Case report

A cautionary tale of the Charnley–Hastings bipolar hemiarthroplasty

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1. Introduction

The Charnley–Hastings prosthesis (DuPuy International Ltd., Leeds, United Kingdom) has been used in the treatment of intracapsular neck of femur fractures since the 1980s. It is a bipolar prosthesis consisting of the Hastings acetabular component and a Charnley femoral component. The Hastings head is a snap fit with no locking system. We report on the case of a manufacturing flaw in the production of the femoral component and highlight the importance of a peri-operative compatibility check of the implants prior to cementing.

2. Case

A 93-year-old lady sustained an intracapsular neck of femur fracture and was taken to theatre the following day for a Charnley–Hastings bipolar prosthesis. An anterolateral approach was used, the head was removed and sized with callipers. The femur was then prepared with a box chisel and reamed with a hand reamer. The trial prosthesis was inserted easily and so a cement restrictor was placed and the femoral component inserted using cement.

Following setting of the cement the Hastings head was opened and connected to the Charnley prosthesis. Instead of the usual snap fit, there was a sloppy articulation allowing the hastings head to easily dislocate. This was because the head of the Charnley prosthesis appeared to not make contact with the edges of the polyethylene lining and thus a “snap” was not possible before the head was fully inserted. A second Hastings head was opened to check whether the fault was with the Hastings head or with the head of the Charnley prosthesis. The same sloppy articulation occurred, suggesting that the fault was with the Charnley prosthesis. This was then confirmed when it was found that both the Hastings heads made a satisfactory snap fit with the trial Charnley prosthesis on the instrument tray. Finally using a tape measure we measured the circumference of the femoral stem head of the implanted prosthesis and compared it to the trial prosthesis. We found that the circumference of the implanted prosthesis was 2 mm less than the trial and thus the cause of the failure to connect the two.

On reduction of the implant with the Hastings acetabular component the bipolar prosthesis was stable despite the failure of connection. It was decided that due to the patients age and co-morbid medical status that an on table revision of the stem would not be tolerated. Due to the fact the combined prosthesis was stable the choice was made to accept this situation and not to revise the femoral stem. She has made a good recovery post operatively and has been discharged home mobilising well. We will continue to monitor her as an outpatient.

Following this incident the matter was reported to the prostheses company (DePuy). The batch with the same lot number was withdrawn and a representative sample of those was examined by the company. These appeared to match the design and the other stems in the batch appeared to match correctly to the Hastings acetabular component. According to the manufacturer there have been no changes from the original design. They will continue to monitor for any further reports. We continue to use the prosthesis but ensure a compatibility check is undertaken prior to cementing the implant.

3. Discussion

The preferred treatment of displaced intracapsular fractured necks of femur in the elderly is by hemiarthroplasty, either monopolar or bipolar. The Bipolar protheses have been shown to have similar outcome in the short term to monopolar prostheses with some suggesting the bipolar prosthesis gives better pain relief and function. The Charnley–Hastings prosthesis has shown to have a good outcome and improved long term survival when compared to a monopolar prosthesis. This has been corroborated with motion studies. There have been reports in the literature of a rare complication of interprosthetic dislocation postoperatively. These were initially reported as faulty prototypes but have subsequently thought to be due to impingement of the prosthesis, trauma or an assembly mistake peri-operatively.

We are unaware of any mention in the orthopaedic literature of a previous peri-operative flaw in the Charnley femoral stem or a mismatch in the Charnley–Hastings bipolar prosthesis. It is possible that the postoperative interprosthesis dislocations cited above may have been due to a similar mismatch but the surgeon was unaware at the time of insertion. Previous reports have highlighted how small manufacturing alterations.
can have a significant effect on the insertion of implants. Our case report highlights the importance of checking the compatibility of implants prior to insertion to prevent similar mistakes.

References