

CASE REPORT

Reactive pelvic cyst following total hip arthroplasty. A case report

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A 77-year-old woman presented with an intrapelvic cyst which had developed secondary to polyethylene wear of the socket after total hip arthroplasty. This reactive cyst surrounded polymethylmethacrylate cement fragments due to excessive penetration in the pelvis during the initial procedure 20 years previously. This pelvic mass was responsible for gynaecologic symptoms. The cyst was resected in a first stage. Revision hip arthroplasty is scheduled because of cup wear and progressive femoral osteolysis. Cement extrusion must be avoided during total hip arthroplasty to prevent pelvic complications, since these problems can present even several years later. Cement intrusion into the pelvis possibly opens up a pathway for polyethylene wear particles to migrate into the pelvis.

Total hip arthroplasty has become a routine surgical procedure with a very high success rate, despite some well-known complications including loosening, heterotopic ossification, sepsis and dislocation (1, 2). Intrapelvic complications have been observed less frequently following total hip arthroplasty (1, 8). Peri-operative intrapelvic nerve or vascular injuries have been predominantly documented; problems related to extrinsic compression of the bowel, bladder and vagina have been reported less frequently (1-5, 8, 10). Intrapelvic cysts are secondary to a histiocytic reaction of the body to particles of polyethylene or PMMA cement (4, 9). We report the formation of an intrapelvic cyst, which was diagnosed 21 years after total hip arthroplasty and which was probably secondary to a reaction to polyethylene wear particles and was

possibly triggered by cement intrusion at the initial operation.

CASE REPORT

A 77-year-old woman presented in 1999 in the department of gynaecology with pain in the right lower quadrant of her abdomen and a sensation of pressure in her vagina and rectum when she sat down. Her personal history revealed a total arthroplasty of her left hip in 1983 and of her right hip in 1978, both for osteoarthritis. She also had an appendectomy in 1950, a varicectomy in 1971 and a curettage in 1980. On clinical examination there was some pain during motion but an excellent stability of the right hip.

Bimanual pelvic examination revealed a large right paravaginal mass with extrinsic compression of the vagina and rectum. Sonography confirmed these findings and showed the presence of hyper-reflective tissue in this mass. An ultrasound assisted fine-needle aspiration of the cyst revealed serous fluid with multiple macrophages. All tissue cultures were sterile. A CT-scan showed the pelvic

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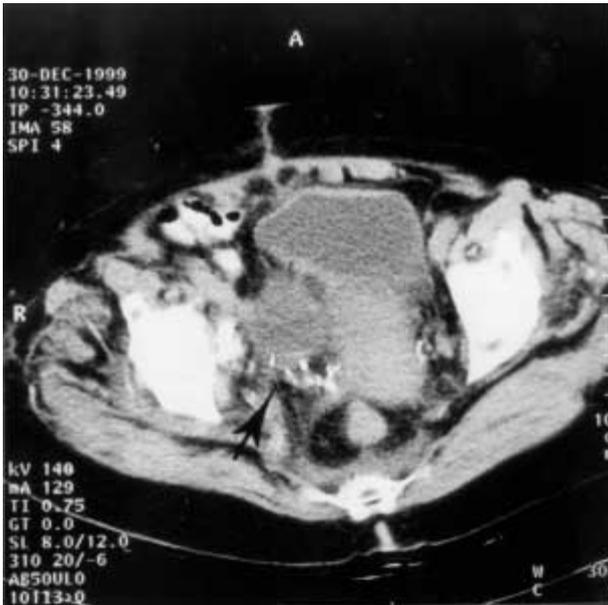


Fig. 1. — CT-scan showing the pelvic mass with cement fragments included (arrow), with external compression of the bladder, uterus and rectum.

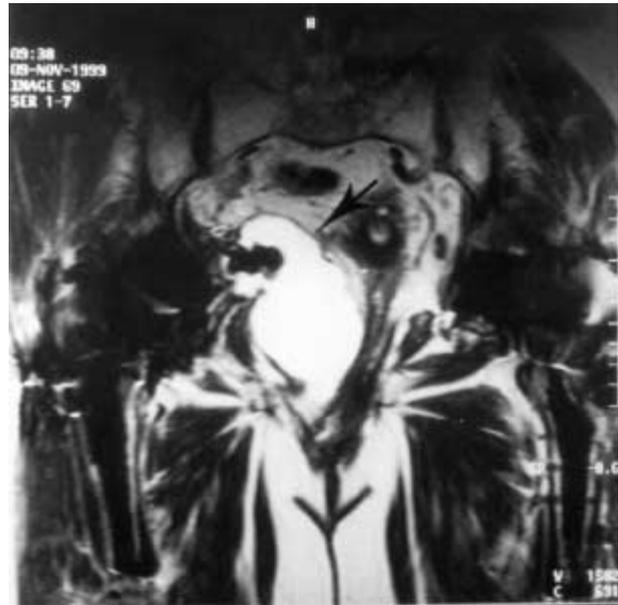


Fig. 2. — Coronal MRI image showing the pelvic cyst (arrow) with the cement fragments included (low signal intensity) adjacent to the right acetabulum.

