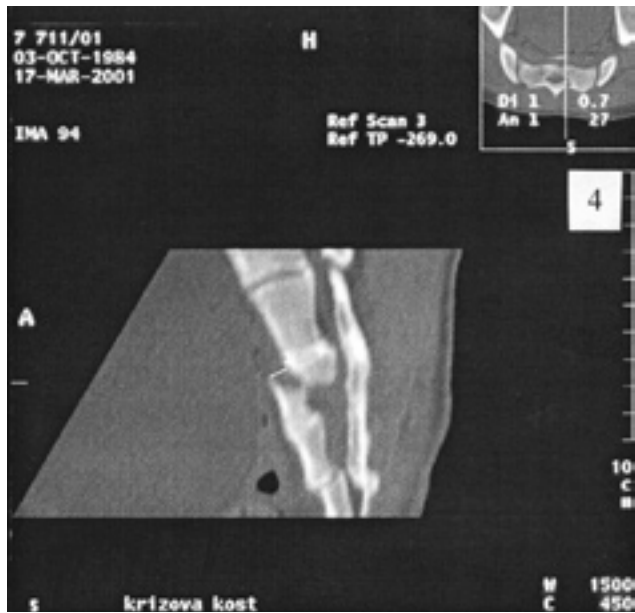
A 16-year-old snowboarder was catapulted into the air from a downhill run and he bumped orthogonally into a tree stump or stone. He was admitted to the surgical department in Bruneck (Italy) with an isolated sacral oblique fracture – dislocation of S3. The bone fragments were dislocated at 3/4 of the bone's latitude ventral, in the AP projection an axial dislocation of 30 degrees to the right side was described, in the lateral projection there was a disfiguration of the 5th segments of the sacral bone to the coccyx (Figs 1, 2). The patient was treated by bed rest for 4 days. Over the whole time he had a micturitional disturbance.

The patient was admitted to our department for persistent urological problems 10 days after injury. Ultrasonography showed about 120 ml of urinal residuum in the urinary bladder after urination. Computer tomography (Figs 3, 4) with 3D reconstruction (Fig. 5) was also done. In the neurological report there was only shown the above-mentioned micturitional disorder, otherwise the report was normal.

He was treated conservatively by bed rest, Baclofen, Biseptol (Co-trimoxazol), vitamins, and followed up by ultrasonography. His condition improved incrementally and he was dismissed after 7 days. He has been without any clinical neurological problems after 1 year. The sacral fracture is healed (Figs 6, 7).



