



Case report

Intraoperative dislocation of the trial bipolar cup into the pelvis during bipolar hip arthroplasty – A case report[☆]



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HIGHLIGHTS

- There have been a few reports of intrapelvic migration of trial femoral heads during total hip arthroplasty, and it is difficult to retrieve from the pelvic space.
- An additional incision might be useful to retrieve, as might the ilioinguinal approach or sometimes laparotomy.
- It is important to remove the component based on the patient's condition, component position, and the patient's consent.

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ABSTRACT

Introduction: Bipolar hip arthroplasty is a good option for treating femoral neck fractures, although some contraindications have been indicated. We report a case of intraoperative dislocation of the trial bipolar cup into the pelvis during bipolar hip arthroplasty.

Case presentation: A 74-year-old woman underwent bipolar hip arthroplasty for a femoral neck fracture (AO31-B2). She was placed in a lateral decubitus position, and a direct lateral approach was used. During intraoperative trial reduction, the trial bipolar cup became disengaged and dislocated into the anterior space of hip joint. Several attempts to retrieve it failed. The permanent femoral component was inserted, and the wound was closed. The patient was repositioned supine to allow an ilioinguinal approach, and the component was easily removed. She had an uneventful, good recovery.

Discussion: Several cases of intraoperative dislocation of the femoral trial head during total hip arthroplasty have been reported, this is the first report of dislocation of a bipolar trial cup. A previous report described difficulty retrieving a trial cup.

Conclusion: We easily removed our trial cup using another approach. It is vital to plan systematically for this frustrating complication.

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1. Introduction

Bipolar hip arthroplasty is a good option for treating femoral neck fractures in patients more than 65 years of age, especially

when they are at some surgical risk [1]. Bipolar hip arthroplasty offers more advantageous than total hip arthroplasty in that it has a shorter operative time, less bleeding, and a lower risk of dislocation. Some contraindications (e.g., dislocation, infection), however, have been described. We report the case of intraoperative dislocation of the trial bipolar cup into the pelvis during bipolar hip arthroplasty. Although there have been several reports of intrapelvic migration of the trial femoral head during total hip arthroplasty [2–10], we found no reports of intrapelvic migration of a trial bipolar cup. Thus, we believe that this is the first report of intraoperative dislocation of a trial bipolar cup into the pelvis during bipolar hip arthroplasty.

[☆] This work was performed at the Department of Orthopaedic Surgery, Juntendo Shizuoka Hospital, 1129 Izunagaoka, Izunokuni, Shizuoka 410-2295, Japan.

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2. Case presentation

2.1. Patient information

A 74-year-old Japanese female fell in her room and arrived at our hospital the same day. Her previous medical history included diabetes mellitus, chronic kidney disease with dialysis, and no previous surgery.

2.2. Clinical findings

She had a complaint of pain of right hip joint, and was positive right Patrick test. There was no sign of perfusion failure of right lower limb.

2.3. Timeline

The surgery was performed on 7 days after the injury.

2.4. Diagnostic assessment

We diagnosed a right femoral neck fracture (AO31-B2) by X-ray (Fig. 1).

2.5. Therapeutic intervention

The surgery was performed under general anesthesia with the patient in the left lateral decubitus position. Surgery was performed by a three-years experienced physician and a 17-years experienced attending orthopaedic physician. A direct lateral approach was used with a standard skin incision. The hip joint capsule was widely resected in a T-shaped form. After reaming and rasping the femur, a trial bipolar cup was installed with a femoral stem component (Stryker Accolade II, Cup 43 mm; Tokyo, Japan). Before final implantation, a trial reduction with a 43-mm trial bipolar cup was performed. During the intraoperative trial reduction, the trial bipolar cup became disengaged and dislocated into the anterior space of hip joint. At first, we maintained the trial cup within our visual field and made several attempts to retrieve it using our fingers or forceps. These attempts brought about making components deeper, because of the limited working space, or the cup's placement. Finally, they all ended in failure. The trial cup's location was confirmed by fluoroscopy (Fig. 2). We left the cup in



Fig. 1. Radiograph of the right femoral neck, indicating femoral neck fracture.

