

Case Report

How to manage blocked intramedullary canal while reaming during hip arthroplasty

Harish Bansal, Laxmi Narayan Jajoriya*, Aditya Verma

Department of Orthopaedics, Indian Spinal Injuries Centre, Vasant Kunj, New Delhi, India

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*Correspondence:

Dr. Laxmi Narayan Jajoriya,

E-mail: laxminarayan200810@gmail.com

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ABSTRACT

Blockage of femoral canal while doing hemiarthroplasty is rare finding. Before inserting the femoral stem trial we should manage this blockage adequately to prevent iatrogenic fracture. Herein, we present a case of fracture neck of femur right in a 79-year-old male who presented with history of right hip pain and later was diagnosed with neck of femur fracture subcapital type that was treated with cementless hemiarthroplasty. In conclusion, if the canal is blocked, start with small diameter (K-wire), then insert guide wire and then reaming over it to open the blocked canal, do not hammer directly to prevent iatrogenic fracture. Go sequentially to open the blockage. First open the marrow then insert trial stem.

Keywords: Blocked femoral canal, Hemiarthroplasty, Reaming, Fracture, K-wire

INTRODUCTION

The objective of treatment of femoral neck fractures in the mobile elderly population is early restoration of pre-morbid walking ability and quality of life. Hemi- or total hip arthroplasty is an accepted treatment of fracture neck of femur in the elderly.¹ Reported advantages of HA compared with THA are reduced dislocation rates, less complex surgery, shorter operation times, less blood loss, and lower initial costs.² In this case report we had reported the blockage of femoral canal while reaming, to open that canal we had used a technique to prevent fracture of femur shaft while hammering the broach.

CASE REPORT

A 79-year-old male, social worker with history of fall after which he got femoral neck fracture subcapital type. He presented to our hospital with chief complaint of right hip pain and was not able to bear weight since the fall. The

pain was sudden in onset and sharp shooting in character. Range of motion of the hip was severely restricted due to pain. Greater trochanter tenderness was noted on examination. Initial X-rays were ordered (Figure 1) and revealed a right neck of femur fracture displaced. On X-ray finding the marrow was found to be blocked. Surgical intervention for the right neck of femur fracture was offered to the patient. The patient favoured surgery and requested to be done as soon as possible. He was admitted for preoperative clearance and planning. Initial labs were ordered for the patient. Following the clearance for surgery by anaesthetist, the patient was taken to the operating room after 1 day.

Procedure

Under general anesthesia, a posterolateral approach was used. After hip joint arthrotomy, the femoral head was removed. Femoral head size was noted to be 48 mm. We noted the bone quality to be excellent, which affirmed our decision to continue with the cementless system (DEPUY,

Warsaw, IN, USA). However, the proximal femoral canal was completely blocked, and reaming was not possible. Multiple drilling initially with k wires was done (Figure 2), and then a guidewire was inserted in the femoral canal, which opened it and allowed for the flexible reamer to be used (Figure 3). Size 8 stem was used with a size 22/0 mm head, and 48 mm bipolar +1.5 cup to achieve excellent fixation and stable reduction.

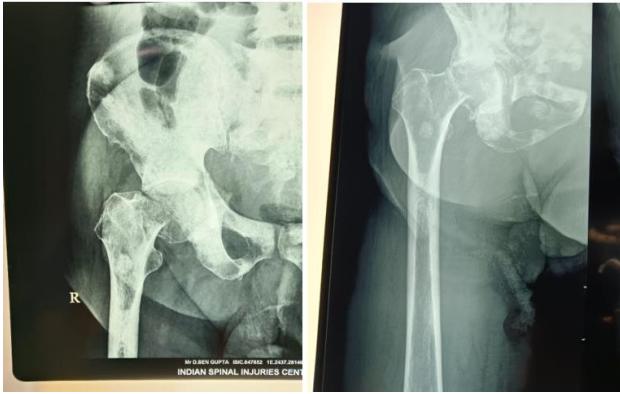


Figure 1: X-ray showing fracture neck of femur with blocked proximal femoral canal.



Figure 2: Various tools used intraoperatively to open the canal (K-wires, canal opener, reamer tips).

Recovery

Postoperatively, the patient was started on a physiotherapy course consisting of full-weight bearing on the bilateral lower limb mobilization. The patient achieved all his inpatient physiotherapy goals within 3 days and was discharged with his home medication and anticoagulation. During his first follow-up 3 weeks out, the surgical wound was clean, and his clips were removed. The patient was then referred to an outpatient physical therapy center to resume his physiotherapy. The patient achieved full range of motion within 2 months post-operatively. Implants

remained in good position showing no signs of loosening on X-rays on the ninth month visit, and he denied any pain with walking and had excellent range of motion at the time.

