CASE REPORT

Transperitoneal removal of an intrapelvic acetabular component after total hip replacement and salvage of a destroyed acetabulum

Intrapelvic migration of the acetabular component of a total hip replacement, with severe acetabular destruction making reconstruction impossible, is very rare. We present a patient in whom the component was removed using a laparotomy and a transperitoneal approach with subsequent salvage using a saddle prosthesis and a total femoral replacement.

Although rare, intrapelvic migration of the acetabular component is a well recognised complication of total hip replacement (THR). The use of a retroperitoneal approach for the retrieval of such components is well-documented.\textsuperscript{1-3} To the best of our knowledge a transperitoneal approach using a standard midline laparotomy incision has not been reported in the literature. In addition, the use of a saddle prosthesis for acetabular destruction following resection of neoplastic pelvic lesions is well-described\textsuperscript{4-10} but rarely indicated for complications following THR.\textsuperscript{11} We describe a case of severe intrapelvic migration of an uncemented revision acetabular and femoral component with subsequent destruction of the acetabulum which precluded the usual reconstructive techniques.

Case report

A 78-year-old female with rheumatoid disease presented with worsening pain in her right hip and knee and an inability to walk. Over the previous 35 years she had three hip replacements on the left and four on the right at a different institution, with the most recent approximately ten years before on the right side. She had also undergone a right total knee replacement (TKR) in 2005 in our unit which was revised for instability two years later following a fall.

The movement of her right hip was restricted and painful. On examination, she was wheelchair-bound and unable to walk. There were well established scars around the hip. Neurovascular examination was normal. Plain radiographs revealed a right custom-made proximal femoral component with a stemmed acetabular component which had migrated a long way into the pelvis with complete destruction of the acetabulum. The femoral head was not seated properly in the acetabular component (Fig. 1). There was also a hinged TKR on the right (Link, Hamburg, Germany) and a revision THR on the left.

Inflammatory markers and full blood count on admission were normal. A CT scan confirmed that the tip of the stem of the acetabular component was almost in the midline and free of bone. It was also difficult to determine its exact relationship to intrapelvic structures because of artefact secondary to the metallic component. In the light of this information, a general surgical and vascular opinion was obtained following which the decision was made to remove the migrated acetabular component.
component using a laparotomy and a transperitoneal approach. It was also decided that reconstruction of the acetabulum would be impossible and therefore salvage with a compatible total femoral replacement (Mark II; Link) was planned.

The procedure was performed in two stages. The patient was initially placed in the supine position and the prosthesis was clearly felt on deep palpation of the abdomen. A laparotomy was performed via a midline incision by a general surgeon. The bowel was early dissected and mobilised and posterior dissection of extensive fibrous tissue revealed the right ureter running over the stem of the acetabular component (Fig. 2). The inferior iliac vessels lay directly behind it. Careful dissection enabled mobilisation of the acetabular component and its eventual removal (Fig. 3). A pedicle of omentum was created and sutured into the extensive pelvic defect. The abdomen was closed.

The patient was then placed in the left lateral decubitus position. Old scars were re-utilised and the right hip exposed by a posterior approach, with a medial parapatellar approach to the right knee. In order to facilitate removal of the femoral component from the pelvis the knee was disassembled to initially take tension off the leg, attention was then turned to the femoral component. Mobilisation of the proximal component from the pelvis still proved difficult due to the proximal migration of the femoral stem and associated scar and fibrous tissue formation so it was decided to divide the femur between the femoral stems. This allowed retrograde dissection up towards the hip and the prosthesis was easily removed. Omentum could be seen through the resulting massive pelvic defect (Fig. 4). Multiple specimens were taken for culture. A prophylactic dose of teicoplanin 800 mg was then given. The remainder of the distal femur was removed through the knee wound.

Attention was then turned to the pelvis. It became clear very quickly that there was no acetabulum left and as predicted reconstruction was impossible. A total femoral replacement was assembled (Mega-C; Link) with stems 150 mm and 30 mm and a 135° neck section, using a neck-saddle connection of 90 mm. This placed the trunion approximately at the level where the true acetabulum would have been. This left the saddle prosthesis articulating with the vertical plate of ilium as planned. At the knee, a new tibial insert and locking screw were used, and the tibial component was left undisturbed. The whole construct was stable and a sound soft-tissue closure was achieved. Post-operatively, intravenous tazocin 4.5g tds and teicoplanin 400 mg od were given until the wounds were dry (one
A midline laparotomy provides a satisfactory exposure to the retroperitoneum together with quick and easy access to vascular structures should complications arise. Other approaches are less frequently used and therefore less familiar. It was for these reasons that this approach was felt to be the safest option for this difficult case. The only other conceivable alternatives were amputation, massive bone grafting or salvage with a saddle prosthesis.11 We therefore decided to use a saddle prosthesis. This prosthesis has become increasingly popular following resection of a pelvic tumour4-10 but rarely used following complications of THR.11 In this case we could not use it without revising a femoral component which in turn was compounded by a lack of bone stock and the presence of an ipsilateral stemmed revision TKR. It was therefore decided that a total femoral replacement was the best option so we used a Mega-C prosthesis which is compatible with both the saddle articulation and the tibial component of the revision TKR enabling the tibial component to be left undisturbed.

This case posed several difficult problems, however, it has highlighted that the midline laparotomy is certainly a safe and, in our opinion, more familiar alternative for the retrieval of a grossly migrated uncemented acetabular component. It has also confirmed that a saddle prosthesis can provide successful salvage of a destroyed acetabulum following arthroplasty.

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

References