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FALSE ANEURYSM OF THE EXTERNAL ILIAC ARTERY FOLLOWING HIP ENDOPROSTHESIS

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A false aneurysm developed from the external iliac artery within the pelvic cavity following total hip surgery when methylmethacrylate cement had been used to fix the cup. The aneurysm was probably caused by a cement spicule which had entered the pelvis and had come into contact with the external iliac artery.

Key words: arthroplasty; hip; cement spicule; arterial aneurysm

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The two most common complications of total hip replacement are loosening of the prosthesis from its attachment, and infection. There are also a large variety of complications associated with the different methods employed and which occur with different frequencies. Recently, false aneurysm arising as a result of the prosthesis coming into contact with a major vessel has been reported by Hierton et al. (1973), Kroese & Möllerud (1974) and Dorr et al. (1974).

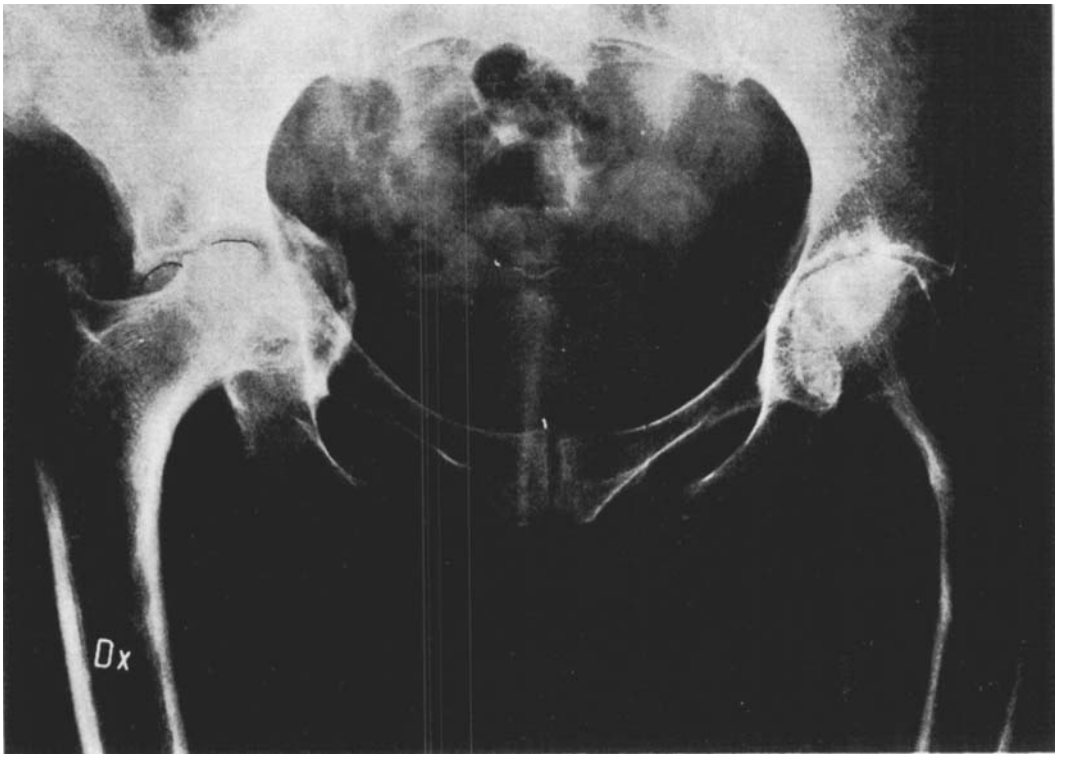
In view of the rare occurrence of this complication it may be of interest to report a recent case that has come to the author's notice.

CASE REPORT

A McKee total hip replacement was performed in a woman of 57 years suffering from rheumatoid arthritis. The diagnosis had been made 20 years earlier. She was able to walk short distances with a stick. She suffered from severe night pain. A roentgenogram of the hip joint showed destruction and marked acetabular protrusion (Figure 1). McKee total hip replacement was performed on October 12, 1973. Posterior curved exposure (southern exposure) was used. Postoperative radiographs showed the prosthesis to be in the varus position, fairly deep in the pelvis.

The immediate postoperative course was normal, and no prophylactic or postoperative antibiotic therapy was given. Her right hip could be flexed 90°, and there was no hip extension contracture; abduction was 15°, adduction 20°, external rotation 15° and internal rotation 10°. About 8 months later a fistula appeared, with no previous pain or pyrexia. The patient was able to walk with the aid of a stick and without pain. Radiographs showed no change in the position of the prosthesis and no evidence of bone resorption or osteitis (Figure 2). It was planned to explore the fistula and, if necessary, to perform curettage and suturing, but on admission to hospital pain developed in the groin. Palpation revealed the presence of a deep, slightly pulsating, resistant swelling. Auscultation disclosed a slight murmur. There was a blood-stained discharge on the fistula changing later to pure blood. Arteriography disclosed the presence of a false aneurysm of the external iliac artery (Figure 3).

