

Intrapelvic penetration of Olmed cervical hip fracture screws

A report of 7 cases

Per Adolphson

During a 5-year period 1,307 patients with cervical hip fractures were operated on with Olmed screws. In 7 patients one or both screws migrated into the

pelvis. 6 patients underwent a total hip arthroplasty without complications, 1 patient had a Girdlestone procedure.

Department of Orthopedics, Danderyd Hospital, S-182 88 Danderyd, Sweden. Tel +46 8-6555000. Fax -7551476
Submitted 95-01-18. Accepted 95-02-06

Migration and intrapelvic penetration of osteosynthesis devices used for fixation of a cervical hip fracture are rare. Recently, Sundgren and Persson (1994) reported of 4 cases (1 with a fatal outcome) after osteosynthesis with Olmed screws. I report the 7 cases we observed in our hospital from 1990 until 1994. During this time, 1,307 patients were treated with Olmed screws.

Case 1

A 79-year-old woman had spontaneous onset of left hip pain. Radiographs were normal. Because of progressive pain in the hip she was readmitted 11 days later, and new radiographs showed a displaced cervical hip fracture. The fracture was reduced and fixated with 2 Olmed screws and full weight bearing was permitted. Because of persistent pain, further radiographs were taken 3 weeks later, revealing the distal calcar screw penetrating through the acetabulum. She was reoperated on with a total hip arthroplasty (THA). There was a large oval penetrating hole in the acetabular wall which was covered with a metal net. No further complications occurred.

Case 2

An 82-year-old woman sustained a cervical hip fracture with severe displacement after a fall. She underwent osteosynthesis with Olmed screws the day after the injury, and the postoperative radiographs showed an acceptable position of the screws (Figure 1). The tip of the distal screw was at the bone-cartilage border, but the surgeon had not penetrated the hip joint. She was able to bear full weight after 1 week. Because of increasing hip pain, new radiographs were taken 2 months later; they revealed that the distal calcar screw had penetrated into the pelvis (Figure 1). She underwent a THA without complications.

Figure 1. Case 2.



Immediately postoperatively.



2 months after the osteosynthesis.



Figure 2. Case 3. 6 months after the osteosynthesis.

Case 3

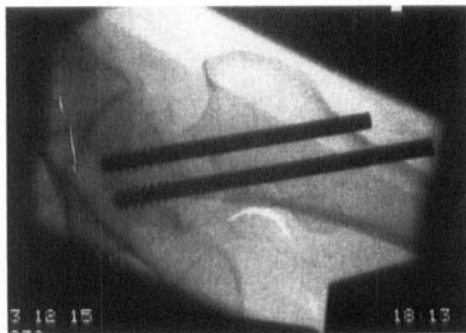
A 91-year-old woman, wheelchair-ridden due to knee contractures, suffered a displaced cervical hip fracture after a fall in a nursing home. She was operated on the day after admission with Olmed osteosynthe-

sis, obtaining an acceptable position of the screws. She returned to the nursing home after 2 weeks, but due to increasing hip pain, a new radiographic examination was carried out 6 months later. It showed the distal screw migrating far into the pelvis (Figure 2). The patient underwent reoperation. She was tiny, and by gentle pushing against the lower part of the abdomen it was possible to press the severely dislocated screw backward into the acetabulum and extract it through the posterior incision. Because of her contractures, only a Girdlestone procedure was performed.

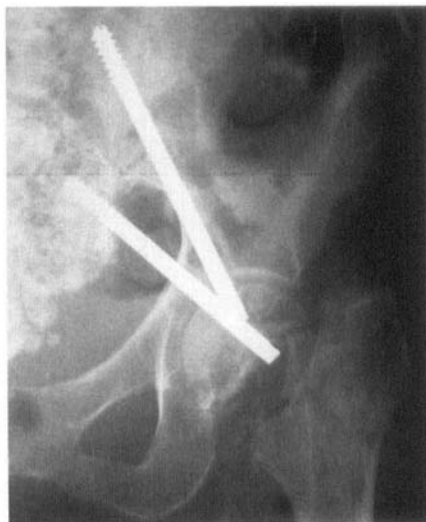
Case 4

An 85-year-old woman fell in her home. The radiographs showed a displaced cervical hip fracture with a small capital fragment. She underwent Olmed osteosynthesis on the following day, and the postoperative radiographs showed a good reduction and screw position (Figure 3). Due to increasing pain, a new radiographic examination was performed 1 month later. This showed that both screws had migrated into the pelvis, one of them seemed to be embedded in a calcified myoma (Figure 3). The patient was reoperated on with extraction of the screws and was given a THA. 2 large acetabular defects were covered with metal nets. The operation was laborious and the perioperative bleeding was 2.6 L. The arthroplasty dislocated 3 days later. After closed reduction, no further complications occurred.

