

A simple technique to retrieve broken guide wire transfixing hip joint

Daya Krishna, Subhash Chand

Department of Orthopaedics, Veer Chandra Singh Garhwali Government Institute Medical Science and Research Institute, Srinagar, Pauri Garhwal, Uttarakhand, India

Address for correspondence:

Dr. Daya Krishna,

Department of Orthopaedics, Veer Chandra Singh Garhwali Government Medical Science and Research Institute, Srinagar, Pauri Garhwal - 246 174, Uttarakhand, India.

E-mail: daya.k.ortho@gmail.com

ABSTRACT

While operating on the hip joint, breaking of guide wire became a challenge for treating orthopedic surgeon. Here we report a simple method of removal, which requires limited resources and does not need sophisticated instrumentation. By using this method, we remove broken guide wire in a patient of sub-trochantric fracture of femur managed by close reduction and internal fixation by proximal femoral nail. During the removal of the guide wire, after placing distal screw in the neck the guide wire comes out with some difficulty in the final view on image intensifier - the guide wire broken and transfixes the hip joint but does not enter the pelvis. After removal of the distal screw, its cannulated drill bit was connected to a T-handle and introduced into the track of distal screw up to the broken distal end of guide wire and slow manual reaming done under C-arm image intensifier to prevent damage to the articular cartilage. This process was repeated three times after cleaning drill bit each time to clear the base of guide wire for grasping its distal end. With the help of Kerryson rounger/grasper, the distal end of the guide wire was grasped and easily removed. The distal screw was placed in its original track and the procedure was completed.

Keywords: Breakage, proximal femoral nail, subtrochantric fracture, threaded guide wire

Introduction

Threaded guide wire and cannulated instruments are used for localizing the various fixation devices such as cannulated cancellous screws, dynamic hip screw, recon nails, and proximal femoral nail while operating around hip joint, and the intertrochantric and subtrochantric regions. Retrieval of broken threaded guide wire is difficult and challenging. There are chances of intrapelvic migration, damage to the articular

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cartilage, and over-reaming during its removal. We removed the broken guide wire with the help of manually controlled drilling at the base of guide wire without any further damage to the articular cartilage with the help of Kerryson rounger/grasper. This method can be used by center with limited resources and lacking of sophisticated instruments.^[1-3]

Case Report

A 46-year-old male patient presented to the orthopedic emergency with the history of fall from height and inability to use right lower limb. The patient was diagnosed as close subtrochantric fracture of right femur. An above knee skin traction was applied till operative fixation. Close reduction was performed under spinal anesthesia on fracture table and image intensifier. After making an entry at the greater trochanter, the guide wire was passed into the distal fragment followed by reaming and placement of PFN in the correct position. The threaded guide wire was passed into the neck up to the subchondral area of the head under an image intensifier. The proximal screw was placed after drilling and tapping. After placement of the distal screw, the guide wire was removed by forward unidirectional drill used in the case by pulling it out. On the final view of image intensifier, the broken guide wire transfixing the hip was seen [Figure 1a]. For removal of this broken guide wire, we removed the zig and distal screw in the neck after locking of nail in distal fragment. We connected the cannulated drill bit of distal screw to a T-handle and introduced it

through the track of distal screw into the neck and head of femur up to the broken end of the guide wire. Under image intensifier, we manually drilled the base of broken drill bit 3 times, after cleaning drill bit each time, to remove bone debris; it cleared the bone around the base of broken guide wire to grasp it easily. The broken end was grasped easily by the Kerrison rongeur/grasper and retrieved successfully [Figure 1b]. This method was successfully used in another case, in which the guide wire broken during drilling for proximal screw.

Discussion

Guide wire breakage while operating around hip joint is not a common problem; it is very easy to remove the broken guide wire by our method, which we used successfully in two patients. The possible reasons for breakage of guide wire are as follows: Multiple reuse of guide wire, blockage and jamming of cannulated drill bit and tap, increase in the effective diameter of threaded portion of guide wire and decrease in the effective diameter of lumen of cannulated drill bit due to deposition of bone debris produced during the procedure, bending and distortion of guide wire due to the pushing and pulling force applied during insertion and removal, and unidirectional drilling machine used for both insertion and removal may lead to the breakage, as in our cases. The drill machine move in forward direction the threaded portion of guide wire also moves forward but we pull in the opposite direction to remove the guide wire leading to breakage.

The various method of removal of broken guide wire in literature are as follows: by using 2-mm cannulated drill bit under fluoroscopy; by using dynamic hip screw (DHS) reamer to make entry wide and then removal by Kocher forceps or a needle holder;

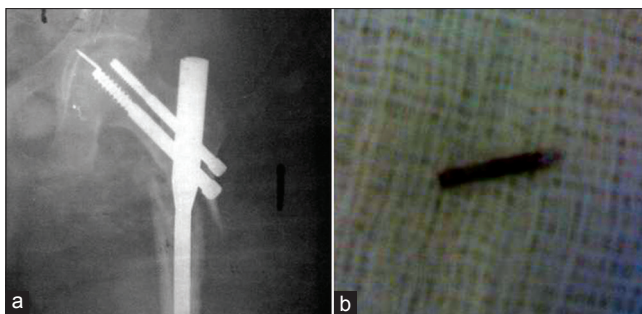


Figure 1: (a) The broken guide wire transfixing hip, (b) broken piece of the retrieved guide wire

by making a window in femoral neck, and by endoscopic-assisted retrieval method.

By using 2-mm cannulated drill bit, it is not easy to catch the guide wire and there are chances of pelvic migration of the guide wire. Window formation is also not without complication; we cannot use DHS triple reamer in case of proximal femoral nail where the implant is *in situ*, and endoscopic-assisted method requires sophisticated instrumentation and an expert.^[4-8]

In our method, no powered instrument was used with the help of T-handle and cannulated drill bit. We cleared the base of the broken guide wire to make it accessible to catch by using Kerrison rongeur/grasper for retrieval under image intensifier with implant *in situ*. The advantages of our method are that there are less chances of pelvic migration of the guide wire and cartilage damage; because of manually controlled drilling under image intensifier, there is no need to wide entry, and the same track is used with implant *in situ*.

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