mass adjacent to the right acetabulum with radio-opaque cement nodules protruding into the mass (fig 1). MRI revealed the cyst (hyperintense) with cement nodules (hypointense) included and compression of the pelvic organs (fig 2, 3). A standard radiograph demonstrated intrapelvic cement due to excessive medialisation of the cup. Marked wear of the cup and femoral osteolysis were seen (fig 4). A technetium bone scan was negative and a routine biochemical analysis showed no inflammation. This patient insisted on having the paravaginal mass removed, so a paramedian laparotomy and colpotomy were performed. The cyst reached the right parametrium and was fixed to the inner wall of the acetabulum. PMMA cement nodules were found inside the cyst. Pathologic examination revealed fibrotic tissue surrounding PMMA cement particles and a serous cyst triggered by polyethylene wear particles. Full recovery was achieved after six weeks, and at 20 months follow-up pelvic examination was normal. Revision hip arthroplasty is scheduled because of progressive cup wear and femoral osteolysis.

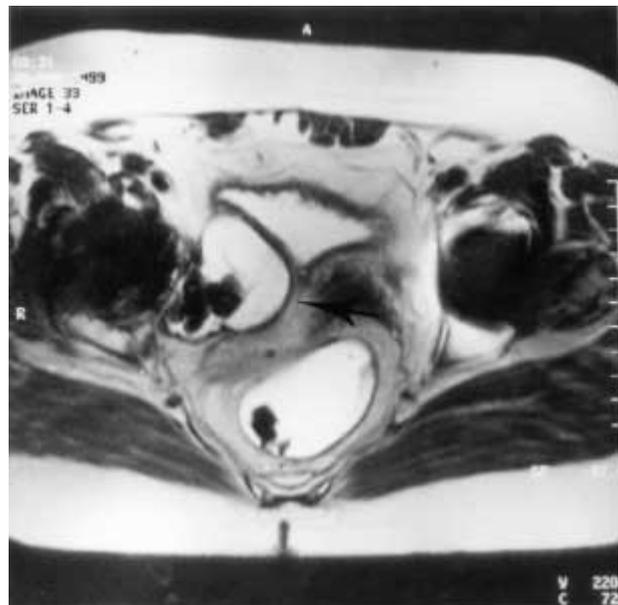


Fig. 3. — Axial MRI image showing the pelvic mass (arrow) surrounding the cement extruding from the acetabulum and compressing the intrapelvic organs.



Fig. 4. — Standard radiograph showing a cemented Charnley hip prosthesis with intrapelvic penetration of cement after medialisation of the cup. There is wear of the cup and progressive osteolysis of the femur.

DISCUSSION

Intrapelvic complications after total hip arthroplasty are very rare, especially those with involvement of the pelvic organs (2-5, 7, 8, 10). To our knowledge only one gynaecologic case was published by Awbrey *et al* (2). Most of the cases involved urologic problems with bladder compression or even with fistulae, presumably due to tissue damage related to the exothermic reaction during polymerisation of the cement (3-5, 8, 10).

In our case polyethylene wear and osteolysis was found, similar to other published cases where these cysts were induced by PMMA cement or polyethylene particles in patients with cup loosening (4, 9). It was observed that methylmethacrylate debris and polyethylene particles can incite an inflammatory response with giant cells and histiocytes (1, 8). These cells will induce the formation of the reactive cyst. Finally, excessive medialisation of the cup and the use of a medial centralising hole should be avoided to prevent the intrusion of cement into the pelvis (2, 4). Pelvic cement intrusion has sometimes been considered harmless,

since the iliopsoas muscle was considered to be a barrier (2). Many cases (2-5, 8, 10) however proved the opposite, therefore the presence of intrapelvic cement has to be noted on the postoperative radiograph and if pelvic or visceral symptoms develop, appropriate treatment is imperative (2). This case shows that these symptoms can present as late as 20 years after the initial surgical procedure. We presume that the cement intrusion possibly opens up a pathway for the polyethylene wear particles, even many years later. If these cysts are asymptomatic, they should not be resected (6). Usually this pelvic mass will be the first presentation of loosening of the implant, and revision hip surgery may be necessary (4, 8, 9).

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