■ CASE REPORT

Fracture of the stem of the femoral component after resurfacing arthroplasty of the hip

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Resurfacing arthroplasties of the hip are being undertaken with increasing frequency and the complications associated with this procedure are well documented. We have encountered a further problem with a fracture of the centralising peg of the femoral component in a prosthesis which had been *in situ* for three years.

Resurfacing arthroplasty has several advantages over total hip replacement. The femoral bone stock is preserved, normal hip biomechanics are reproduced and a future revision is theoretically easier.¹ Complications associated with hip resurfacing include fracture of the femoral neck, avascular necrosis (AVN) of the head, raised levels of metal ions in the blood and possible problems with long-term fixation.¹⁻³

The Cormet resurfacing hip (Corin Medical Ltd., Cirencester, United Kingdom) was introduced in 1997 and is a development of the McMinn resurfacing hip (Corin Medical Ltd). Short-term follow-up of the McMinn prosthesis has been reported as excellent.⁴ In McMinn's original series there were no fractures of the femoral neck or cases of AVN. A further series of metal-on-metal resurfacing prostheses including the Cormet and Birmingham Hip Resurfacing Arthroplasty (Midlands Medical Technologies, Birmingham, United Kingdom) in 446 patients gave a revision rate of 0.02%.⁵

We present a new complication that has not been described previously.

Case report

A 69-year-old man complained of progressive disabling pain from the right hip. Plain radiographs confirmed osteoarthritis in the hip (Fig. 1). His medical history included mild sacroiliitis from ankylosing spondylitis. He underwent a Cormet resurfacing arthroplasty in 2002 performed via a posterior approach. An uncemented 58 mm acetabular and a cemented 52 mm femoral component were used. There were no intra- or post-operative complications and the initial radiographs appeared satisfactory. He made an uneventful recovery. On follow-up at three months, six months and annually thereafter he

remained free of symptoms and returned to playing tennis. The radiological appearances were satisfactory two years after surgery (Fig. 2). Three years following the initial operation he presented with a two-week history of increasing pain in the right hip and an inability to bear weight. There was no history of trauma.

Radiographs showed a fracture of the centralising peg of the femoral component (Fig. 3). The acetabular implant was well positioned with evidence of sound osseous integration. It was decided to revise the femoral component to a Trifit stem (Corin Group PLC, Cirencester, United Kingdom), using a modular 52 mm head. The acetabular component did not need to be changed.

At operation there was no evidence of fracture of the femoral neck and no macroscopic signs of AVN around the peg or at the bone-cement interface (Fig. 4). The portion of the centralising peg distal to the fracture was firmly cemented to the centralising canal of the femoral neck and was stable.

The patient made a good recovery and remains independently mobile and pain free.

Discussion

This is the first reported fracture of the peg of the femoral component of this particular implant and there are no previous reports of similar failure with other resurfacing prostheses. The central stem is not designed to be load-bearing. However, a recent review questions whether the central stem may increase the durability if the fixation interface is inadequate.⁶

The retrieved femoral head and fractured peg were sent to the manufacturer for analysis, the femoral head was not however examined histologically. The manufacturer commented that this was the first report of this complication. They were unable to explain why the component fractured.

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Fig. 1

Pre-operative radiograph.

Fig. 2

Radiograph at 2.5 years follow-up..

Fig. 3

Radiograph of the implant fracture three years after operation.

Fig. 4

Retrieved femoral component with broken peg.

Distal fixation of the centralising peg with cement is not recommended by the manufacturer, although the femoral component has been tested when fixed distally. It was found that the stem could resist approximately nine times body-weight. Fatigue testing showed no failures after 5 million cycles.⁷

Avascular necrosis is a well-recognised complication of hip resurfacing arthroplasty.¹⁻³ The fracture may have been due to AVN of the femoral head leading to its collapse. The unsupported femoral component may have caused overloading of the stem leading to fatigue fracture.

If the stem had not been fixed by cement distally, the femoral neck might have fractured instead of the implant.

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