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Case Report

Loss of Trial Femoral Head, A Rare Intraoperative Complication During Total Hip Arthroplasty: A Case Report and Literature Review

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Abstract

The one of the most important step while performing total hip replacement is trial reduction of implant. While dislocating or reducing trail implant the femoral trial head may disengage and migrate into the deep tissue space of the pelvis. Such a complication can be very frustrating to the surgeon and sometimes to the patient also. 70-year-old male farmer presented with right neck femur fracture. The patient was planned for total hip replacement. The trial reduction was done and the hip relocated and checked for range and stability. On performing the dislocation maneuver the trial head disengaged and migrated into the surrounding soft tissue and could not be visualized in spite of multiple attempts. The Final head was attached and the final reduction performed and the patient was closed. The trial head couldn't be detected on the portable fluoroscopy machine and immediate radiographs. A CT on the 3rd post-operative day revealed that the trial head was lying next to the iliac bone, within the pelvis. A 3, 6 and 12 month follow up of the patient showed a normal clinical examination and patient was able to walk full weight bearing.

Keywords: Trial Femoral Head; Dislocation; Total Hip Replacement

Abbreviations

CT: Computer Tomography

Introduction

Total hip replacement is a commonly performed surgery for various pathologies of the hip in elderly individuals. The one of the most important steps while performing total hip replacement is trial reduction of implant to check stability of hip joint and the leg length discrepancy [1]. While dislocating or reducing trail implant the femoral trial head may disengage and migrate into the deep tissue space of the pelvis [2,3]. This is a rare and under reported complication of total hip replacement. There are few case reports describing this complication, but actual incidence is unknown. Such a complication can be very frustrating to the surgeon and sometimes to the patient also. The surgeon usually tries to retrieve the migrated trial head by finger exploration however it ends up being pushed further intra-pelvic. Since the trial head is not radio opaque, it is not visible on fluoroscopy or x-rays and a CT scan is required to view its exact location [4]. We present our experience with this complication and relevant review of the literature.

Case Report

A 70-year-old male farmer, presented with pain and inability to bear weight on right lower limb after a fall. A local examination showed groin tenderness, external rotation deformity, shortening and inability to perform active straight leg raising test. Radiographs confirmed the diagnosis to be neck femur fracture of the right side. Patient had previous history of fracture of left hip for which Bipolar hemiarthroplasty was done 10 years back.

The patient was planned for a total hip replacement surgery. Postero-lateral approach was taken after positioning in lateral decubitus position. The metallic acetabular shell and polythene liner and a cemented femoral stem were inserted and the trial head of size 32mm was mounted on the femoral neck and the hip relocated and checked for range and stability.

On performing the dislocation maneuver the trial head disengaged and migrated into the anterior soft tissue. Attempts were made to retrieve the head manually by fingers but resulted in further pushing of the head deeper and could not be visualized in spite of multiple attempts. Since the trial head is made of radio-lucent material so it couldn't be detected on the portable fluoroscopy machine. After multiple failed attempts finally, decision was made to proceed with the surgery in usual way. The final metal head was attached, and the reduction was performed, and the patient was closed. Immediate radiographs couldn't reveal the femoral head. The immediate post-operative period was uneventful, and the patient was mobilized full weight bearing using crutches.

A CT scan was performed on the 3rd post-operative day and the trial head was able to be detected lying next to the iliac bone, within the pelvis.

A 3-month, 6 month and 12 month follow up of the patient showed a normal clinical examination and patient was able to walk full weight bearing.

A repeat CT scan conducted at 3 months showed the head to lie in the same anatomical position as the immediate post-operative period.

Discussion

Total hip replacement is one of the most common surgeries performed for various pathologies of the hip. The trailing of implants is commonly performed during the surgery before final implantation of implant. The intra-operative complication of disengagement and further migration of the trial femoral head component is not commonly reported in literature. The loss of any instrument intraoperative is a serious situation and can lead to possible immediate and long-term effects. The exact incidence of such an occurrence is unknown [1]. As per literature disengagement occurs while reducing or dislocating the trial femoral head and has also found to occur during assessment of anterior instability [5,6]. In our case the head disengaged at the time of dislocation of the head.

The possible risk factors for the same include lack of muscular relaxation [7], soft tissue tightness [8,9], poor fitting of the trial head onto the femoral broach following repeated sterilization [7,10], mini-invasive approach, performance of an anterior capsulotomy and impingement of the head against the anterior wall of the acetabulum [11].

