Hip Arthroplasty for Atypical Subtrochanteric Fracture with Intractable Non-Union or Concomitant Osteoarthritis Hip; 3 Cases

Seok-Hyung Won*, Jung-Wee Park**, Young-Kyun Lee***, Yong-Chan Ha and Kyung-Hoi Koo

*Department of Orthopedic Surgery, Seoul National University Bundang Hospital, South Korea
**Department of Orthopedic Surgery, Chung-Ang University College of Medicine, South Korea
***Department of Orthopedic Surgery, Seoul National University College of Medicine, South Korea

*Both contributed equally to this study

Abstract

Background: Atypical Subtrochanteric Fracture (ASF) is frequently associated with intractable non-union and fixation failure. Hip arthroplasty might be an option to treat intractable non-union of ASF. However, there is no study on hip arthroplasty in ASF patients with refractory non-union.

Case Presentation: We present 3 patients who had atypical subtrochanteric fracture with intractable non-union or concomitant arthritic hip and were treated successfully with hip arthroplasty.

Conclusion: Hip arthroplasty is a successful treatment option for ASF patients, who have intractable non-union or combined osteoarthritis of the hip.

Abbreviations

ASF: Atypical Subtrochanteric Fracture

Background

Atypical Subtrochanteric Fracture (ASF) is frequently associated with intractable non-union and fixation failure [1,2]. Reportedly, rates of non-union and fixation failure ranged from 30% to 46% [2-4]. Repeated reoperations due to refractory non-union lead to shortening of the affected limb and prolonged disability of the patients. Hip arthroplasty might be an option to treat intractable non-union of ASF or concomitant hip osteoarthritis. However, there is no study on hip arthroplasty in ASF patients with refractory non-union or hip osteoarthritis. We described 3 ASF patients, who underwent hip arthroplasty due to refractory non-union or concomitant osteoarthritis of the hip.

Case Series

Case 1

A 74-year-old woman was transferred to our department due to intractable non-union of ASF. She had taken weekly bisphosphonate for 10 years, and the ASF occurred 5 years ago on the right femur and 3 years ago on the left femur. Before the transfer to our department, she underwent 4 operations including the initial fixation on the right femur, elsewhere. Radiographs revealed non-union of ASF, breakage of the plate, and leg shortening by 3 cm (Figure 1A). We performed a conversion hemiarthroplasty with use of a long stem (ARCO stem, Zimmer Biomet) (Figure 1B). The excised femoral head was grafted at the non-union site. On the postoperative radiograph at 6 months, the stem was well fixed. She had no pain and could ambulate with walker (Figure 1C).

Case 2

A 77-year-old woman visited outpatient clinic due to right hip pain. She had been treated with intramedullary nailing for ASF of the right femur elsewhere 1 year ago. Radiographs revealed non-union of ASF, breakage of the plate, and limb shortening by 3 cm (Figure 1A). We performed a conversion hemiarthroplasty with use of a long stem (ARCO stem, Zimmer Biomet) (Figure 1B). The excised femoral head was grafted at the non-union site. On the postoperative radiograph at 6 months, the stem was well fixed. She had no pain and could ambulate with walker (Figure 1C).

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The broken nail was removed and conversion hemiarthroplasty was done with use of a long stem (ARCO stem, Zimmer Biomet, Warsaw, USA). Augmentative fixation was done with a plate and the excised femoral head was grafted at the non-union site (Figure 2C). At 1 year postoperatively, she had no pain and no subjective discrepancy of leg length. The non-union healed, and the stem was well fixed (Figure 2D).

Case 3

A 70-year-old woman visited our emergency room due to left hip pain after a fall. Radiographs revealed an atypical subtrochanteric fracture and advanced hip osteoarthritis (Figure 3A). She had been medicated due to tuberculosis of the left hip 15 years ago. Total hip arthroplasty with use of a full porous coated long stem (Solution; DePuy, Warsaw, IN) was performed to treat both ASF and hip osteoarthritis. The fracture was fixed with plate and wires (Figure 3B). At postoperative 6 years, radiograph showed union of the fracture and well-fixed prostheses, and the patient had no pain (Figure 3C).

Discussion and Conclusion

Although internal fixation is the first-line surgical treatment for ASF, nonunion and fixation failure are common in ASF patients [2-4]. Hip arthroplasty can be an alternative option in special conditions. In 2015, Yuasa et al. first reported a patient with ASF and hip osteoarthritis, who was treated with total hip arthroplasty [5]. The same authors reported successful results of total hip arthroplasty in another patient, who had pycnodysostosis, ASF and femoral head osteonecrosis [6]. Our report showed that hip arthroplasty is a successful treatment for ASF patients, who have intractable non-union or combined osteoarthritis of the hip. We recommend hip arthroplasty for these special conditions in ASF patients. Leg shortening induced by non-union can be treated or improved with use of hip arthroplasty.

References