

Hemiarthroplasty Using a Modular Hip Segment in a Patient with a Long Stem Total Knee Prosthesis

Sung-Rak Lee, MD, PhD, Bong-Jin Lee, MD, PhD, Seong-Tae Kim, MD, Kwon-Hee Park, MD

Department of Orthopaedic Surgery, Cheju Halla General Hospital, Cheju, Korea

Femoral neck fractures frequently occur in elderly patients and the treatment strategies for this are well documented. Revision knee arthroplasty using a long intra-medullary stem has recently been increasingly used for treating complications such as infection, aseptic loosening or instability. The current case had a femoral neck fracture with a well-fixed, long stem knee prosthesis, which reached to near the lesser trochanter of the femur. The authors performed the surgery using impaction of the modular hip segment; its inner diameter was fit to the outer diameter of the femoral stem of the knee prosthesis. At two years postoperative follow-up, the result was excellent without loosening or osteolysis.

Key Words: Femur neck fracture, Hemiarthroplasty, Long stem total knee prosthesis

Introduction

Recently, revision knee arthroplasties using long intra-medullary stem have been increased. In case of a displaced femoral neck fracture with long stem total knee prosthesis, surgical options are quite limited. To the best of our knowledge, there is no case report in the world. We report a successful hemiarthroplasty using modular hip prosthesis with impaction and cementing technique for a displaced femoral neck fracture with long stem total knee prosthesis.

Case Report

A sixty-five-year-old man who has diabetes had multiple revision total knee surgeries for periprosthetic infection during past thirteen years. Last total knee revision was performed at author's hospital using Endo-model® M Modular Knee Prosthesis System (LINK, Hamburg, Germany). The total knee prosthesis was fixed with cement and press-fix stem. Femoral stem size was 14 mm in diameter and 280 mm in length. Long stem was used for proximal osteolysis and cortical perforation of the proximal femur. The patient made an uneventful recovery. At six months postoperatively, the prosthesis was considered to be functioning well. At ten months postoperatively, he sustained a femoral neck fracture as a result of a fall in which he landed directly on his hip on a hard surface (Fig. 1).

After consideration of the management options, the fracture was managed with hemiarthroplasty using modular hip segment. Modified Mallory approach was used. The authors used MP model® (LINK, Hamburg, Germany) hip segment exactly matched in diameter and metallurgy. After check the length of

Submitted: July 17, 2009

1st revision: August 13, 2009

2nd revision: September 4, 2009

3rd revision: September 4, 2009

Final acceptance: September 4, 2009

• Address reprint request to **Seong-Tae Kim, MD**

Department of Orthopaedic Surgery, Cheju Halla General Hospital, 1963-2, Yeon-dong, Jeju, 690-766, Korea

TEL: +82-64-740-5475 FAX: +82-64-743-3110

E-mail: schstk27@hanmail.net

• 본 논문의 요지는 2008년도 대한정형외과학회 추계학술대회에서 학술전시되었음.

the hip center to lesser trochanter base, fractured femoral head was removed. Gradual reaming of the femoral canal was performed to 24 mm. We chose the long proximal hip segment, which is 20 mm in outer diameter and 14 mm in inner diameter with 3 mm wall thickness and 165 mm in length. After testing the fitness of head and neck segment to femoral stem of the knee prosthesis, prophylactic wiring was done. We decided to fix the proximal segment of the hip with cement for more secure fixation. Palacos® cement was mixed and filled the femoral canal, and then the proximal hip segment

was hardly impacted. After impaction of hip segment, short 28 mm alumina femoral head and 50 mm bipolar cup was assembled and reduction was done. The affected leg was lengthened about 10 mm, however there were no ways to shorten the leg. Grossly stability of the modular hip segment was good. Suction drain was removed on postoperative second day, and then crutch-walking exercise was started with tolerable weight bearing.

At the latest clinical review, twenty-eight months after surgery, radiographs showed no loosening or osteolysis (Fig. 2), and the Harris hip score was 89.



Fig. 1. Preoperative radiographs reveal much displaced femoral neck fracture and securely fixed stem of total knee prosthesis reach to lesser trochanter.

