LATE SUPERIOR GLUTEAL NERVE PALSY FOLLOWING POSTERIOR FRACTURE-DISLOCATION OF THE HIP

A. GÜLEÇ, O. BÜYÜKBEBECI

An unusual case of late superior gluteal nerve palsy complicating posterior fracture-dislocation of the hip is reported. Posterior fracture-dislocation of the hip was Grade V according to the classification of Thompson and Epstein, and Type IV according to the subclassification of Pipkin. The palsy resulted from traction by scar tissue formation. Excision of the scar tissue and decompression of the superior gluteal nerve led to complete recovery.

Keywords : hip ; fracture-dislocation ; nerve compression.
Mots-clés : hanche ; fracture-luxation ; compression nerveuse.

Posterior dislocations of the hip, with or without an associated acetabular or femoral head fracture, are becoming more frequent owing to the increasing incidence of high-energy trauma (4). It is a major injury because the forces necessary to cause it are considerable. Associated life-threatening injuries are common and their recognition is essential (2).

Associated musculoskeletal injuries are also common, such as femoral head fractures, femoral shaft fractures and injuries to the ligaments of the ipsilateral knee (4). In addition to the obvious disruption of the femoral head-acetabular relationship noted on x ray, there is often significant associated local soft tissue injury. The latter may involve juxta-articular muscle tissue, joint capsule, ligamentous structures, cartilaginous labrum, vessels and nerve tissue. The sciatic nerve, most commonly the peroneal component, is frequently injured in dislocations or fracture-dislocations about the hip (4). Epstein (2), and Stewart *et al.* (5) note this complication in 8% to 19% of patients, and it is more common in fracture-dislocations (Thompson and Epstein types II to V). Late sciatic nerve palsy has also been reported secondary to scar formation during healing and secondary to ectopic bone formation (1, 3). No published reports have been found of superior gluteal nerve dysfunction due to traction by scar formation. We report such a case.

CASE REPORT

A 41-year-old man, who was intoxicated, sustained multiple injuries when the truck in which he was a passenger in the front seat was involved in an accident. He was not wearing a seat belt.

Clinical examination at the time of admission to the medical center less than an hour later showed that the right hip was held immobile in the typical position of flexion, adduction, and internal rotation. There was also deformity of left wrist, swelling of right ankle and dyspnea. A neurologic examination of the lower extremities revealed no evidence of motor or sensory loss along the sciatic nerve distribution. Roentgenograms demonstrated a left pneumothorax, a Colles fracture of the left radius, a right bimalleolar fracture, and a posterior fracture-dislocation of the right femoral head (fig. 1). Fracture of the femoral head was cephalad to the fovea centralis with an associated nondisplaced fracture of the acetabulum (Pipkin Type IV).

The dislocation was reduced without difficulty with the patient under general anesthesia, within

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Fig. 1. — Anteroposterior radiograph of the right hip.

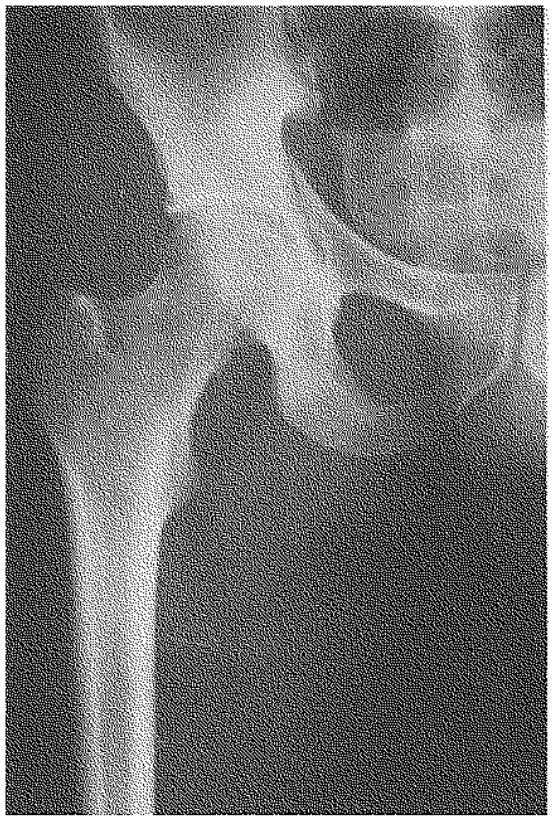

Fig. 2. — Postreduction radiograph.

2 hours of trauma. The hip was flexed to a right angle and then the femoral head was gently lifted into the acetabulum. A subsequent radiograph showed a satisfactory reduction (fig. 2). The Colles fracture of the left radius was manipulated and then it was immobilized in a short-arm cast. Open reduction and internal fixation was performed for the ankle fracture. The pneumothorax was treated by insertion of a chest tube. The extremity was then immobilized in Russell's traction for 6 weeks. Postreduction roentgenograms and tomograms demonstrated that the femoral head fracture and acetabular fracture were aligned satisfactorily. At the end of the 6 weeks, the traction was discontinued, and the left arm cast and right leg cast were removed.

Active hip abduction, adduction, and flexion movements were begun immediately. He remained free in bed one week after the traction had been discontinued and was then allowed to walk with crutches. Weight-bearing was not permitted on the affected right limb. Active motion of right hip, right ankle and left wrist was continued. One month later the range of motion of the hip, ankle and wrist were nearly normal, and partial weight-bearing was started. Three months after the accident the patient was bearing full weight on the affected limb without a limp and the Trendelenburg test was negative.

