

CASE REPORT

MRS-TITAN MAXIMUM

TREATMENT OF A SIGNIFICANT BONE DEFECT CENTRALLY AND IN THE POSTERIOR COLUMN WITH A MODULAR CUP SYSTEM

MEDICAL HISTORY

A 76-year-old patient presented to our clinic in 2023 with increasing weight-bearing pain in his right hip joint and considerable suffering.

In the 1970s, a bilateral femoral conversion osteotomy was performed. In the 1980s, the patient underwent primary cementless total hip arthroplasty on both sides. An aseptic stem replacement was performed in 2000 on the left hip due to loosening and in 2001 on the right hip as well. The cup components and inserts were left in place for both procedures.

In December 2023, the left cup was replaced for aseptic cup loosening in our hospital. The patient was very satisfied with the treatment. He suffers from rheumatoid arthritis with long-term MTX therapy.

DIAGNOSIS

Radiological imaging and joint puncture revealed aseptic wear of the polyethylene insert, pronounced osteolysis and an acetabular defect type IIc according to Paprosky in the right hip (Fig. 1). Preservation of the cup was not possible due to the pronounced osteolysis. In addition, no polyethylene inserts were available from the manufacturer of the cup system for this cup. A revision with cup replacement in the right hip joint was indicated. In April 2024, the patient was treated with a revision cup as on the left side (Fig. 2).

The patient complained of persistent discomfort. In October 2024, the radiological examination showed a medial cup migration compared to the previous radiographs (Fig. 3). Computed tomography (CT) diagnostics confirmed an aseptic loosening of the acetabulum cup and an acetabular defect in the area of the posterior pelvic column. The ischium was fractured and barely connected to the acetabulum (Fig. 4).



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Fig. 1 Pelvic overview, aseptic loosening of the cup, right hip, osteolysis.

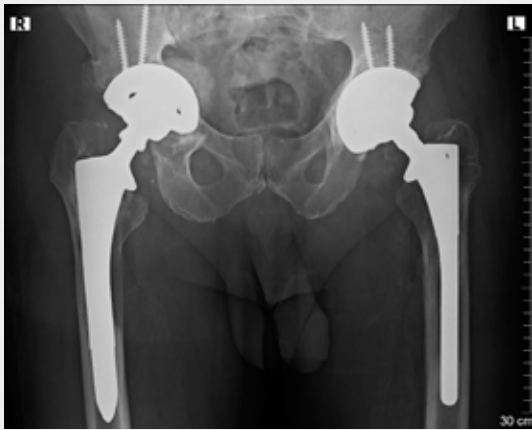


Fig. 2 Preoperative pelvic overview after cup replacement, right hip.



Fig. 3 Pelvic overview 6 months after cup replacement. Medial migration of the cup.

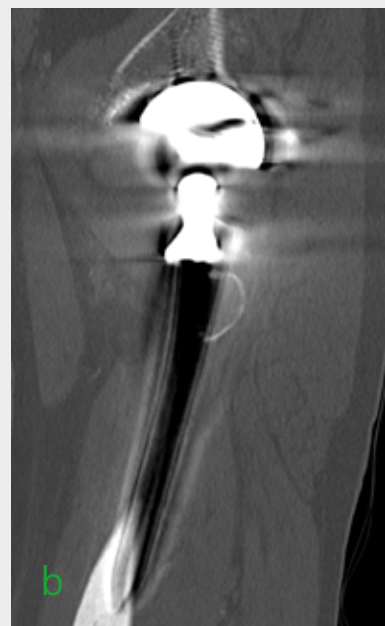
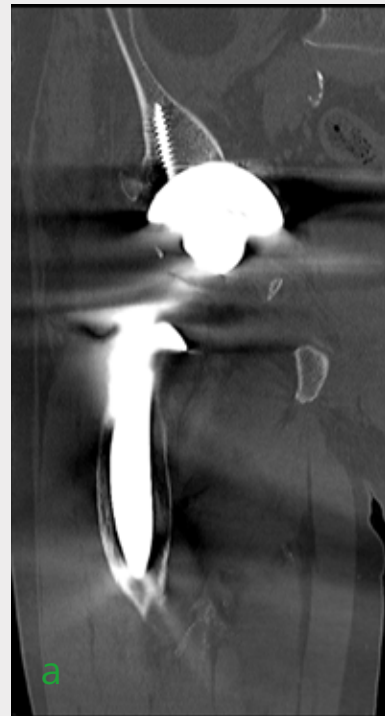


Fig. 4 Preoperative CT imaging in the frontal plane (a) and sagittal plane (b, c), acetabular defect situation.

TREATMENT

In November 2024, the cup was revised using the Bauer lateral approach in accordance with the surgical planning. After removal of the cup, pronounced Paprosky type IIIb bone defects were found intraoperatively in the acetabular floor and area of the posterior column.

The patient was surgically treated with the cementless modular revision cup MRS-TITAN Maximum (Ø 72 mm) to ensure the greatest possible stability (Fig. 5). The anatomical strap and the iliac peg (30 mm) enable primary stable anchoring of the cup.

Intramedullary stabilisation in the ilium was achieved using the intraoperatively placeable iliac peg. In addition to press-fit anchoring of the cup and strap screw fixation, cancellous screws were used. The trabecular, open-pored and rough titanium surface structure (3D printing) promotes rapid bone ingrowth for secondary stabilisation.

The intraoperative X-ray control confirmed the correct positioning of the implant components and stable joint conditions (Fig. 6). Both postoperatively (Fig. 7) and in the radiological follow-up 2 months after implantation (Fig. 8), the revision cup was found to be well and firmly seated.



