CASE REPORT

Medical history

An 85-year-old female patient was presented to our clinic consultation as an emergency case with complaints in her right hip and limited mobility. She reported that her right leg had slipped when she turned. The patient complained about pain-related inability to put weight on the affected hip. At rest, she was almost painless. Before the traumatic event, the patient was able to walk without walking aids.
The diagnostic investigation of comorbidities revealed hypothyroidism and osteoporosis. After a surgical procedure in the 1950s, the patient suffered an anaphylactic shock, the trigger of which is unknown. The patient was not taking any anticoagulant medication. The preoperative laboratory findings showed no relevant drop in haemoglobin levels.

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Diagnosis

Preoperative X-ray and computed tomography (CT) diagnostics (Fig. 1, 2 a-c) revealed a protrusio acetabuli and fracture extension into the posterior column. The defect and fracture were described according to the Paprosky and Della Valle classifications. A right-sided periprosthetic acetabular fracture (type IIIb according to Paprosky and Della Valle) and fractures close to the acetabulum in the area of the pubic bone (ramus superior and inferior ossis pubis) were diagnosed. The cup of the inserted cementless primary total endoprosthesis (Zweymüller stem, Allofit® cup, Zimmer Biomet, service life 15 years) had dislocated cranially and entered the pelvis minor. The M. iliopsoas had an adjacent haematoma.

A stable acetabular cup restoration with an ilium support and additional osteosynthetic stabilisation (ORIF) of the posterior column was indicated. The aim of the treatment was to restore the joint function quickly by means of load-stable, one-stage surgical treatment ("single shot surgery"). The procedure enables early mobilisation with full weight-bearing in order to avoid long-term immobilisation and the associated complications.

Fig. 1 Preoperative X-ray a.p. Condition after minor trauma with periprosthetic fracture and dislocation of the total endoprosthesis through the fractured acetabulum

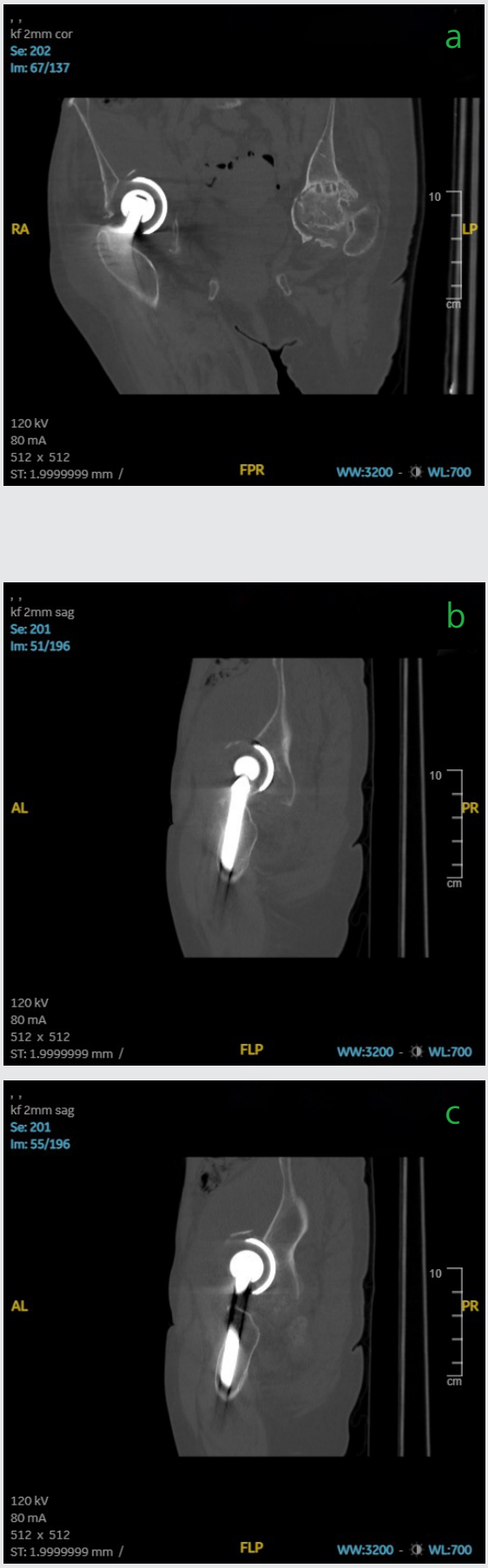


Fig. 2a to c Preoperative CT imaging in the frontal plane (a) and sagittal plane (b, c)

