A patient is described with a ligamentous disruption at the L4/L5 level in association with bilateral, traumatic dislocations of the hip. The diagnostic evaluation, acute intervention, and definitive stabilisation are reported. The unstable spine posed a problem in treatment with regard to the timing and technique of the reduction of the hips.

Case Report

A 27-year-old female pedestrian was struck by a motor vehicle first in the forward direction and then again by the same vehicle in reverse. When first seen she was awake and following commands. She complained of pain in both hips and in the pelvis. She lay supine on a backboard with the right hip extended, abducted and in neutral rotation. The left hip was extended, abducted, and externally rotated. The range of movement of both lower limbs was limited by pain. Neurological examination was consistent with a right L5 radiculopathy with weakness of the extensor hallucis longus (EHL) of MRC grade IV and paraesthesia of the first web space. The pelvis was grossly stable to internal and external rotational stress applied to the anterior superior iliac spines. Spinal palpation revealed tenderness in the lumbar region with no palpable deformity. The initial radiographs showed an anterior dislocation of the left hip, a right acetabular fracture with superior dislocation of the hip (Thompson and Epstein modification IC)\(^7,8\) and malalignment of the L4 and L5 spinous processes and pedicles (Fig. 1). Before attempted reduction of the hips the patient had further films of the lumbosacral spine. Radiographs showed widening of the interspinous distance of L4/L5. There was no fracture evident on any of the plain radiographs. CT of the lumbosacral spine and pelvis showed widening of the facet joints at L4/L5 (Fig. 2).

We performed closed reduction on each hip with manual pelvic stabilisation maintained by two assistants. The patient was sedated so that she was comfortable, but responsive.

MRI of the lumbar spine showed ligamentous disruption of the posterior elements of L4/L5 as well as a right-sided herniated disc. The L4/L5 disc had an enhanced signal throughout on sagittal T1 images, consistent with internal disruption of the annulus.

An open reduction and internal fixation of the acetabulum was then undertaken through an ilioinguinal approach. Postoperatively, there was no change in her neurological status. A posterior approach to the spine was performed. Intraoperative findings showed complete ligamentous disruption of the facet joints and interspinous ligaments as well as a herniated nucleus pulposus causing...
compression of the L5 nerve root. The L4/L5 level was fused with instrumentation.

Postoperatively, the patient’s radiculopathy resolved and the EHL motor strength improved. She was transferred to a rehabilitation centre.

Discussion

Dislocations of the hip and their management were reported as early as the late 1800s and associated avascular necrosis has been recognised since the early 1930s. The incidence of avascular necrosis following dislocation of the hip varies from 6% to more than 40% and may be related to the time for which the femoral head remains dislocated. It is thought to be secondary to ischaemia caused by damage to the vessels of the ligamentum teres and retinaculum of Weithrecht, in combination with molecular damage to the femoral head caused by the initial trauma. Traditionally, treatment based on Thompson and Epstein’s classification has been immediate closed reduction, although various authors have advocated an early open technique. Open reduction is generally reserved for cases of unsuccessful closed reduction, fragments trapped in the joint after reduction, or associated fractures of the femoral neck.

Lumbosacral fracture-dislocation is a rare injury resulting from major trauma. Herron and Williams, in a review of 17 patients, described the mechanism of the injury as hyperflexion and rotation. When present, neurological findings are usually incomplete and unilateral. Approximately 50% of the patients have associated major injuries. Holdsworth developed a classification system based on over 1000 patients. He described one mechanism of injury as flexion-rotation, which resulted in rotational fracture-dislocation. This was characterised as the most unstable of spinal injuries, being most common in the thoracolumbar and lumbar spine, and reduction was often achieved by merely placing the patient in the supine position. Radiological findings include separation of the spinous processes and lateral shift of the articular processes. The minimal displacement seen gives the false impression of stability. Das De and McCreath described four patients with this injury. They advocated open reduction with fusion because of the instability of the injury. In their experience the deformity increased if fusion was not performed at the time of reduction. Lee et al presented a fracture-dislocation of L5/S1 in which spontaneous reduction occurred while positioning the patient on the X-ray table. The same patient refused operative stabilisation and was readmitted within two months for radicular symptoms in the L5 and S1 roots. Decompression was undertaken without fusion and at the last follow-up a 20% olisthesis was present. Damage to the disc is a central feature of this injury and exploration of the canal is essential. Decompressive laminectomy alone should be avoided because it further destabilises the spine. Other authors have reported cases of lumbar fracture-dislocation and have reviewed the literature. They concluded that the injury is unstable and requires open reduction and fusion of the involved motion segment.

In our case the treating surgeons were presented with an unusual combination of problems, which required con-
sideration before treatment was begun. Both hips could be successfully reduced closed without compromising the spinal injury. This simplified management and allowed sequential treatment of the injuries. In retrospect, the use of a pelvic external fixator would have allowed improved manual control of the pelvis during reduction of the hip and general anaesthesia would have aided the reduction. The reduction was successful under sedation, however, and allowed continuous monitoring of the neurological status throughout the procedure.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

References