Displacement of a cemented femoral implant. A complication of manipulation of a dislocated total hip replacement

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SUMMARY

Dislocation is a common complication of total hip replacement, which has been quoted in the literature as having an incidence of 1–4%. This is commonly treated with closed reduction. The authors present a case report of displacement of a cemented smooth-polished tapered femoral stem, which occurred while attempting closed reduction of a dislocated hybrid total hip replacement. The patient required full revision arthroplasty.

BACKGROUND

Primary total hip arthroplasty is a common elective orthopaedic procedure, which has been shown to be successful in terms of restoring function and relieving symptoms of end-stage arthritis.¹ Fixation of components may be cemented or uncemented and this is determined by patient demographics and surgeon's choice.

Dislocation following total hip replacement² is a recognised complication commonly treated successfully with closed reduction in the accident and emergency department or in the theatre under fluoroscopic guidance. Displacement of the femoral stem during closed reduction of a dislocated total hip replacement is an extremely rare complication and the incidence is unknown.

There may be an increased risk with cemented smooth polished stems, which theoretically may be due to a weak bond between the cement and the stem. Holt first described displacement of a cemented polished tapered stem during closed reduction in 1996, but this complication has also been reported in uncemented femoral stems.^{3–7} Only five case reports have been published in the medical literature, all requiring revision of arthroplasty surgery. This case highlights the need for care to be taken and avoidance of use of excessive force when reducing dislocated hip replacements, particularly for smooth-polished cemented stems.

CASE PRESENTATION

An 80-year-old man presented with a right-sided dislocated hybrid primary total hip replacement which was implanted in 2005 at a different institution for osteoarthritis. He sustained this dislocation at home while attempting to stand from a seated position. Significant medical history included ischaemic heart disease (coronary artery bypass graft, 2002 and stenting, 2009), chronic renal failure and hypertension. He also previously had a

left total hip replacement and bilateral knee replacements.

Dislocation of the hybrid total hip replacement was confirmed on antero-posterior (AP) pelvis (figure 1) and lateral radiographs of the hip. There was no radiographical evidence of loosening of the implants. Closed reduction under sedation was attempted unsuccessfully in the accident and emergency resuscitation room. Repeat radiographs confirmed that the hip remained dislocated but no evidence of implant displacement was seen.

Further closed reduction was attempted in the theatre under fluoroscopic guidance. Reduction was again unsuccessful and intra-operative screening revealed complete displacement of the femoral stem from an intact cement mantle with the femoral head remaining dislocated (figure 2). This unusual complication was managed by a revision surgeon and the patient underwent full revision arthroplasty. The acetabular cup which was found to be neutrally aligned was revised and the femoral stem recemented in place. The patient started physiotherapy and was mobilising with crutches postoperatively. Advice was also given regarding hip precautions. No immediate postoperative complications were encountered on discharge and at his routine follow-up appointment at 6 weeks, he continued to make excellent progress.

INVESTIGATIONS

AP pelvis and lateral radiographs of the right hip.

TREATMENT

Full revision hip arthroplasty (figure 3).

OUTCOME AND FOLLOW-UP

Revision of the acetabular cup and re-cementing of the femoral stem by a revision arthroplasty surgeon with an uneventful recovery.

DISCUSSION

Dislocation following total hip arthroplasty is a common complication with an incidence of 1–4%.² Displacement of prosthesis following dislocation or as a result of attempted closed reduction is a rare occurrence with only five published case reports in English medical literature. It is commonly associated with cemented smooth-polished tapered stems but has also been reported in textured and uncemented components.^{3–7} Smooth-polished tapered stems do not have a permanent bond with the cement and allow controlled subsidence in the

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Figure 1 Admission antero-posterior radiograph of the pelvis demonstrating dislocated hybrid total hip replacement.

cement in order to maintain stability while being placed under load.⁸ It has been recommended that cement should be applied over the shoulder of the polished stem thereby increasing the pull-out force required.⁹ This, however, is not routine practice.

This case highlights the need for care to be taken while attempting closed reduction of a dislocated total hip

replacement, particularly when dealing with smooth-polished femoral stems. Treating physicians should be aware of this complication and discuss it with the patient prior to relocation of the hip. Excessive force should not be used in accident and emergency, and for difficult reductions, it may be better to perform manipulation under anaesthetic in the theatre under fluoroscopy guidance with the patient fully relaxed.

Figure 2 Antero-posterior pelvis following attempted closed reduction under anaesthetic. Displaced femoral stem prosthesis is demonstrated.

Figure 3 Antero-posterior pelvis demonstrating revised total hip replacement.

Learning points

- ▶ Excessive force while attempting closed reduction should be avoided as displacement of the femoral stem can occur, particularly with smooth-polished tapered stems.
- ▶ Prior to attempted reduction of dislocated hip replacements, examine radiographs for evidence of loosening.
- ▶ If resistance is felt and for difficult reductions, patients may benefit from manipulation under anaesthetic in the theatre with full muscle relaxation and fluoroscopic guidance.
- ▶ If this complication does occur, referral to an appropriate revision arthroplasty surgeon is recommended.

Competing interests None.

Patient consent Obtained.

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