Figs 1, 2
Isolated sacral fracture - dislocation of S 3



Figs 3, 4
Same case as Figs 1 and 2 - best visualized on CT

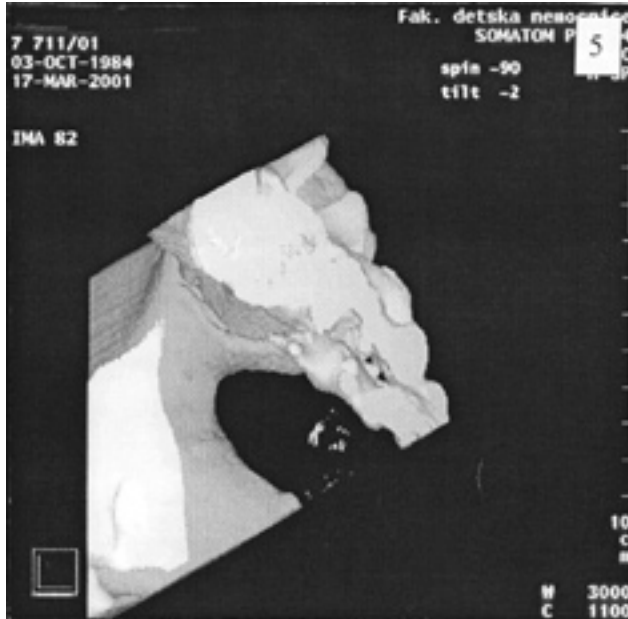


Fig. 5
Same case as Figs 1-4 - CT with 3D reconstruction

DISCUSSION

The most common cause of sacral injuries is falls from a height. Fatigue (stress) fractures of the sacrum in children are described by *Grier* (3) and *Rajah* (12) and in two adolescents by *Haasbeck* (6). The diagnosis of a sacral fracture is best made clinically. Pain and swelling may be present, most often over the lower portion of the sacrum. Rectal examination will cause pain anterior to the sacrum. Occasionally, the fracture fragment may be felt. Repeated bimanual rectal examination with attempts at reduction should be avoided because permanent reduction is rarely achieved and a tear in the rectum may occur (7).

Sacral fractures should be carefully monitored for neurological deficits - bladder or bowel dysfunction.

Radiographically, the fractures are difficult to see. Sacral fracture is a difficult diagnosis due to the lack of specific signs and the inaccuracy of conventional radiology (1). While some fractures may be oblique, most are transverse with minimal displacement and occur through the sacral foramen, which is the weakest portion of the body of the sacrum. One should look for minimal offset of the foramen or offset of the lateral edge of the sacral body. Lateral views are helpful only if there is anterior displacement, which is rare.



Figs 6, 7
Same patient - one year after injury

On a limited basis, radioisotopic bone scans at 48 hours following fracture have been helpful in making a diagnosis in nondisplaced fractures through the foramen (2).

Computer tomography is a more specific investigation which enables 3D reconstruction.

The stress fracture findings are described on magnetic resonance imaging after the CT scan and they showed a fracture line with a band of oedema. On spin echo (SE)T1 weighted images (T1W1), the hypointense signal of the oedema could mask a fracture line. On SE T2W1 the fracture line could be detected within the hyperintense oedema (3).

Likewise, the findings on magnetic resonance imaging may be nonspecific or confusing because changes in signal intensity in the marrow may not be sufficient to distinguish infection or malignancy from healing of the fracture (9).

Treatment in the child should consist of bed rest for 3 to 6 weeks and ambulation according to pain tolerance. Rectal manipulation of the fracture is generally not worthwhile and should be avoided (7).

Novkov (10) described successful treatment of a severe fracture dislocation of S1 in a 12-year-old boy with progressing neurological deficits by closed reduction under general anaesthesia followed by skeletal traction for 60 days.

SUMMARY

Isolated sacral fracture with neurological complications in children and adolescents are rarely described in literature.

The authors present a case of an isolated sacral fracture which a 16-year-old boy suffered after flying through the air on a downhill run while snowboarding. The fracture was complicated by difficulties during urination and a residuum in the urinary bladder; however, during conservative treatment (Baclofen, Co-trimoxazol, vitamins) the patient's condition improved.

In the discussion the authors present a summary of concurrent possibilities by means of diagnostics of sacral fractures both from clinical symptoms and also the possibility of radiological investigations, where computer tomography always plays an important role with its possibilities of 3D reconstruction.

It also gives opportunities for treatment at this age where, according to available literature, conservative treatment prevails.

Bartl V., Skotáková J.

IZOLOVANÁ ZLOMENINA KOSTI KŘÍŽOVÉ S UROLOGICKOU KOMPLIKACÍ

S o u h r n

Izolované zlomeniny kosti křížové a s nimi spojené urologické komplikace u dětí a adolescentů jsou v literatuře popisovány velmi vzácně.

Autoři uvádějí případ izolované dislokované zlomeniny Kosti křížové, kterou utrpěl šestnáctiletý chlapec při pádu na snowboardu. Zlomenina byla komplikována potížemi při močení a residuem v močovém měchýři, avšak při konzervativní léčbě (Baclofen, Co-trimoxazol) se stav upravil.

V diskusi uvádějí autoři souhrn současných možností diagnostiky zlomenin křížové kosti jak z klinických příznaků, tak i možností radiologických vyšetření, kde zaujímá stále důležitou roli počítačová tomografie s možností prostorové rekonstrukce.

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