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First Cut-Out of a Cement-augmeted TFNA - A Case Report

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INTRODUCTION

Intertrochanteric femoral fractures mainly affect geriatric patients (1). Osteosynthesis using cephalomedullary systems is the treatment of choice (2). Despite technical improvements in implants, the rate of mechanical complications such as cut-outs, defined as perforation of the implant through the femoral head, remains high at up to 11.5% (3). Osteoporosis, unstable fracture patterns, poor reduction and poor positioning of the implant quantified by the tip-apex-distance (TAD) are known risk factors for cut-outs (4, 5). Cement augmentation of the femoral head element is increasingly used to reduce complication and revision rates (6). Nevertheless, cut-outs have also been described with various cement-augmented systems. We describe the first case of a cut-out in a TFNA with a cement-augmented blade.

CASE REPORT

A previously independently mobile 80-year-old female patient suffered an intertrochanteric femoral fracture (AO 31A2.3) after a fall at home (Fig 1. a, b). On the following day, closed reduction and osteosynthesis were performed using a TFNA with a cement-augmented blade (Fig 1. c, d) and the patient was discharged to a temporary care facility. A routine bone density measurement as part of our geriatric follow-up care diagnosed osteoporosis, which was treated with antiresorptive therapy and vitamin D and calcium supplementation. After initially good mobilization, the patient complained of increasing pain three months postoperatively with incipient varus position of the head fragment in the X-ray. Six months postoperatively, an immobilized patient presented with perforation of the cement-augmented blade into the acetabulum with consecutive erosion and necrosis in the femoral head (Fig 2.). A revision surgery with removal of the TFNA and implantation of a cemented total hip prosthesis was necessary (Fig. 3).

Figure 1: a) Initial anteroposterior (AP) and b) cross-table axial x-ray of the right hip showing an intertrochanteric femur fracture (AO 31A2.3). c) Postoperative AP and d) cross-table axial x-ray of the right hip after implantation of a TFNA with an adequate TAD of 17 mm, an anatomical reduction and primary anterior distribution of the cement augmentation.

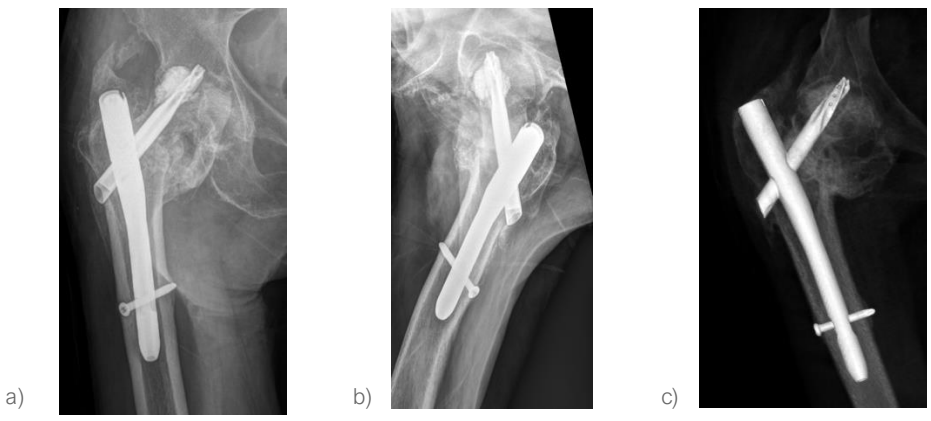

Figure 2: 6 months postoperativ. a) Cut-out of the cement-augmented blade in the a) AP and b) cross-table axial x-ray of the right hip. c) Additional 3D reconstruction of sequential CT images demonstrating in anterior view the cut-out and acetabular erosions.

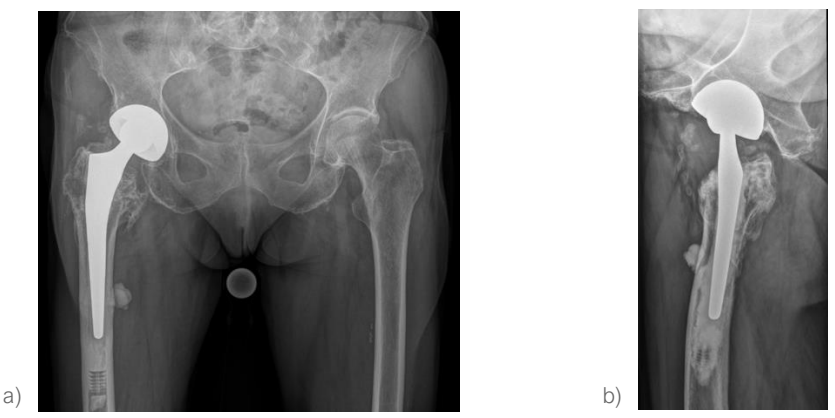

Figure 3: One year after revision total hip arthroplasty.
a) AP x-ray of the pelvic and b) cross-table axial x-ray of the right hip showing a correct anteversion (21°) (7) and inclination (42°) of the cup as well as a correct offset and balanced leg length of the total hip prosthesis. Incidental heterotopic ossifications (Brooker grade II) without clinical relevance.

CONCLUSION

Intertrochanteric femoral fractures are an incisive event in elderly patients with increased mortality, morbidity and loss of independence. Although good results can be achieved through osteosynthesis with cephalomedullary systems, serious complications such as cut-outs persist. Cement augmentation can improve implant anchorage even with malpositioned implants, but there is still a risk of cut-outs, which typically occur within the first 12 weeks (5). Standardized clinical-radiological follow-up is therefore essential in order intervene in an appropriate time. Hip arthroplasty may restore the patient's ability to walk and relieving pain for the cost of a second surgery in this fragile patient collective.

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