CASE REPORT

Hip revision using a modular cup system after multiple re-revisions

Medical history

A 60-year-old female patient presented to our clinic for the first time in 2021 with acute pain and restricted movement in her left hip.

Three years previously, the patient had received a cementless total hip arthroplasty (Plasmafit® acetabular cup, highly cross-linked polyethylene Vitelene® size 50, TrendHip® stem size 2, BIOLOX® delta ball head 36 mm, Aesculap AG), which had been implanted for the treatment of a traumatic femoral neck fracture.

During rehabilitation, the patient suffered another event, resulting in a periprosthetic fracture classified as Vancouver B2 type. The patient was transferred to a BG Hospital for surgical treatment. There, an open reduction and internal fixation (ORIF) of the proximal femur and a large trochanteric fragment was performed using cerclage wires. The femoral stem component was replaced (Alloclassic® Zweymüller® SSL stem size 4, BIOLOX® delta ball head 36 mm, Zimmer Biomet).

Postoperatively, the osteosynthesis failed after 4 weeks with a gross fragment dislocation. The inserted revision stem was found to be firmly embedded in the non-fractured part of the femoral stem, so that only a revision of the proximal fracture fragments using a 4-hole claw plate and the preassembled cables (Trochanteric Reattachment Device, DePuy Synthes) was necessary.

In the further course, a periosteosynthetic, periprosthetic joint infection with evidence of Staphylococcus aureus occurred. The proximal femur was also affected in the sense of osteomyelitis. The implant and the osteosynthesis material were completely removed and the parts of the proximal femur altered by the osteomyelitis were resected. A Gentamycin-Pallacos® spacer was used. Intravenous antibiotic therapy in line with the antibiogram was initiated.

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A hip revison arthroplasty system was re-inserted 6 weeks after removal of the spacer when the patient was aseptic. Due to the large bony substance defect in the area of the proximal femur, a cementless modular revision stem (MRP-TITAN, Ø 14 x 320 mm, ceramic ball head BIOLOX® delta, 36 mm, PETER BREHM GmbH) and an acetabular reinforcement ring with hook according to Ganz (Zimmer Biomet) were selected. A polyethylene insert was cemented into the acetabular reinforcement ring.

About 3 months later, the hip joint replacement dislocated. After a problem-free closed reduction further dislocation occurred. The polyethylene insert was replaced by a dual mobility cup (Gyracup® E size 48, BIOLOX® delta ball head 28 mm, Aesculap AG). The cup was cemented into the remaining acetabular reinforcement ring.

Diagnosis

An acute dislocation with a classically shortened and malrotated leg was observed during clinical examination. Preoperative radiological and computerised tomography (CT) diagnostics revealed a dorsal dislocation of the dual mobility shell out of the acetabular reinforcement ring (Fig. 1). Additional injuries and bony defects were ruled out. A stable cup treatment was indicated. The aim of the surgical treatment was to achieve a stable function of the hip joint in the presence of insufficiency of the pelvitrochanteric muscles and failure of the dual mobility cup.

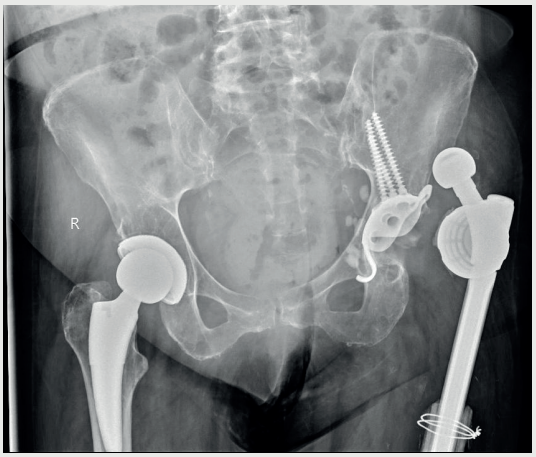
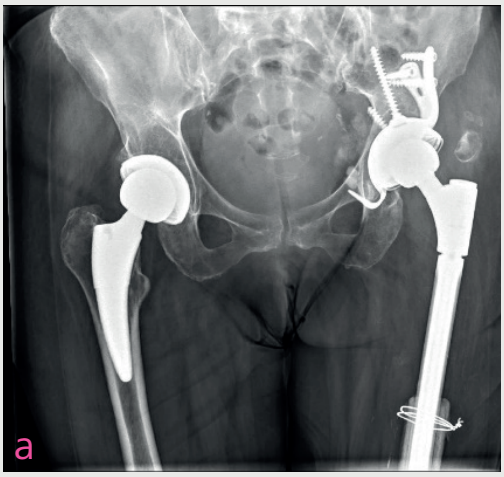


Fig. 1 Preoperative X-ray of the left pelvis (a.p.), dorsal dislocation of the dual mobility shell out of the acetabular reinforcement ring

Surgical treatment

The operation was performed according to the preoperative planning and the patient was operated in the lateral position. Due to the multiple previous operations, the posterior approach was chosen. The metal shell of the dual mobility cup was dislocated. However, the bony situation was found to be intact.

