



Intrapelvic migration of a guide pin during fixation of a hip fracture Who and what is to blame ?

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The authors report the case of a 61-year-old patient who underwent internal fixation with a dynamic hip screw for a stable intertrochanteric fracture of the right hip. The immediate postoperative radiograph showed complete intrapelvic migration of the threaded guide pin, which has gone unnoticed during operation. The pin was removed by laparotomy, and was found to have damaged no pelvic viscera ; the patient made an uneventful recovery. The authors analyse the mechanism of such iatrogenic complications and the possible means to avoid them.

INTRODUCTION

Fractures around the hip joint are successfully managed with internal fixation. Many of the devices used are cannulated and require the initial placement of one or more guidewires for accurate positioning. There are several reports on intrapelvic penetration of guide wires (6, 7, 9) and the high risk of pelvic visceral damage that could occur during hip fracture fixation (3).

This is an unusual case report of undetected intrapelvic migration of a guide pin during fixation of an intertrochanteric fracture.

CASE REPORT

A 61-year-old male sustained a stable intertrochanteric fracture of the right hip. Under regional anaesthetic, he was placed on the orthopaedic

fracture table and closed reduction of the hip fracture under the image intensifier was performed. A sliding compression hip screw was used to internally fix the fracture fragments. The standard and usual technical steps specified by the manufacturer for the application of a compression hip screw were followed. No difficulty was encountered during the surgery and the procedure was completed without any complications. A final check up of the operated hip with the image intensifier was not done. The routine post-operative radiograph of the right hip revealed intrapelvic migration of the threaded guide wire (fig 1). The patient was asymptomatic. He was informed of the complication and was promptly taken to the operating room for open laparotomy under general anaesthesia. During surgery the pin was seen to be lying over the intestines and no pelvic visceral damage was noted (fig 2). The bent guide wire was retrieved successfully from the abdomen without intra-operative or

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Fig. 1. — Immediate post-operative radiograph of the right hip showing intrapelvic migration of the threaded guide wire.



Fig. 2. — The guide wire as seen during laparotomy

post-operative complications (fig 3). The progress of the patient over a 3-year follow-up was unaffected by this complication.

DISCUSSION

The use of tools and implants in treating fractures is common in orthopaedic surgery. Migration of orthopaedic implants is well documented in the literature (2, 10). There have also been reports of hardware migration with disastrous as well as fatal consequences (2, 5, 9). However, undetected migration of a guide wire into the pelvis during hip fracture fixation is rare (6, 7).

In our case, the migration of the guide wire into the pelvis was not noticed during surgery. The final check up of the operated hip with the image intensifier was neglected. The immediate postoperative radiograph showed almost complete intrapelvic protrusion of the guide pin. Such an unexpected complication, regardless of the final outcome causes embarrassment to the surgeon. Looking retrospectively into the causes of such an unpermissible complication, we could point out a number of possibilities.

Several types of hip screws and instrumentation systems are available on the market place and each one provides its own guide wires and mechanisms for their correct placement in the femoral head. It is

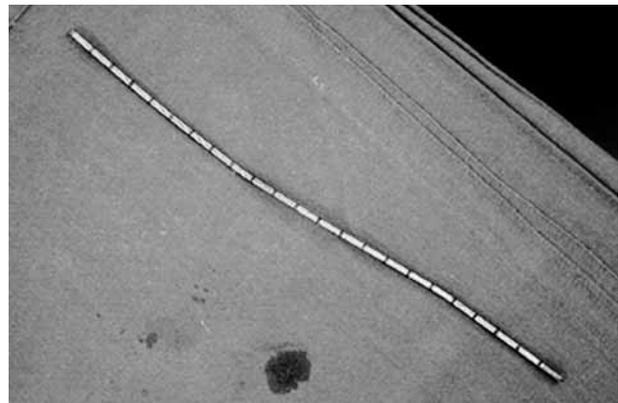


Fig. 3. — The retrieved bent guide wire

advised that only guide wires specified by the manufacturer for the particular type of hip screw should be used. If for any reason, guide wires from different manufacturers are used, the surgeon should make sure that the available guides have the same characteristics as the original wire provided by the manufacturer. Guide wires that have different specifications regarding thickness, length and resistance to heat generated during their insertion, may lead to unexpected complications. The use of cannulated drill bits or taps over a thick, or bent guide wire may generate high friction between them. The generated friction increases the force required for drilling or reaming (4, 7). The excessive force applied while drilling or reaming may drive the guide wire further into the pelvis.

A similar complication could happen if the blocked flutes of the cannulated drill bits and taps are not properly cleaned before reusing (8), or if those supplied hardwares do not fulfill the specifications recommended by the manufacturer for the type of hip screw used. In our case, we are not sure if the wire used was bent or reused but it definitely did not belong to the instrument set supplied by the manufacturer for the type of hip screw used.

In order to avoid intraoperative or postoperative incidents, the operating surgeon should be well acquainted with the type of instrumentation to be used. Counting the guide wires should be routinely done before surgery and before closure of the wound. The surgeon should be sure that the guide wires available in the instrument set are straight, strong, and have the same length and thickness, and that they can easily pass through the available cannulated instrumentations. In our case this checking detail was neglected by the surgeon as well as by the scrub nurse.

Moreover, visualisation of tools and implants on fluoroscopy should be done at all stages during surgery. In our case, the checking of the position of the guide wire with the image intensifier was only done at the beginning of surgery and was neglected thereafter.

So, who and what is to blame? Such iatrogenic complications should of course be avoided. First of all, only disposable straight and stout guide wires should be used. To ensure the single use of guide wires, surgeons should bend the end of the guide wire he used, at the end of each operation (1). Furthermore, the use of hardware that does not belong to the instrumental set supplied by the manufacturer for the type of hip screw used should

be avoided. Junior as well as senior surgeons should be well acquainted with the instrumentation to be used for fixation and should not rely solely on mechanical devices. Finally, checking of guide wire placement with fluoroscopy at all surgery stages is necessary.

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