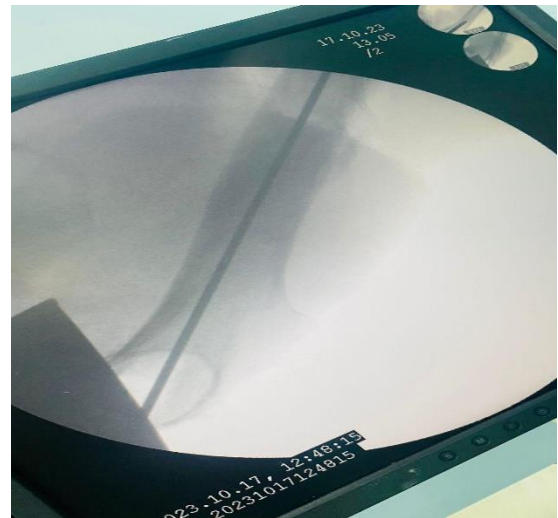


Figure 3: Guide wire inserted intra-operatively and checked fluoroscopically, on which reaming has been done.

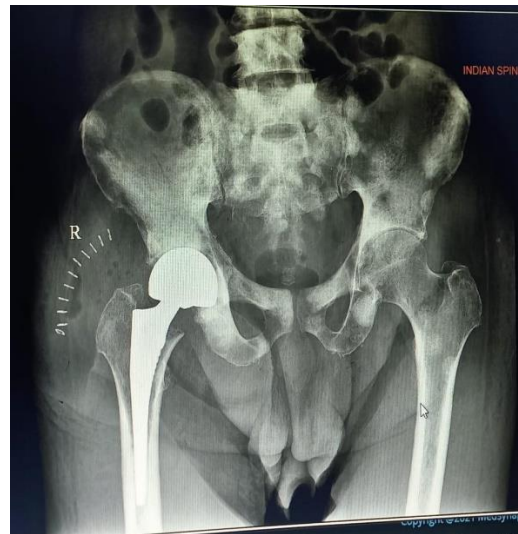


Figure 4: Immediate post-operative X-ray showing the well-fixed prosthesis.

DISCUSSION

There are few published data about the blocked femoral canal management while doing bipolar hemiarthroplasty. It is well-established that femoral neck fracture is more common in elderly with trivial fall. However, to our knowledge, this is the first reported case of hip fracture with blocked femoral canal. The choice of surgical intervention between bipolar hemiarthroplasty and total hip replacement was decided based on the absence of osteoarthritic changes to the left hip, adding to that the patient's activity level prior to her symptoms was low to begin with. The main challenge in dealing with the case

was to insert the stem without causing fracture to the shaft. There is no clear consensus on the matter due to the rarity of the blocked canal in the arthroplasty clinic. However, a cementless approach was decided based on the surgeon's preference. Additionally, we wanted to avoid unwanted side effects of femoral cementing such as increased blood loss and longer operative time.¹⁻³ In conclusion, the use of initial K-wire, followed by guide wire, then reamer will decrease the chances of fracture while inserting the stem in a blocked femoral canal during bipolar hemiarthroplasty. In a study by Pachore et al since most of their patients had fibrosis after nonunion, their canals were blocked. After the initial drilling, the canal was reamed using short intramedullary cannulated reamers over the guide wire. They had to use larger reamers and high-speed burr in the proximal part of the canal to accommodate the prosthesis because there was no metaphyseal cancellous bone to prepare the canal with routine broaches. Proximal fragment instability was observed in one patient who had undergone four prior surgeries for subtrochanteric extension. Therefore, they had to bone graft it on the posteromedial side of the femur and a lateral plate was used to stabilise the proximal fragment.⁴ In a study by Alturki et al the proximal femoral canal was totally obstructed due to myelofibrosis and it was not feasible to ream it. Gradually, several drill holes were completed before a guidewire was placed in the femoral canal which made it accessible and using the flexible reamer became possible.⁵ In a study by Shetty et al after being unsuccessful to pass the guidewire, they tried the reamer cutter, which didn't pass through either. Then they tried to mallet the guidewire to negotiate the blocked canal. Still to no avail, they drilled the proximal fragment using a 3.2 mm guide pin.⁶ Since no such ideal protocol is still there to deal with blocked medullary canal. Make drill hole with K-wires, then insert guide wire under C-ARM guidance and then ream over it is a guided technique to deal with blocked intramedullary canal. At no step, hammering is advisable to prevent intraoperative fracture.

CONCLUSION

If the canal is blocked, start with small diameter (K-wire), then insert guide wire checked under fluoroscopy and then

reaming over it to open the blocked canal, do not hammer directly to prevent iatrogenic fracture. Go sequentially to open the blockage. First open the marrow then insert trial stem. Best way to prevent intraoperative fracture.

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