Inexperience of the surgeon and pre-operative weight loss are other reported factors [12].

In various reported cases, the trial head was found to migrate along the iliopsoas muscle, to lie extra-peritoneally within the pelvis commonly [3,4,9,13]. The eventual position of migration was found to be posterior to superior-pubic rami [6], anterior to sacro-iliac joint [9], beneath rectus femoris [10], beneath tensor fascia lata [11]. Attempts to retrieve with the help of fingers usually leads to further pushing of the trial head into the soft tissue [1]. The head in our case lay within the pelvic cavity in front of the sacro-iliac joint.

Considering that the head was sterile, round, smooth plastic structure made of acetyl copolymer resin and also the age [9], medical status and unwillingness on the part of the patient for another surgery, the decision to not attempt retrieval of the head and follow –up the patient was made. Similarly, many cases in literature have also not attempted a retrieval [2,4,9,14], whereas others have attempted the removal of the head via the same or different incision [6,7,12]. Retrieval is preferred in young patients, and also in those wherein the implant has or is likely to cause compression of neurovascular structures [7].

The complication can be prevented by ensuring adequate muscular relaxation of the patient, packing the anterior space, and checking the trial implants for wear. Alonso suggested passing su-

tures through the dome hole of the trial head to prevent its dissociation [10].

Figure 1: Pre-operative X-ray.

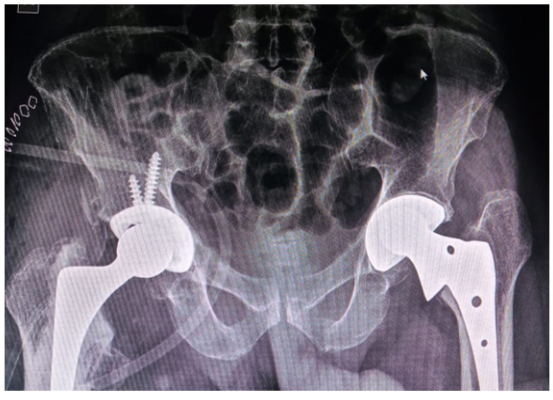

Figure 2: Immediate post-operative X-ray with no evidence of trial femoral head.

Figure 3: A post-operative day 3 CT scan showing position of trial femoral head.

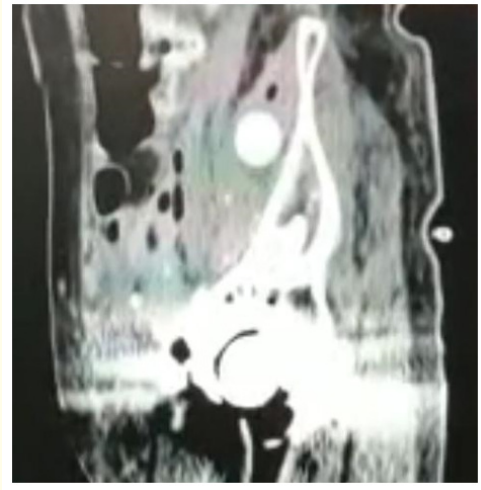

Figure 4: A post-operative day 3 CT scan showing position of trial femoral head.

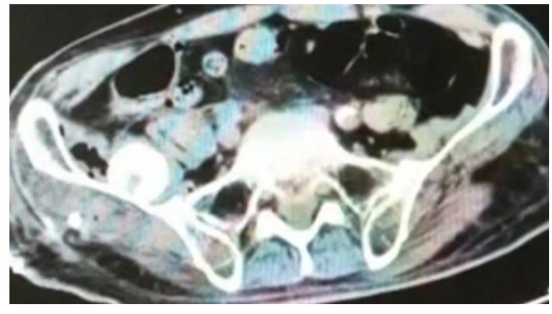

Figure 5: A post-operative 3-month CT scan showing no change in position of trial femoral head.

Figure 6: A post-operative 3-month CT scan showing no change in position of trial femoral head.

Conclusion

Although a rare complication, but surgeon should know about this complication. Once disengaged it is very difficult to retrieve the trial head from the soft tissue. Various precautions have to be kept in mind to prevent its occurrence. The trial-head may be kept in situ as it's a sterile implant and the patient may be followed-up to assess for any complications. We may also suggest implant manufacturers to have radio-opaque trial implants to allow for easier detection via fluoroscopy in the event of disengagement [4].

Conflict of Interest

No conflict of interest exists.

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