Eur Spine J (2007) 16 (Suppl 3):S316–S317
DOI 10.1007/s00586-007-0396-9

CASE REPORT

Acute L5 pedicle fracture and contralateral spondylolysis in a 12-year-old boy: a case report

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Received: 10 December 2005 / Revised: 13 March 2007 / Accepted: 24 April 2007 / Published online: 23 May 2007

Abstract Acute unilateral L5 pedicle fracture associated with a pre-existing contralateral spondylolysis is a rare lesion. We report a case in a non-competitive 12-year-old boy. We present the clinical, radiological and specific management of this rare condition. The clinical and radiological draft of this patient was reviewed. The follow-up was 30 months after fracture healing. Some cases reported in the literature were analyzed and our clinical findings and therapeutic strategy was compared and discussed. Non-operative treatment was done including full-time bracing in a modified Boston brace incorporating one thigh for 3 months. Plain radiographs and computed tomographic (CT)-scan performed at 3 and 6 months showed progressive healing of the pedicle fracture and no modification of the contralateral isthmic spondylolytic lesion. At final follow-up, the patient was asymptomatic and resumed all his activities. In skeletally immature patients, we think that conservative treatment should be considered as a treatment option for this unusual injury.

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Keywords Spondylolysis · L5 pedicular fracture · Conservative treatment

Introduction

Stress fracture of the vertebral pedicle in the lumbar spine associated with contralateral spondylolysis are already described in the literature [1–8, 10], especially in competitive sport patients. This lesion has not been described previously during childhood. We report a case of acute unilateral L5 pedicle fracture associated with a pre-existing contralateral spondylolysis in a non-competitive sport 12-year-old boy and propose an effective method of conservative treatment.

Case report

A 12-year-old boy with no previous history of low back pain presented with an acute and severe low back pain after a fall during playing activities. The pain was exacerbated by movement. There were no associated radicular symptoms. Physical examination was notable for tenderness to palpation over the lumbosacral spine and increased pain with lumbar extension or rotational movements.

Plain radiographs were consistent with L5 spondylolysis. A left L5 spondylolysis was confirmed by computed tomographic (CT) scan. The CT scan showed a contralateral non-displaced L5 pedicle fracture. Bone scan revealed a right sided increased activity in the posterior elements of L5.

The patient was immobilized in a modified Boston brace incorporating right thigh for 3 months. Plain radiographs and CT-scan performed at 3 and 6 months showed pro-

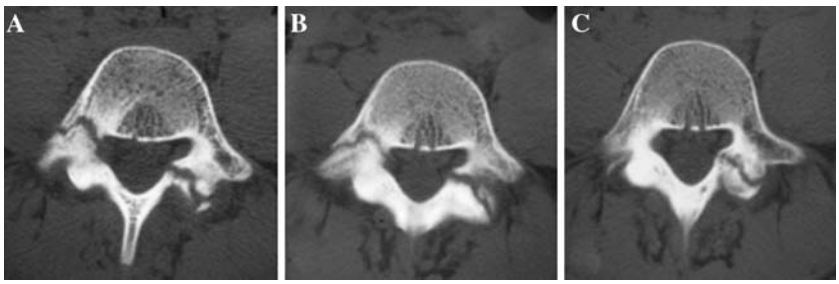

Fig. 1 Axial CT scan showed the unilateral L5 left spondylolysis associated with a non-displaced L5 right pedicle fracture **a**. CT-scan performed 3 months **b** and 6 months **c** after initial trauma showed complete fracture healing and no modification of the spondylolysis

gressive healing of the pedicle fracture and no modification of the contralateral isthmic spondylolytic lesion (Fig. 1).

A complete pain relief was obtained 3 weeks after the beginning of conservative treatment. The patient was allowed to resume all his activities after 6 months. On follow-up assessment at 30 months, the patient was back to full activities, including sportive activities at school. He had no residual low back pain. Plain radiographs showed no radiographic evidence of L5 anterior slipping.

Discussion

Unilateral spondylolysis associated with sclerosis and hypertrophy of the contralateral side of the neural arch is well described in the literature [1–8, 10]. Pedicle fractures also occurred following contralateral isthmic spondylolysis, secondary to a weakening of the neural arch with resulting increased stress across the contralateral pedicle [1, 2, 4]. Unilateral spondylolysis associated with pedicular fracture has been described in competitive sport patients [2, 5, 10]. To explain pedicular fracture, authors usually insist on the asymmetric character of sports activities, requiring rotary movements. In the current case, the L5 pedicle fracture seemed to be the consequence of an acute trauma. The different steps of bone healing was clearly shown on CT-scan (Fig. 1) which is for us the best way to study the pedicle lesion. Asymmetrical patterns are frequent in traumatic lesions of the lumbosacral junction. However, such lesions usually occur after severe trauma and could be responsible for L5S1 disc lesions and moderate L5 anterior slipping [9]. This was not the case in our patient who presented with a non-displaced unilateral fracture and no L5 slipping. This is the reason while we proposed a conservative treatment. In most published cases, patients have undergone surgery either immediately or after an immobilization failure [10]. Despite the case of a spontaneous healing of the pedicle fracture without immobilization in a young gymnast female reported by Guillodo et al. [5], we stress the importance of an effective lumbosacral junction immobilization, by means of a modified brace incorporating one thigh, to avoid L5 pedicle non union. We think that, especially in young patients before skeletal maturity, conservative treatment should be considered as a treatment option for this unusual injury.

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