Two-Incision Bipolar Hemiarthroplasty for Treating Femoral Neck Fracture
- Analysis of 15 Cases -

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Introduction: We wanted to evaluate the efficacy of bipolar hemiarthroplasty using Berger’s two-incision surgical technique for patients with muscular weakness around the hip joint and/or a high risk of dislocation.

Materials and Methods: We performed bipolar hemiarthroplasty for 15 femoral neck fractures using Berger’s two-incision technique between December 2005 and July 2007. The mean age of the patients was 75.2 years old. Four of them had difficulty in walking due to the sequelae after stroke and five have been treated for psychoneurologic disorders. We investigated the operation time, the length of the anterior and posterior incisions, the amount of bleeding, the time until walking after the operation, the total hospital stay, the recovery to activities of daily living and the complications such as dislocation.

Results: The mean operating time was 93 minutes. The average anterior and posterior skin incision length was 6.4 cm and 7.2 cm, respectively. The mean amount of bleeding was 420 cc at the time of surgery and 230 cc postoperatively through a drain. The patients started walking at a mean of 3.3 (1 to 5) days after the operation and the mean hospitalization was 24.3 days. Fourteen patients went back to their pre-injured activities of daily living, except one case with an intraoperative periprosthetic fracture. As for complications, two cases (13.3%) of femoral fracture were intraoperatively observed and one case of skin necrosis on the anterior incision site occurred. There were not any cases of dislocation or infection.

Conclusion: Two-incision bipolar hemiarthroplasty had advantages for rehabilitation in elderly patients who have a high risk of dislocation, as well as in the patients with muscle weakness. But the operation took a long time and it had a high complication rate.

Key Words: Femoral neck fracture, Bipolar hemiarthroplasty, Minimal invasive surgery, Two-incision technique
We performed bipolar hemiarthroplasty using Berger’s surgical technique in the elderly and in the patients with muscle weakness and psychoneurologic problems and studied the availability of our new surgical technique.

Materials and Methods

1. Materials

From December 2005 to July 2007, we performed minimal invasive bipolar hemiarthroplasty using Berger’s two-incision technique for 15 femoral neck fractures. There were six male and nine female patients, with a mean age of 75.2 years (57 to 87 years). Of the 15 cases, four had difficulty in walking due to stroke; three used a cane and one used a wheelchair. Five of them have been treated for dementia or other psychogenic disorders. Except patients with stroke, 10 patients walked without walking aids. Our surgical technique was used in the selected patients such as hemiplegia and dementia at the early stage and then it was extended into other patients.

We used cementless femoral stems; including Taperloc stem (Biomet, Warsaw, IN) in thirteen cases, ABG-II stem (Howmedica, UK) in one case and Versys stem (Zimmer, Warsaw, IN) in one case, and UHR bipolar cups (Stryker, NJ, USA) in all cases.

We did not use any restraints for positioning of the legs on the bed after the operation and we allowed the patients to walk after removing the suction drain. We began rehabilitation with a tilting table and parallel bar for the patients who could not walk because of hemiplegia and we let them use a wheelchair if they wanted. We investigated the operation time, the length of the anterior and posterior incision, bleeding amount, the time to walk after operation, the total hospitalization period, the degree of recovery to activities of daily living, and complications such as dislocation. An average of follow-up was 39 months (29~48 months).

2. Surgical technique

Patients were positioned on the radiolucent operation table in a supine position. Five to seven centimeters anterior skin incision began along the femoral neck under fluoroscopy (Fig. 1). In this procedure, we had to be careful not to injure lateral femoral cutaneous nerves. After the skin incision, we could expose the joint capsule by retracting the tensor fasciae latae laterally and rectus femoris and sartorius medially after approaching between tensor fasciae latae and sartorius (Fig. 2). After ligating the lateral femoral circumflex artery, which runs along the capsule anteriorly, we could expose the femoral neck by incising the capsule vertically along the femoral neck. Taking a double neck cutting, we removed the femoral head after taking out the bone segment of the neck. Posterior incisions of five centimeters in length, which was for insertion of the femoral stem into the femur, was placed posteriorsuperiorly from the tip of greater trochanter. After reaming and rasping for the femoral stem under fluoroscopy, we inserted the bipolar cup through the anterior incision first; the liner and cup of the UHR

![Fig. 1. Anterior skin incision is placed directly over the femoral neck and posterior skin incision is started from greater trochanter.](image1)

![Fig. 2. After retraction of the tensor fascia lata laterally and sartorius and rectus femoris medially, anterior joint capsule is visible.](image2)