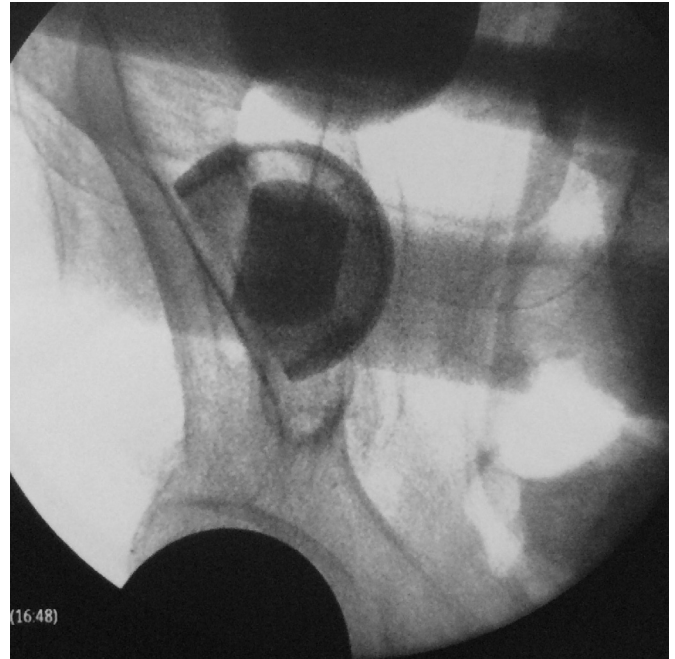


Fig. 2. Radiograph of migrating trial bipolar cup.

the same position and returned to our original surgical goal. The permanent femoral component was inserted, and the wound was closed. The patient was then repositioned so she was supine, which is suitable for retrieving the trial cup via an ilioinguinal approach to the acetabulum. The trial cup was easily found under the psoas muscle (Fig. 3) on the iliac fossa. It was removed, and the wound was closed. Postoperative plain radiography (Fig. 4) revealed no obvious problems.

2.6. Follow-up and outcomes

At the final checkup 3 months later of surgery, the patient was found to have recovered uneventfully.

3. Discussion

There have been a few reports of intrapelvic migration of trial femoral heads during total hip arthroplasty [2–10]. Batouk et al.

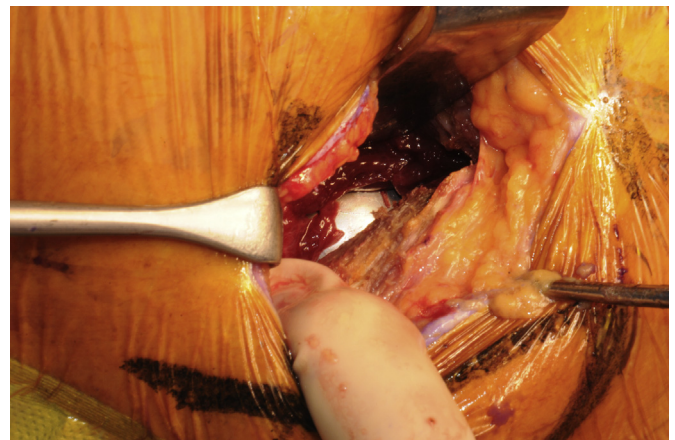


Fig. 3. Trial bipolar cup founded in pelvis by ilioinguinal approach.

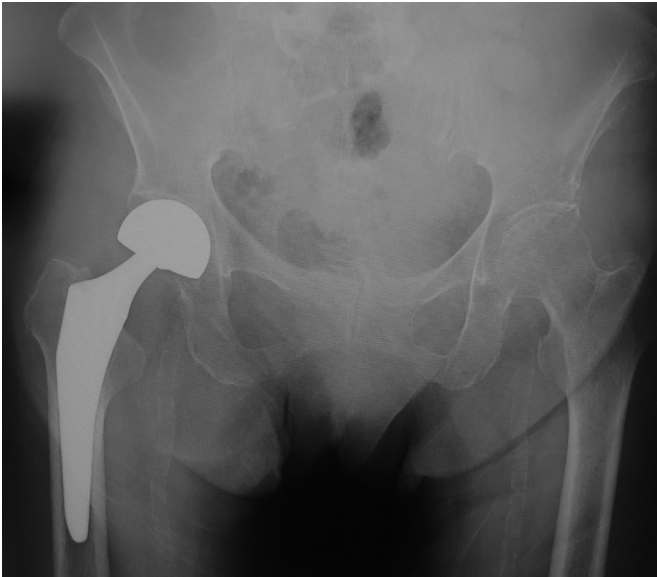


Fig. 4. Postoperative radiograph.

