CASE REPORT

Intertrochanteric fracture of an arthrodesed hip

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We report the case of a 74-year-old woman who sustained an intertrochanteric fracture of the femoral neck in a previously arthrodesed hip. The hip arthrodesis had been performed 53 years earlier to treat septic arthritis. The fracture was treated successfully using a double-plating technique with 4.5 mm titanium reconstruction plates.

Arthrodesis of the hip is an option for the treatment of damaged and painful hips in selected cases. Total hip replacement (THR) has become the treatment of choice for most chronic hip conditions and the indications for arthrodesis are few. They include isolated arthritis of the hip in young patients engaged in manual work, or those with severe muscular deficits. Arthrodesis of the hip is more often performed in the developing world, especially in young patients with septic arthritis. The most effective technique for obtaining a stable hip arthrodesis is a topic of debate. Several surgical procedures with varying rates of success have been described including the use of plates and screws, intramedullary nails and external fixators.

Only one case of a fracture of the proximal femoral neck in a previously arthrodesed hip has been reported. Wulke, Mader and Pennig reported a case of fracture of the femoral neck in a patient who had a hip arthrodesis 51 years earlier. The fracture was at the base of the femoral head. It was successfully treated by a short supracondylar intramedullary locked nail inserted through the subtrochanteric area into the ilium. Wong and Rikhraj reported two cases of femoral shaft fracture in patients with an arthrodesis of the hip. No case of an intertrochanteric fracture in a previously arthrodesed hip has been described.

Case report

A 74-year-old woman was referred after a fall. Plain radiographs showed an intertrochanteric fracture of the right proximal femur (Fig. 1). She had undergone an ipsilateral hip arthrodesis 53 years earlier after septic arthritis. The arthrodesis had been performed using screws, bone autograft and a hip spica cast for two months. The screws were removed three years later and there had been no further symptoms from the right hip. She had no significant health problems. She had not had any symptoms from the ipsilateral knee or lumbosacral spine. Despite a leg-length discrepancy of 4 cm and the need for a shoe raise, she had had no difficulty in walking.

CT of the pelvis was performed to define the nature of the fracture and the state of the surrounding muscles. This showed a complete intertrochanteric fracture (Fig. 2) and poor condition of the gluteus muscles with marked atrophy. The hip arthrodesis was sound, and the femoral neck shaft angle was 165°.

The patient refused conversion of the arthrodesis to a THR and therefore open reduction and internal fixation was performed using 4.5 mm DCP-LCP titanium reconstruction plates (Synthes Ltd., Solothurn, Switzerland). The first plate (10 holes) was contoured and fixed to the anterior aspect of the femoral neck and the anterior column of the acetabulum. The second plate (9 holes) was fixed to the lateral part of the greater trochanter and the superior aspect of the acetabulum slightly anterior to the remaining gluteal muscles (Fig. 3).

Partial weight-bearing was allowed postoperatively. She was discharged home on the eighth post-operative day. During the first month after surgery, she used a walking frame. Full weight-bearing was allowed at seven weeks and at the latest follow-up, 19 months after the operation, the fracture had united and she was satisfied with the outcome.
Discussion

The indications for arthrodesis of the hip are limited. Increasingly, isolated arthritis of the hip in young manual workers is the major indication. In most other conditions, THR is the treatment of choice.

Hip arthrodesis can cause ipsilateral knee and lumbosacral spinal problems and may require conversion to THR which can be technically demanding. Surgeons undertaking conversion should be familiar with the techniques of arthrodesis and should consider many factors including leg-length discrepancy, the position of the hip after arthrodesis and the status of the gluteal muscles. The degree of atrophy of the hip muscles is critical and can contribute to failure of the replacement. THR after arthrodesis is associated with a higher rate of complications and should be considered only in selected cases. Panagiotopoulos et al acknowledged that the results were worse in conversion of a hip arthrodesis to THR compared with traditional hip replacement.

Our patient had undergone an arthrodesis 53 years before sustaining an intertrochanteric fracture. CT showed marked atrophy of the hip musculature. Before her fracture, she had not experienced any problems associated with the arthrodesis and was not willing to accept the risks associated with a conversion to a THR. Options for treatment included the use of a gamma nail, dynamic hip screw or reconstruction plates. Because of the very high femoral neck-shaft-angle (165°) it was considered that secure fixation using either a dynamic hip screw or gamma nail with a much lower plate/nail screw angle, would not be possible. Furthermore, fixation to the pelvis could not be achieved with these implants. As a result, reconstruction plates and screws were used. These offered the advantage of extending the fixation to the pelvis above the site of the arthrodesis. In addition, double plating made early mobilisation and partial weight-bearing possible.
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References