Bladder fistula after loosening of a cementless self-cutting acetabular component—a case report

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A 69-year-old woman developed osteonecrosis of the femoral head secondary to irradiation after operation of a uterine cervix carcinoma 2 years earlier. In 1984, she received a cementless total hip prosthesis consisting of a screw-in polyethylene acetabular component (Endler) and a titanium stem (Zweymüller). Because of loosening, the acetabular cup was changed to a titanium self-cutting cup (Zweymüller) in 1989.

In March 1991, she complained of increasing pain in the groin and a radiograph showed tilting and intrapelvic protrusion of the acetabular cup. A girdlestone procedure was proposed, but the patient refused. At the next visit in October 1991, she agreed to a revision operation, because at this time it was proposed to change the acetabular cup only.

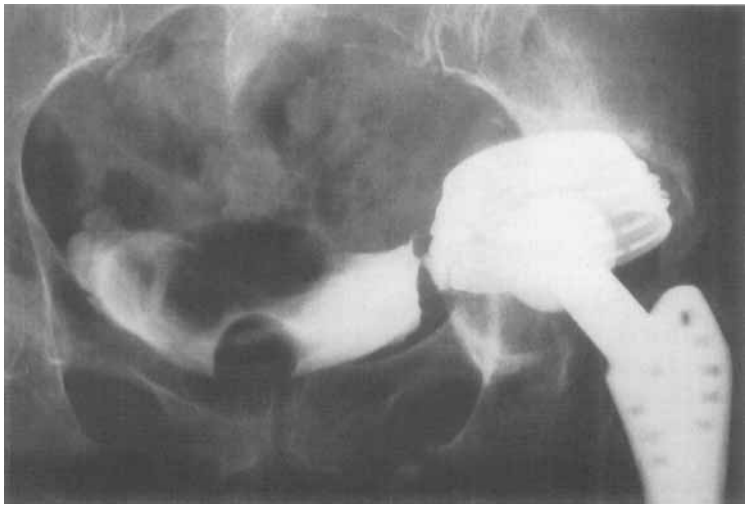
1 week later the patient was admitted to the urologic clinic with dysuria and gross hematuria. Cystoscopy showed a 1 cm defect in the lateral wall of the urinary bladder. Through the defect, the threads of the titanium acetabular component were seen. A cystogram revealed a fistulous communication to the acetabular cup (Figure).

A cystotomy was done with excision of the fistula and interposition of a dura allograft. A bacteriologic smear showed *Escherichia coli*. 2 weeks later the protruded cup was removed, together with an inflammatory mass along the defect in the acetabular wall and a polyethylene cup was cemented into a reinforcement cage (Burch-Schneider). 3 weeks later a relapse of the bladder fistula was treated by surgical closure of the fistula, removal of the dura graft and interposition of an omentum graft.

During the following year, the patient recovered well, a urologic examination 1 year after surgery showed no pathological findings and a cystogram was normal.

14 months after the revision surgery, the patient developed severe pain in the lateral side of the hip with signs of local infection. After incision, pus was drained and a culture showed *Candida albicans*. The infection was treated with fluconazol, and the patient recovered quickly, but the fistula after the incision persisted. At this time, radiographs showed fractures of both the cranial and caudal fixation screws with tilting of the reinforcement cage. Fistulography showed no communication to the joint and a cystogram was normal.

During the next few months, the patient again developed increasing signs of local infection, despite the persisting fistula (with *Staphylococcus aureus* in the smear). A girdlestone procedure with removal of the endoprosthetic material and inlay of antibiotic-



Fistulous communication between urinary bladder and threads of the self-cutting acetabular cup before revision.

loaded beads was performed 20 months after the first urologic revision. The beads were removed after 10 months.

3 years after the first revision, she was admitted again and 1 liter of pus was discharged after incision. A cystogram then showed a fistulous communication to the former acetabulum. Operative intervention was refused by the urologist and the patient was discharged with a permanent urethral catheter. At this time, *Enterobacter aerogenes* was cultured. After antibiotic therapy, the patient did not develop local or systemic signs of infection again.

At the last clinical follow-up 4.5 years after the first urologic intervention, she used a wheelchair and had had no pain during the preceding year. The urinary bladder is still being drained via a standard urethral catheter and there is no evidence of local infection.

Discussion

Reviewing the literature, we found no case of injury to the genitourinary tract following THA using a cementless acetabular component. All documented cases deal with complications attributed to intrapelvic cement or secondary to loosening of cemented acetabular components (Evansky et al. 1973, Moczynski et al. 1973, Steg et al. 1974, Lowell et al. 1975, Greenspan and Norman 1977, Persky et al. 1978, Schlueter 1979, Ray et al. 1979, Wheeler et al. 1983, Awbrey et al. 1984, Videbaek and Sommer 1985, Brentlinger and Hunter 1987, Casteleyn and Opdecam 1987, Roberts and Loudon 1987, Hattrup et al. 1988, Radford and Thomson 1989)

In our case, the use of a cementless system in radiation-induced osteonecrosis may be controversial (Jacobs et al. 1995), especially in case of a revision after loosening of the acetabular cup.

The problem in our case began with the need to convince the patient of the urgency of a revision, when central protrusion and tilting of the self-cutting acetabular cup had become evident. Time was lost, because the proposal of a girdlestone procedure was not accepted. When she agreed to revising the hip, the protrusion was already advanced and the threads of the acetabular cup had perforated the wall of the urinary bladder.

Following revision surgery, it was impossible to decontaminate the site of operation, which finally resulted in loosening of the reinforcement cage. Control of the infection was impossible before removal all the endoprosthetic components and bone cement.

This serious complication has demonstrated the hazard of the sharp-edged threads of a self-cutting acetabular cup. Consequently—in case of loosening and central migration—revision surgery must be considered early.

A two-stage intervention should be discussed in a case like this. Persistent fistulation of the urinary bladder entailed a high risk of contamination of the hip joint, which led to secondary infection of the prosthetic implant.

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