Case report

COMPRESSION OF THE SCIATIC NERVE BY WEAR DEBRIS FOLLOWING TOTAL HIP REPLACEMENT: A REPORT OF THREE CASES

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Pain in the distribution of the sciatic nerve is common in the elderly. In the presence of a long-standing joint replacement, consideration should be given as to whether compression might be due to an extraspinal cause. We present three women, in whom a mass of wear debris from a previous total hip replacement caused compression of the sciatic nerve posterior to the hip. The symptoms were relieved immediately following operation.

Received 21 June 2002; Accepted after revision 23 June 2003

Compression of the sciatic nerve immediately following total hip replacement (THR) is well recognised and may be due to direct trauma, retraction of the nerve at the time of surgery or extrusion of cement from around the acetabulum.1-3 Subsequent problems may present due to dislocation of the prosthesis, migration of trochanteric wires or intrapelvic migration of the acetabular cup.4,5

We present three patients in whom symptoms were caused by a large mass of particulate wear debris directly compressing the nerve. No micro-organisms were cultured from these masses. Following a revision operation, the clinical symptoms were relieved immediately.

Case reports

Case 1. A 62-year old woman had received an uncemented left Ring THR 12 years previously. Seven years later she developed increasing pain in her left groin and thigh radiating down the posterior aspect of her leg to the foot. Initial radiographs showed no signs of loosening of the prosthesis. She attended a course for chronic pain management and a block of the L2 nerve root failed to relieve her symptoms. Further radiographs showed acetabular erosion and migration of the cup (Fig. 1). Revision was carried out through a posterior approach. After incision of the fascia lata, a cystic mass, 12 x 5 cm, was found overlying the greater trochanter and compressing the sciatic nerve (Fig. 2). The mass was excised before the prosthesis was exchanged. The symptoms improved immediately, and when seen after six months, she was free of pain and walking with the aid of one stick.

Case 2. A 75-year-old woman who had undergone a right Stanmore THR 12 years previously presented with pain in her right groin and lateral thigh, radiating from her right buttock to her foot. Radiographs of the right hip showed polyethylene wear with loosening of the acetabular component. Revision was carried out through a posterior approach and a cystic mass, 4.5 x 2.5 cm, was found arising from the

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doi:10.1302/0301-620X.85B8.13638 S2.00
capsule of the hip and the sciatic nerve. The mass was excised and the loose acetabulum revised to a cemented Stanmore cup with a bone graft and mesh reinforcement. The sciatic nerve pain resolved immediately after the operation, and when reviewed after six weeks, she was mobile with one stick and free of pain.

Case 3. A 68-year-old woman was seen 18 years after undergoing a cemented left Muller THR. She had been seen by a spinal surgeon 12 years previously with low back pain radiating down the right leg and underwent an L4-S1 decompression and fusion. Several years later she developed pain in the left groin and buttock which radiated to the back of her foot. An MR scan of her lumbar spine showed no evidence of nerve root impingement. Plain radiographs of the left hip revealed loosening of both femoral and acetabular components. Revision of the arthroplasty was undertaken through a posterior approach after which her radicular pain resolved immediately. A granulomatous lesion, 4 cm x 2 cm, was found pressing on the sciatic nerve. Histological examination of the resected mass in each case revealed a dense infiltrate of histiocytes and multi-nucleate giant cells associated with refractile foreign material.

Discussion

These three patients complained of sciatic pain before any definite radiological evidence of loosening of the prosthesis became apparent. Compression of the sciatic nerve by wear debris may have contributed to their symptoms. Problems due to accumulation of wear debris are rare, although several cases have been reported. Fischer, Christ and Roehr described a patient with sciatic neuropathy following compression by an intrapelvic mass of wear debris. The cystic masses were caused by an inflammatory response of the soft tissue to the presence of foreign material. Wear of the prosthetic surfaces initiates a biological response, characterised by the recruitment of macrophages. These phagocytose the wear particles releasing inflammatory mediators, such as interleukins and prostaglandins, causing secondary osteolysis.

Radiculopathy in the lower limb commonly originates from changes in the spinal canal. Extraspinal radiculopathy has also been described, although this is much less common, with the majority being caused by occult malignant tumours. A possible reaction to wear debris should be considered in symptomatic patients with long-standing joint replacement.

The revision operations were carried out through a posterior approach in which the sciatic nerve is visualised routinely, which is not the case with an anterolateral exposure. A posterior approach is to be preferred in the presence of symptoms related to the sciatic nerve.

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

References