Treatment

According to the preoperative planning (medCAD, Hectec GmbH, Fig. 3), the operation was performed in a lateral position and using the Kocher-Langenbeck dorsal approach. The acetabulum was dislocated centrally. There was a pronounced bony defect combined with only moderate bone quality. The posterior column was fractured near the acetabulum on the ischium.
The quadrilateral area showed complete destruction. The supraacetabular dome was still present as a sufficient block. Acetabular cup in situ was subtly removed to avoid an iatrogenic bone loss. After the open reduction of the posterior column and the dome, fixation was initially performed using plate osteosynthesis (6-hole plate, 88 radius, Stryker Orthopedics).

The acetabular defect was treated with the cementless modular revision cup system (MRS-TITAN Maximum with strap, 56 mm, PETER BREHM GmbH), which could be anchored perfectly in the bone. For a correct and secure positioning of the revision cup system in the os ilium, the modular iliac peg (70 mm) was used additionally, which was fixed to the cup base with a screw. The revision cup was fixed with the pole plug screw. Cup body and the anatomical strap were fixed with 5 (titanium) flat head spongiosa screws. With these screw connection options the maximum stability of the revision cup was achieved.

The stem was left in situ. After an intraoperative stability testing of the femoral component, the trial reduction was performed, which showed excellent mobility and a correct head-cup relation. A revision ball head (32mm, BIOLOX® OPTION, CeramTec GmbH) was used. A polyethylene insert (antiluxation 20°, PETER BREHM GmbH) was clamped into the metallic cup.
The correct implant position, correct articulation and stable joint conditions were confirmed by intraoperative (Fig. 4) and postoperative X-ray controls (Fig. 5 a-d).

Postoperative monitoring took place in the intensive care unit. The patient was transferred to the normal ward the following day. Further postoperative course indicated no complications. The wound conditions were non-irritating. There were no disturbances in peripheral blood circulation, motor function or sensitivity (pDMS control). At no time there were any signs of thrombosis.

No complications occurred. The patient was discharged to the Clinic for Early Rehabilitation and Geriatrics for follow-up treatment.

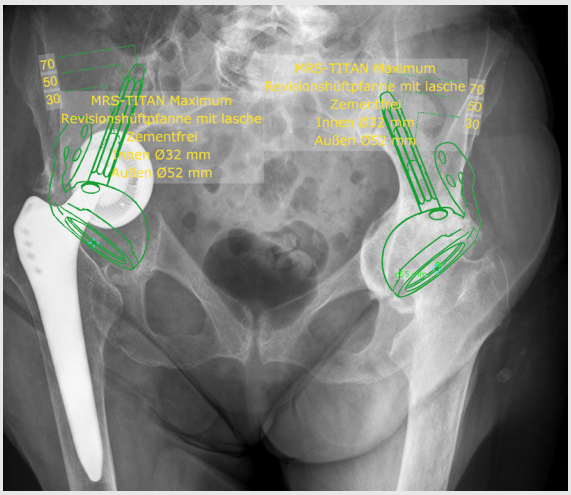


Fig. 3 Preoperative planning of treatment after acetabular fracture with the cementless modular revision cup MRS-TITAN Maximum, strap and screw fixation and iliac peg