On exploration it was found that some of the methylmethacrylate cement used to attach the prosthetic cup to the pelvis bone had entered the pelvis through a drill hole, and that a projecting spicule of the cement was in contact



with the external iliac artery. Close to this spicule a false aneurysm had formed in the vessel; this formation was found to communicate with the fistula. The cement spicule was removed, and the aneurysm isolated and closed with a patch. The postoperative course was satisfactory.

DISCUSSION

Many reports of complications in total hip replacement have been published. Much attention has been devoted to postoperative infection, loosening of the endoprosthesis, and pulmonary and cardiovascular responses elicited by the monomeric methylmethacrylate in the fluid component of the cement.

Arterial trauma and false aneurysm of the large vessels seem to be rare complications of arthroplastic surgery. In this patient the false aneurysm developed after laceration of the external iliac artery by a cement spicule which had

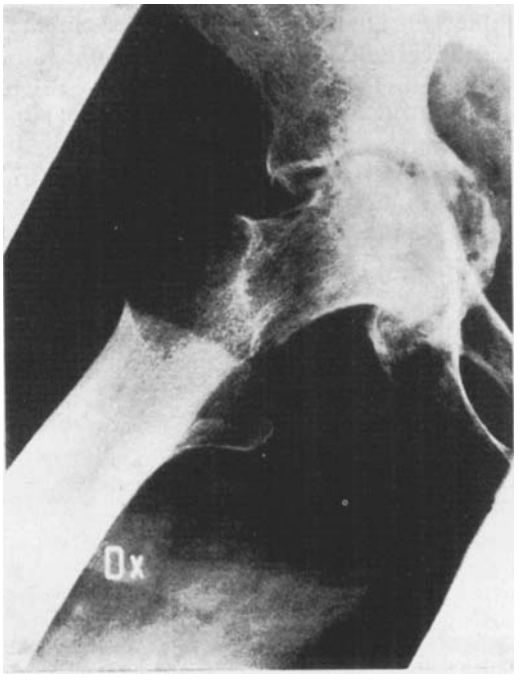


Figure 1. Preoperative roentgenogram. Marked acetabular protrusion in the right hip.

Figure 2. Eight months after total hip replacement. Barium sulphate does not mix with the methylmethacrylate.

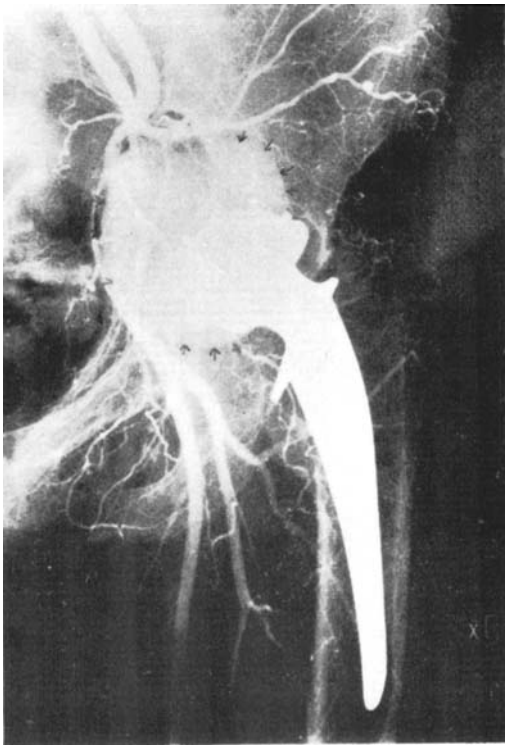


Figure 3. Angiogram. The false aneurysm in the external iliac artery is seen as a radiopaque mass.

entered the pelvis. Gradual erosion of the arterial wall occurred. The false aneurysm developed 8 months after operation.

In view of the rarity of false aneurysm following hip endoprosthesis it is doubtful whether specific, preventive measures are indicated when using ordinary surgical techniques. To fix the prosthesis in the pelvis it is necessary to use one or more drill holes to gain stability. The direction of these holes is important, as contact with any of the larger vessels in the pelvis must be avoided.

Special care must be taken when drilling the pelvis of patients with acetabular protrusion. In such patients the large pelvic vessels lie closer to the acetabulum, and laceration of arteries or veins readily occurs.

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