CASE REPORT

Simultaneous bilateral avulsion fracture of the anterior superior iliac spine in a young athlete

V. Havlas a, b, * , R.S. Gaheer a , T. Trc b , F. Anwar a

 a Department of Orthopaedics and Trauma, Dumfries and Galloway Royal Infirmary, Dumfries, UK
 b Department of Orthopaedic Surgery, 2nd Medical School, Charles University in Prague, Czech Republic

Accepted 10 January 2007

Case report

A 16-year-old boy was running a 100 m sprint. About 40 m from the starting line, he felt a sharp snap in his right groin with moderate sudden pain. As he decelerated, there was similar snap with sudden pain in the left groin. He collapsed to the ground with moderate pain over both the groins. He was unable to get up from the ground and had to be carried off on a stretcher.

On arrival in the emergency department by ambulance about an hour from the time of injury, the pain was still localised to both the groins and had somewhat subsided with analgesics. On examination, he was of moderate build with good muscular tone. His height was 178 cm and weight 72 kg. He had no obvious bruising or swelling. There was no deformity of the lower limbs, with both being held in neutral rotation. He was tender anteriorly over the hip and the anterior aspect of the iliac crest on both sides. Both hips were held in about 20° of flexion with the knees flexed to about 30°. He was unable to straighten his leg. Rotational movements were not possible. Distal sensation and circulation were normal.

A radiograph of the pelvis was performed which showed bilateral avulsion of the anterior superior iliac spine (ASIS) with almost symmetrical caudal displacement of the avulsed bony fragment on both the sides by about 2 cm (Figs. 1–3). This was confirmed on MRI scan.

Full bone profile laboratory tests, full blood count, full biochemistry tests as well as growth and thyroid hormone levels were all normal.

He was treated with analgesia and full bed rest in a semi-flexed hip position in 45–90° flexion for the first 2 weeks. A check X-ray at 2 weeks showed initial signs of callus formation and he was started on a course of gradual physiotherapy with increasing hip extension gaining full weight bearing training by 4 weeks and full ROM at 6 weeks (Figs. 4 and 5). He was kept on crutches until he regained full ROM in both hips at 4 weeks, and he returned to full sports activities and was free from pain by 10 weeks after the injury. Radiographs at 3 months showed both fractures were fully healed (Figs. 6–8).

Discussion

Avulsion fracture of the ASIS is an uncommon injury, accounting for only 1.4% of injuries to the hip and pelvis. It is mostly seen in adolescent competitive
athletes, usually sprinters, distance runners and soccer players, more commonly in boys (13:1). In the skeletally immature adolescent athlete, the physis is the weakest component of the muscle–tendon–bone complex, and the powerful muscular contraction that occurs in sports such as sprinting, soccer or gymnastics can result in avulsion of the apophysis when the sartorius and tensor fascia lata muscles are strongly and suddenly contracted against a hyperextended trunk. Such an avulsion is a Salter–Harris type 1 fracture. The avulsed fragment is usually displaced caudally and laterally. Because of this displacement, these lesions can be mistaken for a fracture of the anterior inferior iliac spine. There has been no report of significant laboratory changes in young athletes with ASIS avulsion in the English literature.

Most cases of ASIS avulsions are unilateral. Bilateral sequential avulsions have been described in the same patient, but there has been no report of a simultaneous bilateral avulsion fracture of the ASIS in the English literature.

Avulsion fractures of the ASIS without neurological symptoms can be treated non-operatively. Sometimes the displaced fragment can cause traction or compression of the lateral femoral cutaneous nerve causing meralgia parasthetica.

These lesions need surgical intervention. Open reduction and internal fixation is also recommended when the fragment is displaced more than 3 cm. One of the authors has treated eight adolescent patients with unilateral ASIS avulsion over the last 6 years. Seven cases were successfully treated non-operatively, but in one patient ORIF was performed because of fragment displacement over 3 cm. None of our patients had any nerve symptoms.
Non-operative treatment has traditionally been 2–3 weeks of limitation of activities and walking with partial weight bearing using crutches. We emphasise the importance of treating them with a strict graded physiotherapy regimen for optimum return to full weight bearing 6 weeks after initial injury and full sports activities in less than 3 months.
Summary

In this rare case of simultaneous bilateral avulsion fracture of the anterior superior iliac spines, we achieved very good results with full recovery using conservative treatment with a period of bed rest followed by gradual physiotherapy. The patient returned to full sporting activities less than 3 months from the original injury. Surgery is only indicated in significant displacement and for any concomitant neurological symptoms, even in a bilateral simultaneous injury.

References