One week later, the patient started complaining of weakness in the hip region and tingling in right toes, and within 2 weeks he had obvious weakness of hip abduction. He was able to walk with a limp and the Trendelenburg test was positive for the affected hip. The patient showed no evidence of sciatic nerve dysfunction except tingling in the

right toes. Electromyography revealed denervation potentials in the gluteus medius muscle. Electromyography findings in the gluteus maximus, tibialis anterior and gastrocnemius muscles were normal.

At operation the hip was approached posteriorly with an inverted L-shaped incision. The incision was begun at the posterosuperior iliac spine and was carried diagonally distally and laterally in the direction of the fibers of the gluteus maximus. The proximal part of the incision was deepened through the gluteal fascia, and fibers of the gluteus maximus muscle were separated. Extensive scar tissue was encountered beneath the gluteus maximus, and the superior gluteal nerve could not be identified. To expose the proximal part of the nerve as it emerges from the sciatic notch, the piriformis was detached from its femoral insertion and retracted medially and a part of the sacrum was removed with a rongeur. Electric stimulation of this portion of the nerve yielded no response in the gluteus medius. When the course of the nerve was followed distally, it was seen to disappear within extensive scar tissue. Exploration of the region revealed the superior gluteal nerve entrapped in and pulled by a mass of scar tissue in the region of the piriformis muscle. The superior gluteal nerve ran on the ventral surface of the piriformis. This was considered as a normal variation. Satisfactory neurolysis was obtained by total excision of this mass, which was diagnosed histologically as fibrous tissue. During the next 3 months there was complete return of power of the gluteus medius. The patient was able to walk without a limp, and the Trendelenburg test was negative.

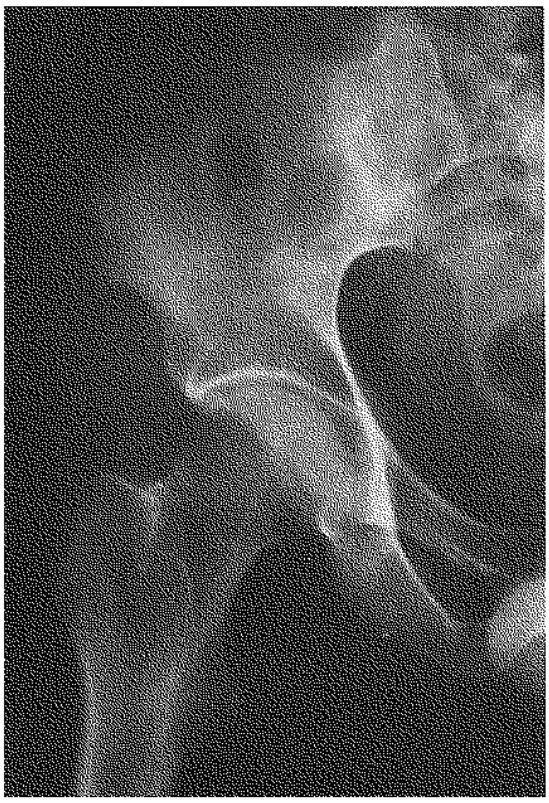

Fig. 3. — Radiographs 2 years postoperatively.

Twenty-four months after the accident he denied having any symptoms in the right hip and he had a normal gait. Roentgenograms showed no evidence of avascular necrosis of the femoral head or degenerative arthritis of the hip joint (fig. 3).

DISCUSSION

Type V fracture-dislocation that is associated with a fracture of the femoral head was once thought to be an uncommon injury. However over the past decade, with the increasing incidence of motor vehicle accidents, this injury has become more common (4).

Sciatic nerve palsy resulting from posterior dislocation of the hip is a well-known complication, varying in incidence from 8% to 19% (5). From our experience and from a review of the literature the case presented here appears unique. This case demonstrates that superior gluteal nerve palsy can occur during the dislocation but also later during the healing period. Other nerves such as the inferior gluteal nerve are also vulnerable. Careful evaluation of strength of the hip abductors, extensors, and external rotators should be performed as soon as feasible. For questionable cases, electromyography of these muscles, as well as of the other muscles, may be used after the 2 or 3 weeks required for denervation potentials to appear.

Another point is that the patient described in this report is an example of successful conservative treatment of a femoral head fracture occurring cephalad to the fovea ; that is, the ligamentum teres was still attached to the lesser fragment.

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SAMENVATTING

A. GÜLEÇ, O. BÜYÜKBEBECI. Laattijdige paralyse van de nervus glutealis superior na posteriore fractuur-luxatie van de heup.

De auteurs rapporteren een zeldzaam geval van laattijdige paralyse van de nervus gluteus superior na posteriore fraktuur-luxatie van de heup. Het ging om een fraktuur-luxatie graad V, volgens de classificatie van Thompson en Epstein, en type IV volgens de subclassificatie van Pipkin. De paralyse was veroorzaakt door littekenweefselvorming. Excisie van het littekenweefsel en decompressie van de nervus gluteus superior had een volledige recuperatie voor gevolg.

RÉSUMÉ

A. GÜLEÇ, O. BÜYÜKBEBECI. Paralysie tardive du nerf fessier supérieur après fracture-luxation postérieure de la hanche.

Un cas rare de paralysie tardive du nerf fessier supérieur après une fracture-luxation postérieure de la hanche est rapporté. La lésion était de type V selon la classification de Thompson/Epstein et de type IV dans la sous-classification de Pipkin. La cause de la paralysie a été la traction exercée sur le nerf par un tissu de cicatrisation formé après le traumatisme. La décompression du nerf et l'excision du tissu de cicatrisation ont amené la guérison complète.