INTRODUCTION

The most widely accepted treatment of inter-trochanteric fractures is a sliding compression screw telescoping through the barrel of a sliding plate. Dynamic hip screw (DHS) fixation is quick and straightforward. It utilizes controlled impaction during weight-bearing to stabilize the fracture, thus facilitating healing. However, numerous complications have been reported even with this simple surgical technique. This report is only the second case of per-operative intra-pelvic migration of DHS sliding screw in the literature, with technique and difficulties during its retrieval.

CASE REPORT

A 55-year-old man presented with intra-pelvic migration of DHS sliding screw during osteosynthesis of inter-trochanteric fracture. Detailed history from the patient and orthopaedic surgeon revealed that, he was operated through modified Watson-Jones approach under radiographic control at a community health centre. The surgeon did not use the coupling screw and the guide shaft for insertion of DHS. He was unable to guide the barrel plate over dynamic hip screw and in this process, he used hammer to push the barrel plate over the screw. This resulted in proximal migration of the dynamic hip screw into the pelvis and fracture displacement. Surgeon tried to retrieve the DHS, but the distal end of the screw got stuck at posterior femoral neck comminution with engagement of the threaded portion at inner table of pelvis, then the patient was shifted to lateral decubitus position and the Watson-Jones approach was converted to Moore’s approach. The distal end of the screw was visible through posterior comminution and it was aligned to the distal reamed portion of the trochanter. Subsequently, the screw was removed with the help of Kocher’s forceps by rotating it in an anti-clock-wise fashion. Eventually, the fracture was stabilized with a dynamic condylar screw.

Immediately after surgery, pelvis and abdomen were guarding or rigidity was present. Anteroposterior radiographs of pelvis revealed intra-pelvic migration of the DHS with only 2.5 cm of it engaged in the femoral head (Figure 1). Ultrasonography of the abdomen and pelvis revealed, sliding screw lying along the pelvic wall, with no intra-abdominal visceral or vascular injury. The patient was shifted to the operation theatre and an attempt was made to insert the coupling screw through the hollow guide shaft into the hip screw. This failed, and during the process the screw migrated further into the pelvis. Kocher’s forceps was used to retrieve the DHS screw, but this technique was partially successful in bringing down the hip screw. However, the distal end of the screw got stuck at posterior femoral neck comminution with engagement of the threaded portion at inner table of pelvis, then the patient was shifted to lateral decubitus position and the Watson-Jones approach was converted to Moore’s approach. The distal end of the screw was visible through posterior comminution and it was aligned to the distal reamed portion of the trochanter. Subsequently, the screw was removed with the help of Kocher’s forceps by rotating it in an anti-clock-wise fashion. Eventually, the fracture was stabilized with a dynamic condylar screw.

ABSTRACT

The authors report a rare per-operative complication of intra-pelvic migration of dynamic hip screw, during osteosynthesis of an inter-trochanteric fracture. Possible reasons of migration are analyzed along with the importance of careful execution of the surgical technique to avoid such iatrogenic complications and medico-legal implications.

Key words: Dynamic hip screw. Inter-trochanteric fracture. Screw migration. Pelvis.
again assessed with ultrasound scan, which did not reveal any intra-pelvic damage due to screw penetration.

**DISCUSSION**

The DHS is a frequently used implant, and this device is associated with various complications both per- and postoperatively, if the standards of surgical procedure are not adhered to.\(^7\),\(^9\),\(^10\) One such complication is intra-operative migration of sliding hip screw in the pelvis,\(^7\) as observed in this case also.

The different methods have been described for retrieval of migrated screw.\(^7\)-\(^9\) Murphy et al. removed the migrated hip screw through a small hole in the roof of the acetabulum.\(^8\) Laparoscopic removal of intra-pelvic hardware has also been described.\(^9\) Naidu Maripuri et al. described the use of a long handled punch biopsy forceps to hold and un-screw the migrated DHS.\(^7\) This technique was partially successful in the present case, but failed to completely unscrew the migrated DHS as it got stuck at posterior femoral neck comminution. This necessitated exposure of the distal end of proximal fragment through Moore’s approach. Rao and Pringle reported the case of retroperitoneal migration of the sliding screw. At operation, they were unable to access the screw and it was left in-situ.\(^10\)

Numerous reasons like; osteoporosis, poor fragment reduction, inadequate lag screw placement, varus reduction and failure to re-establish acceptable hip biomechanics have been cited as the cause of failure and complications of this mode of osteosynthesis.\(^1\)-\(^3\)

Retrospectively, there may be a number of possible reasons responsible for this complication in the present case. The surgeon may have over reamed the femoral head. This is possible, as surgery was performed under radiographic control (taking X-ray films) and not under image intensifier/fluoroscopic control.

The lag screw may have engaged in the slot of the barrel with slight angulation. Tapping with hammer facilitated entry of lag screw into the pelvis; this may be the main reason in the present case as surgeon tapped the barrel plate on the screw with hammer. To avoid this complication, plate barrel has to be slid manually over the screw and after successful contact between the two has been achieved, only then, gentle use of mallet is advised.

Lag screw extender should not be removed until the plate screw assembly is checked by the image intensifier. Surgeon did not use lag screw extender (the coupling screw and the guide shaft) and image intensifier per-operatively. Manufacturing errors in the screw used, cannot be ruled out.

This highlights the importance of careful execution of the surgical technique to avoid such iatrogenic complications. Regardless of the outcome in such situations, awareness of such iatrogenic complications will avoid embarrassment of the surgeon and medico-legal implications.

**REFERENCES**

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