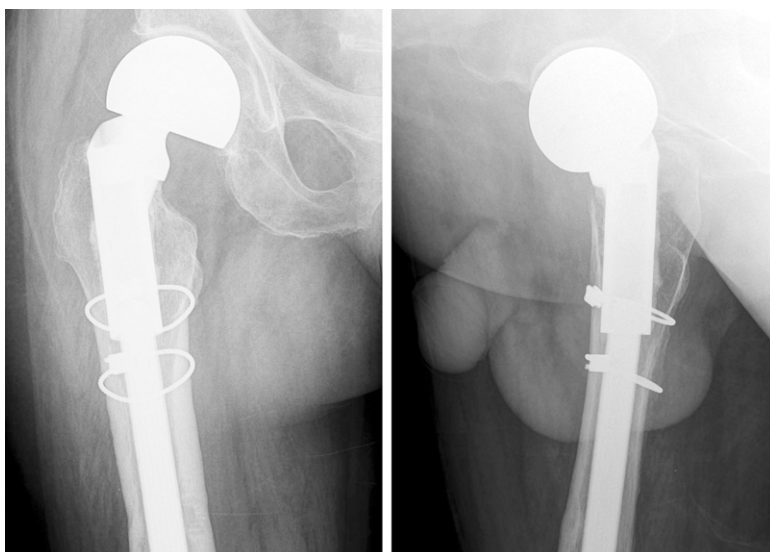


Fig. 2. Radiographs made 2 years postoperatively, demonstrate no radiolucency and component position change.

The patient was informed that data concerning the case would be submitted for publication, and he consented.

Discussion

Many total knee revision surgeries using long intramedullary stem are performed for reconstruction of osteolysis, major bone loss, or infection¹⁾. The current case has a displaced femoral neck fracture and well-fixed long stem total knee prosthesis, which was reach to lesser trochanter. For a displaced femoral neck fracture in elderly patients, replacement arthroplasty is a preferred treatment option. Possible surgical options for current case were conventional hip hemiarthroplasty after removal of well fixed total knee prosthesis and re-implantation of short stem total knee prosthesis, using total femur prosthesis²⁾, or custom made hip prosthesis. Even if we use the custom made prosthesis, it can be difficult to obtain secure fixation at proximal femur due to stem of total knee prosthesis with current case. The total femoral replacement or conventional hip hemiarthroplasty after removal of well fixed total knee prosthesis and

re-implantation of short stem total knee prosthesis was considered as a harmful procedure. We explained all possible surgical options and its disadvantages, and then took the informed consent from patient himself. The authors performed surgery using modular hip segment impacting it to the stem of total knee prosthesis. The current case has a stem of its outer diameter 14 mm. We used long proximal hip segment, which is 14 mm inner diameter and obtained acceptable stability with impaction at stem about 1 cm.

The authors considered that hemiarthroplasty using modular hip segment with impaction technique is a quite useful surgical method for a patient who have femur neck fracture with long-stem total knee prosthesis.

REFERENCES

1. Shannon BD, Klassen JK, Rand JA, Berry DJ, Trousdale RT. *Revision total knee arthroplasty with cemented components and uncemented intramedullary stems. J Arthroplasty*, 18 (7 suppl 1): 27-32, 2003.
2. Steinbrink K, Engelbrecht E, Fenelon GC. *The total femur prosthesis. A preliminary report. J Bone Joint Surg*, 64-B: 305-312, 1982.

국문초록

긴 주대를 포함한 슬관절 치환물을 가진 환자에서의 고관절 반치환술

이성락 · 이봉진 · 김성태 · 박권희

제주한라병원 정형외과학교실

대퇴 경부 골절은 노인에게서 흔히 발생하는 골절로 합병증 및 치료 방법은 이미 자세히알려져 있다. 최근 슬관절의 인공관절술이 많이 시행되면서 그에 따른 합병증의 병발로 재치환술도 흔해졌으며 긴 주대(Long stem)를 사용한 슬관절 치환술의 빈도도 증가하고 있다. 본 증례에서는 긴 주대를 사용한 슬관절 재치환술을 받은 환자에서 발생한 대퇴 경부 골절을 주대를 제거하지 않고 modular segment를 이용한 고관절 반치환술로 2년 추시 상 좋은 결과를 얻었기에 보고하는 바이다.

색인 단어: 대퇴골 경부 골절, 고관절 반치환술, 긴 주대를 포함한 슬관절 치환물