Fig. 5 MRS-TITAN Maximum with anatomically designed strap and intramedullary peg anchorage (modular iliac peg 30 mm)

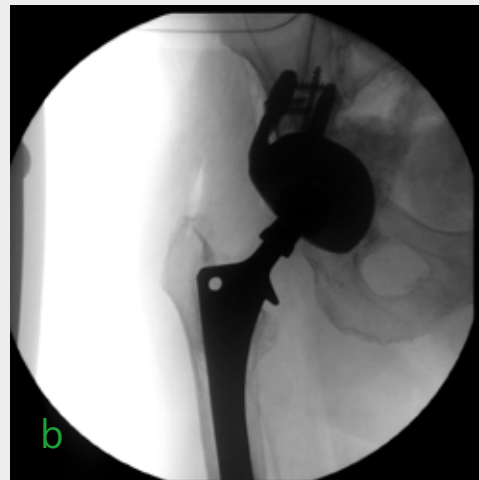
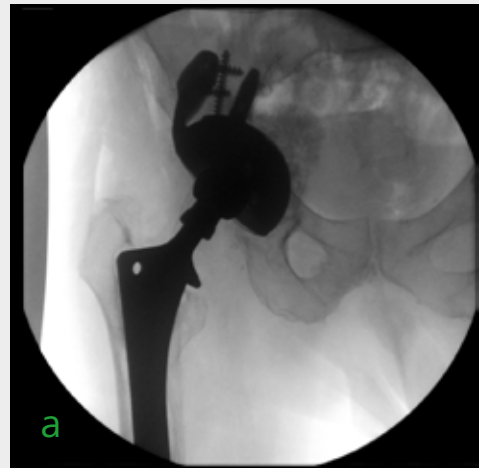


Fig. 6 Intraoperative X-ray control of the implant position, very good defect reconstruction

RESULT

This patient case shows that after multiple revisions the reconstructive restoration using the cementless modular revision cup MRS-TITAN Maximum led to a good functional result.

Early and stable postoperative mobilisation of the elderly patient was achieved. The patient was mobilised immediately postoperatively with partial weight-bearing of the operated limb with 20 kg body weight on crutches for 6 weeks. There were no peri- or postoperative complications. The healing process was positive.



Fig. 8 X-ray control of the implant position, right hip, 2 months after implantation of the MRS-TITAN Maximum revision cup, pelvic overview a.p. (a) and Lauenstein projection (b). Unchanged good and stable defect reconstruction.

Image sources

Fig. 1 to 4, 6 to 8 Hassan Massarwa, MD, Karl-Olga-Hospital

Fig. 5 PETER BREHM GmbH

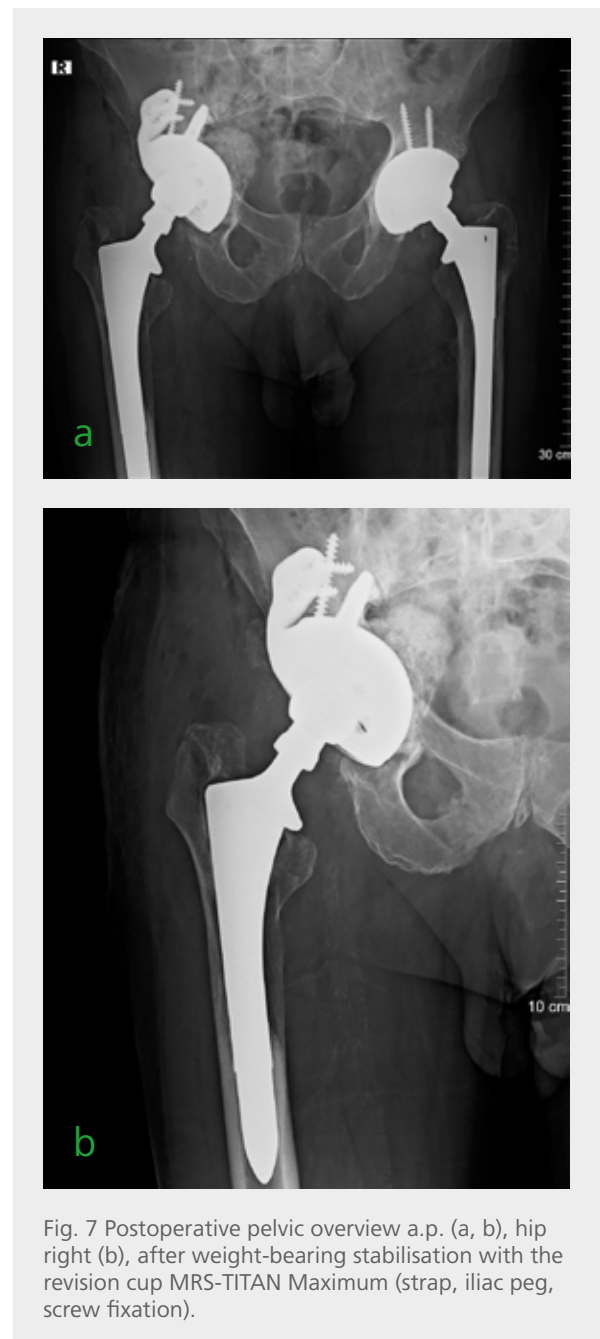


Fig. 7 Postoperative pelvic overview a.p. (a, b), hip right (b), after weight-bearing stabilisation with the revision cup MRS-TITAN Maximum (strap, iliac peg, screw fixation).



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