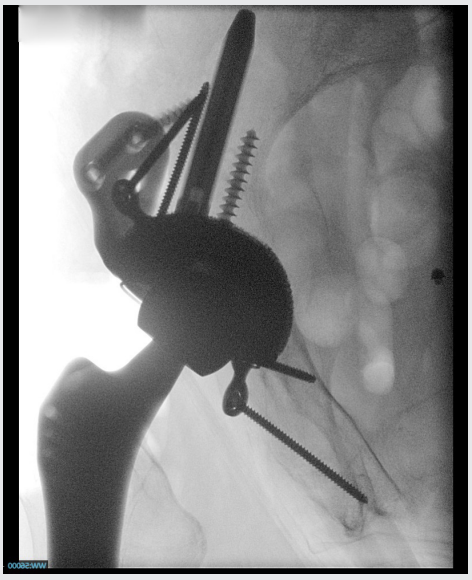
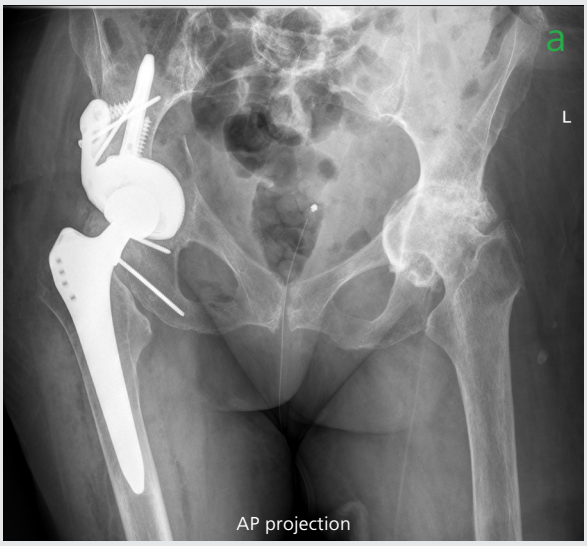


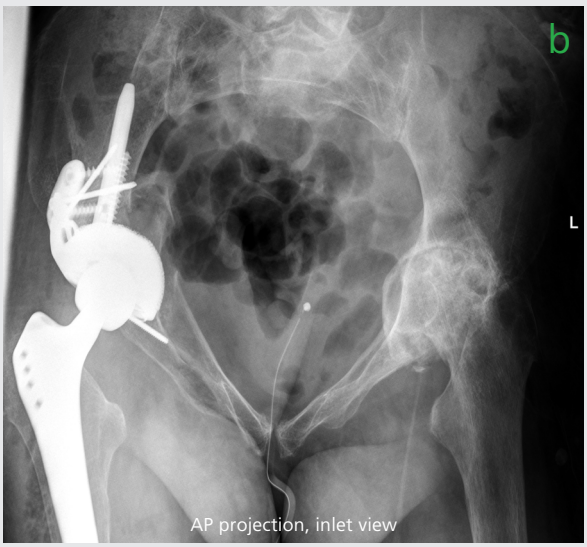
Fig. 4 Intraoperative X-ray control of the implant position

Fig. 6
Revision cup MRS-TITAN Maximum with intramedullary peg anchorage (modular iliac peg 70 mm)

Result

The treatment led to a positive healing process. Rapid mobilisation with a wheeled walker at ward level under pain-adapted full weight-bearing was carried out with physiotherapeutic support. This case illustrates that the treatment of displaced geriatric acetabular fractures with the cementless modular revision cup MRS-TITAN Maximum, strap and screw fixation and iliac peg (Fig. 6) together with additional osteosynthesis is a reliable surgical treatment. As a result, early, load-stable postoperative mobilisation of the patient was achieved in accordance with the regular standard of total hip arthroplasty.





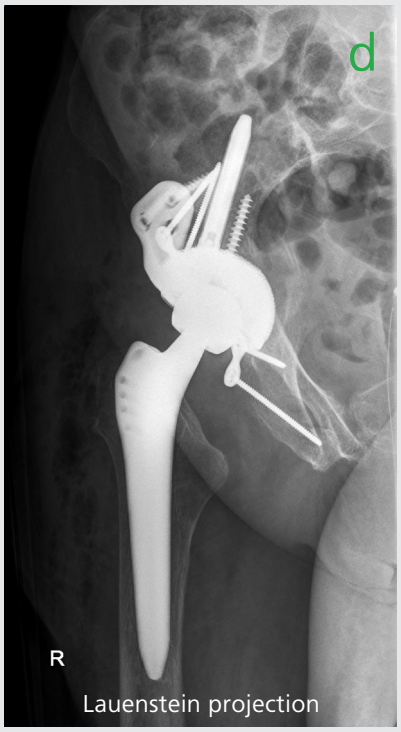


Fig. 5 a to d Imaging after treatment with ORIF and the MRS-TITAN Maximum revision cup (strap, screw fixation, iliac peg) and consolidated fractures

Image sources

Fig. 1 to 5d Westküstenklinikum Heide
Fig. 6 PETER BREHM GmbH

EPRD Endoprothesenregister Deutschland

KNIE HÜFTE SCHULTER
endoCert
Zertifiziertes EndoProthetikZentrum