Figure 3. Case 4.



Immediately postoperatively.



1 month after the osteosynthesis.

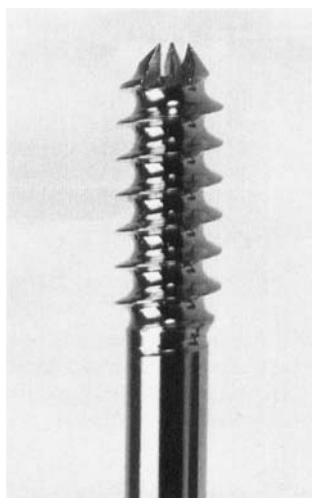


Figure 4. A close-up of the 3 sharp tips of the Olmed screw.

Case 5

A 75-year-old woman sustained a cervical hip fracture after a fall in 1990. After the Olmed osteosynthesis, she had only minor symptoms from the hip until 3 years later, when she noticed a subcutaneous mass on the lateral side of the hip. Radiographs demonstrated a pseudarthrosis, with the calcar screw migrating far into the pelvis. The cranial screw had migrated distally and was the cause of the palpated mass. She underwent a THA without any complications.

Case 6

A 74-year-old man sustained a cervical hip fracture after a fall. He was operated on with Olmed osteosynthesis. The postoperative radiographs showed a good position of the screws. Because of persisting pain, new radiographs were taken 3 months later which aroused suspicion of pseudarthrosis, but the position of the osteosynthesis device was unchanged. New radiographs 4 months after the fracture showed that the calcar screw had penetrated far into the pelvis. He underwent a THA without any complications.

Case 7

An 80-year-old woman was operated on for a dislocated cervical hip fracture after a fall. The postoperative radiographs showed an acceptable position of the Olmed screws. Because of persistent pain, new radiographs were taken 1 year later. They demonstrated penetration of the distal screw far into the pelvis. She underwent a THA without complications.

Discussion

Complete, intrapelvic penetration of an osteosynthesis device after an operation for a cervical hip fracture has been described (Molander 1978, Kolstad 1986). It is a major complication with risks of injury to the retro- and intrapelvic organs. Sundgren and Persson (1994) presented 4 cases of pelvic penetration of Olmed screws, 1 fatal case due to injury to the iliac artery. To avoid this hazard, a retroperitoneal approach may be indicated. However, in our 7 cases it was possible to extract the migrated osteosynthesis device through a posterior hip incision without injury of the pelvic organs.

The mechanism of the proximal migration is not known. Sundgren and Persson (1994) proposed a twisting movement, especially with non-union. Another contributory factor could be the sharp-cutting end of the screw, facilitating perforation of the acetabulum (Figure 4). In none of our cases was there any sign of perioperative penetration into the hip joint. The migration of the screw is anti-gravitational. Therefore, a mechanical explanation could be that the screw tip is trapped in the canal of the femoral head and, after penetration, is squeezed further into the new bony canal of the acetabular wall by bending movements caused by hip flexion.

The manufacturer of the Olmed screw has contacted me to discuss changes of the osteosynthesis device. However, only the future will tell whether changes of the device are sufficient to eliminate this major complication.

Acknowledgements

This work was supported by grants from the King Gustaf V and Queen Victoria's Foundation, the Eva and Oscar Ahrén's Foundation, the Lars Hierta Memorial Foundation, the Åke Wiberg Foundation, and the Åhlén Foundation, Sweden.

References

- Kolstad K. von Bahr-skruv vandrade in i bäckenet hos fyra patienter med medial collumfraktur. *Läkartidningen* 1986; 83 (8): 596–7.
- Molander H. Ovanlig komplikation efter collumfraktur opererad ad modum von Bahr. *Opus Med* 1978; 23: 103.
- Sundgren K, Persson L. Penetrating cervical hip fracture screws. Report of 4 cases. *Acta Orthop Scand* 1994; 65 (5): 511–2.