The patient was treated with the cementless modular revision cup MRS-TITAN Comfort (size 56 with short straps) and a polyethylene dysplasia insert 20° (PETER BREHM GmbH) (Fig. 4). Radiological control confirmed the correct implant position (Fig. 2a-b, 3a-c). The joint conditions were stable. There was no dislocation tendency in any degree of rotation.



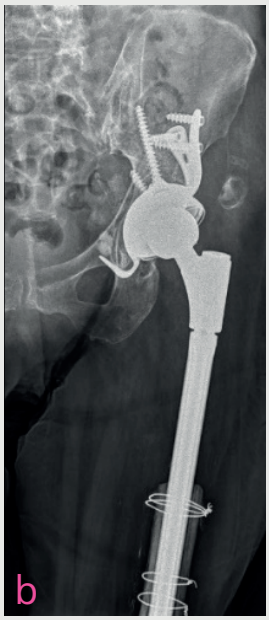


Fig. 2 Postoperative pelvic overview a.p. (a) and Lauenstein projection (b) after cementless treatment with the revision cup MRS-TITAN Comfort

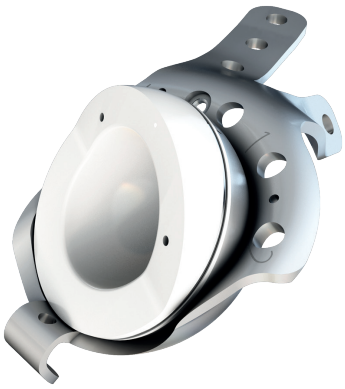


Fig. 4 Cementless modular revision cup MRS-TITAN Comfort

Result

Both the postoperative course and rehabilitation were without complications. The patient was able to begin pain-adapted full weight bearing on underarm crutches postoperatively. On the 12th postoperative day, the patient was discharged from inpatient treatment. The rehabilitation was started on the 19th postoperative day and proceeded without complications.

The last follow-up in January 2023 showed no abnormalities. No further dislocation of the prosthesis has occurred since the surgical treatment.

In this case with recurrent dislocations and the failure of the dual mobility cup, the cementless modular revision cup MRS-TITAN Comfort was a suitable solution and reliable surgical treatment option.

Image sources

Fig. 1 to 3c St. Vincenz Hospital Datteln
Fig. 4 PETER BREHM GmbH

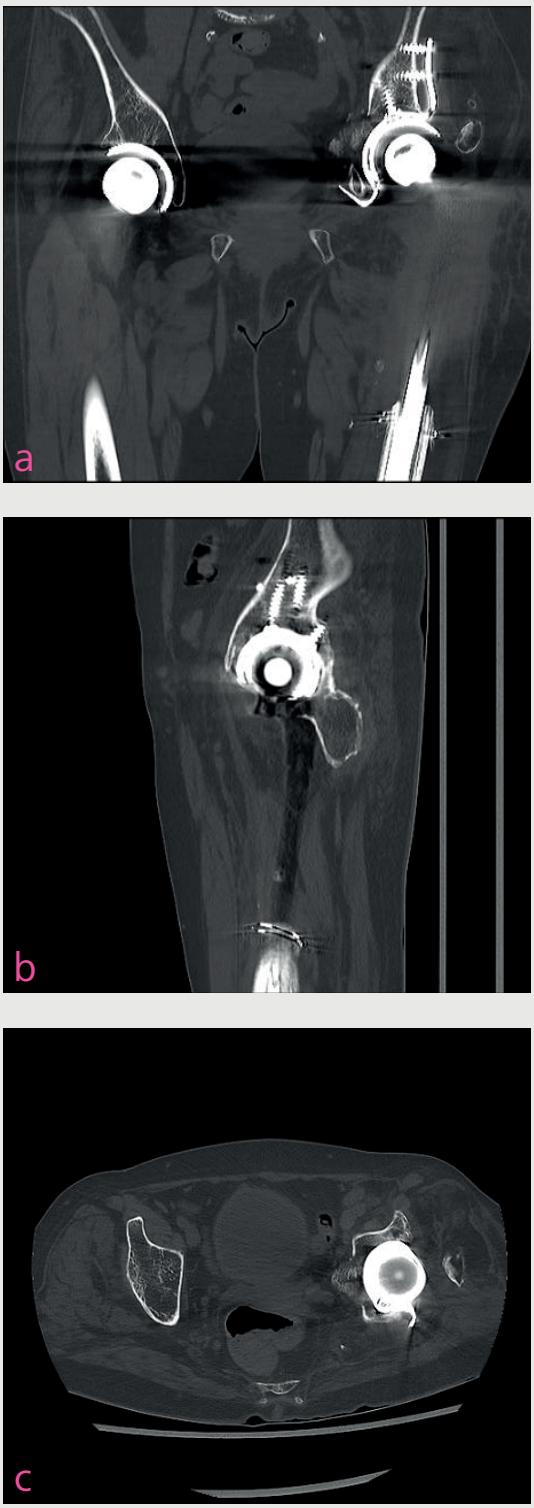


Fig. 3 Postoperative CT imaging in the frontal plane (a) and sagittal plane (b, c)