FRACTURE OF THE NECK OF THE FEMUR ASSOCIATED WITH POSTERIOR DISLOCATION OF THE HIP

H. J. KLASEN, B. BINNENDIJK

From the University Hospital, Groningen

Two patients are described, each with a fracture-dislocation of the hip combined with a fracture of the neck of the same femur. Open reduction combined with internal fixation was performed in both cases. Eight years later one patient had developed avascular necrosis of the femoral head; no signs of avascular necrosis or associated arthritis have appeared in the other patient after four years. A plea is made for considering this more conservative type of operation for these serious injuries before resorting to total hip replacement.

Posterior dislocation of the hip is not uncommon in car accidents where, because of the direction of impact, the dislocation is often associated with an acetabular fracture. The combination of a posterior fracture-dislocation of the hip and a fractured neck of the femur is, however, rare and only a few reports have appeared in the literature (Fernandes 1980; Meller, Tennenbaum and Torok 1982). We therefore report our experience with two patients who were treated for this combined injury at the Department of Traumatology, University Hospital, Groningen.

CASE REPORTS

Case 1. A 19-year-old man was admitted to the Department of Traumatology in July 1971, having been involved in an accident one hour before. He had been riding his motorcycle when he was overtaken by a car which forced him off the road and over a fence. On examination he was unable to move his right leg which was 2 cm shorter than the left and was rotated laterally. Radiographs showed a fractured neck of femur, an acetabular fracture and a dislocated hip on the right side (Fig. 1). He also had multiple metatarsal fractures of his right foot.

A few hours after admission the femoral neck fracture was reduced and fixed with two crossed vitallium screws. The trochanteric crest was used as a pedicled bone graft employing Judet's technique; the bony arch which extended into the head of the femur was fixed with a vitallium staple. The ligamentum teres was found to have avulsed a bony fragment from the femoral head and both the ligament and the fragment were excised; there was no bleeding while this was being done. The roof of the acetabulum showed multiple fractures with loose fragments of cartilage. There was also a fracture of the posterior wall of the acetabulum which was fixed with a screw. After operation the patient was treated for three months on suspended traction.

After six months no fracture could be seen on the radiograph and he was gradually mobilised with increasing amounts of weight-bearing. One year after operation he could walk without crutches and had no complaints. In October 1972 he was able to carry out his work as a lorry driver without problems and took part in sports such as motorcycle racing on grass. However, examination of his hip showed that there was slight restriction of flexion and of medial and lateral rotation. Radiographs

Fig. 1

Case 1. Radiograph of the right hip showing dislocation combined with a fractured neck of femur and an acetabular fracture.
showed no evidence of avascular necrosis (Figs 2 and 3).

In March 1973, nearly two years after the accident, he still had no complaints even though his hip movements were more restricted and there was 4.5 cm of wasting of the right quadriceps.

In May 1974, almost three years after the injury, the staple and screws were removed, as the femoral head showed signs of avascular necrosis and the screws had protruded through it. In 1976 he developed increasingly severe pain which was present both day and night. Flexion and extension of the hip were almost normal but rotation was virtually nil. In early 1979 his symptoms increased still further; there was obvious osteoarthritis of the hip and he was no longer able to do his job (Figs 4 and 5).

In June 1980 he had a double cup arthroplasty performed at another hospital and was still free of symptoms a year and a half later.

Case 2. In November 1977 a 41-year-old man drove his car into a lorry. He was referred from another hospital to our department for treatment of his serious multiple injuries. Radiographs showed a displaced fracture of the neck of the left femur and a fracture-dislocation of the same hip with fractures of the posterior acetabular wall and the base of the acetabulum (Figs 6 and 7). He also had a displaced and unstable subcapital fracture of the humerus, a thoracic injury associated with a fractured clavicle, fractured ribs, and contusion of the lung.

The hip was operated upon approximately 10 hours after the injury. The capsule appeared intact and the
lateral rotators were not torn. The femoral neck fracture was reduced with much difficulty and stabilised using two screws. Reduction of the hip joint was then performed; the acetabular fragments were manipulated and fixed by three lag screws. He was treated on suspended traction for 12 weeks after operation.

Radiographic examination, 12 weeks after operation, appeared to show union of both the neck and the acetabular fractures (Figs 8 and 9). The patient was then mobilised, beginning with partial weight-bearing. Nine months after the injury he resumed his work as a veterinary surgeon. At this time his hip movements were almost normal.

In November 1978, one year after the accident, the screws in the femur were removed. Radiographs taken in June 1979 showed a mild degree of periarticular calcification.

The most recent examination took place in August 1981. He was by then able to do his former work almost normally and had hardly any problems from his hip. Only heavy lifting and strenuous work proved trouble-
some and when walking for a great distance he developed a somewhat tired and painful feeling in the left hip. He had no muscle wasting and a normal gait, but movements of the left hip were slightly limited in all directions. Radiographs showed minor irregularities of the head of the femur. There were no signs of avascular necrosis and no arthritic changes (Figs 10 and 11).

DISCUSSION

Both our patients had been subjected to considerable force and, in addition to their hip injuries, had others of less importance. In both patients the seriousness of the injury was quickly recognised and open reduction and internal fixation was performed within 10 hours of the injury.

According to Fernandes (1980) the dislocation, caused by a longitudinal compression force combined with adduction, is the first incident in this combined type of hip injury. If the longitudinal forces are stronger than the adduction forces then an acetabular fracture is produced. The head of the femur is then fixed by the tight peristeum of the ilium, and further adduction causes the fracture of the femoral neck.

Meller et al. (1982) believed that there was a “coup” and “contrecoup” effect in the production of the femoral neck fracture. The classical dislocation mechanism occurs first and is then followed by an additional laterally applied force.

In Case 1 the pedicle flap advised by Judet (1962) was used as it was realised that the blood supply of the head of the femur had been completely disrupted and necrosis was inevitable. This technique has now been abandoned in our clinic because, although union is achieved, avascular necrosis is not prevented.

Because of the site of the femoral neck fracture in Case 2 the circulation to the head of the femur remained intact (Trueta and Harrison 1953; Sevitt and Thompson 1965) and the prognosis was much better. No signs of avascular necrosis have so far appeared in this patient.

However tempting it may be to use an endoprosthesis or even to perform a total hip replacement initially in young patients with these serious injuries, it still appears advisable (if the general condition permits) to perform less radical operative treatment; a primary open reduction and internal fixation restores the anatomical relationship and establishes a favourable situation in which a total hip replacement can, if necessary, be performed later.

REFERENCES