described a similar case in which they could not retrieve the trial device and so left it. The patient recovered without complications [2]. Previous reports show that trial device dislocations have occurred when using the anterolateral, lateral, posterolateral, and posterior approaches, indicating that every kind approach is accompanied by a risk of trial device dislocation [2–10]. In many cases, patients have not complained as no complications are associated with retention of the trial head because of its shape (round, smooth) and its sterile component [2–5]. In cases in which the trial device required retrieval and removal, the patients had complained of abdominal pain [7,10] or loss of motion [4]. The long-term effects of this foreign body are not known, however, and Yaron Bar Ziv et al. noted that it is desirable to remove it from young patients [6]. Trial devices have migrated to the peritoneal space, especially the anterior portion of the iliosacral joint, or to the iliacus muscles along the psoas muscles. In one case report, the situation required laparotomy, and the trial head was removed through the perineum without bowel damage [4]. We believe that to avoid the risk of damaging abdominal or retroperitoneal organs, it is essential to retrieve the object in all cases, even if it is performed some days later.

In our patient, the migrating component was a trial bipolar cup, larger than the trial head for total hip arthroplasty. It seems that trial cup migration occurs less often than trial heads because of its size. The present patient was elderly, with decreased activity causing atrophy of the iliopsoas muscle, which could be one reason the trial cup migrated into the pelvis. Another reason was the rolling up of the joint capsule into the acetabular space, thereby obstructing reduction of the trial cup. It migrated into a space under the iliacus muscle, as has been recorded in other, previous reports.

Some authors indicated how to prevent this frustrating complication. Ikeuchi et al. blocked the anterior wall of the pelvis by pressing on the surface of the skin around the groin region without using their fingers [3]. Alfonso et al. described the technique of threading sutures through the dome holes of the trial femoral heads, creating a “necklace” of trial femoral heads [10].

Once the component has migrated, it is difficult to retrieve from the pelvic space. Madsen et al. used a Satinsky aortic clamp for retrieval. The clamp's length and compound angle is suitable for retrieving trial devices [8]. An additional incision might be useful,

as might the ilioinguinal approach [4,6] or sometimes laparotomy [7,10]. Dislocation of the trial rarely happen but in most cases it is easy to be overcome if surgeon can select the retrieving way appropriately. Attempting to retrieve the component with limited space may cause further displacement. Although this complication is not particularly dangerous, it is important to plan to remove the component based on the patient's condition, previous approach used, trial device position, and the patient's consent.

4. Conclusion

We experienced a rare case of intraoperative dislocation of a trial bipolar cup into the pelvis during bipolar hip arthroplasty. It was difficult to retrieve the component from the original hip approach, so we adopted the ilioinguinal approach for removing it after completing the original surgery. In cases in which complication occur, attempting to retrieve the component with limited space may cause further displacement. It may be easy to be overcome if surgeon can select the retrieving way appropriately.

Ethical approval

Since the current manuscript is not a research study but a descriptive case report, the paper was not submitted for ethical committee consideration.

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Author contribution

Takahito Miyake has made substantial contributions to conception and design; Akio Kanda, Itaru Morohashi, Obayashi Osamu, Atsuhiko Mogami, Kaneko Kazuo has been involved in drafting the manuscript and revising it critically for important intellectual content.

Conflicts of interest

I don't have any conflicts of interest.

Guarantor

Takahito Miyake, Akio Kanda. This case has been reported in line with SCARE criteria [11].

Research registration unique identifying number (UIN)

This does not apply to case reports.

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