



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

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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.

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Received Date: 19 Nov 2020

Accepted Date: 06 Jan 2021

Published Date: 12 Jan 2021

Citation:

Won S-H, Park J-W, Lee Y-K, Ha Y-C, Koo K-H. Hip Arthroplasty for Atypical Subtrochanteric Fracture with Intractable Non-Union or Concomitant Osteoarthritis Hip; 3 Cases. *Clin Surg*. 2021; 6: 3022.

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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. Radiograph revealed non-union of ASF and broken nail (Proximal Femoral Nail Anti-rotation II; Synthes, Solothurn, Switzerland). We removed broken nail and inserted a larger nail. Autologous iliac bone was grafted at the non-union site. Even after the reoperation, she had persistent non-union and limb shortening (Figure 2A, 2B). Four years later after the fist revision, we performed a second revision. During the second revision, we found a breakage of nail at the entry of cephalomedullary blade.

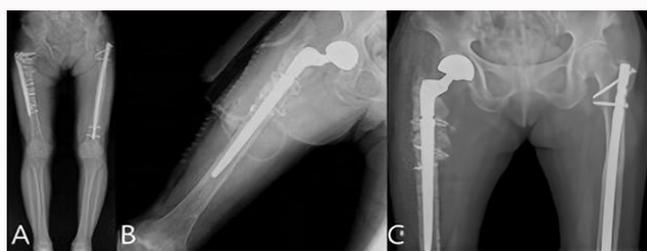


Figure 1: A 74-year-old woman was had intractable non-union of ASF after long term use of bisphosphonate (A). She was treated with bipolar hemiarthroplasty (B). At 6 months after the arthroplasty, she had no pain and could ambulate with walker. The stem was well fixed on radiograph (C).



Figure 2: A 77-year-old woman had nonunion of ASF of the right femur (A). She had a leg length discrepancy by 2 cm (B). She was treated with bipolar hemiarthroplasty (C). At 1 year postoperatively, the fracture healed and stem was well fixed (D).

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



Figure 3: A 70-year-old woman had left hip pain after a fall. She had atypical subtrochanteric fracture (ASF) and osteoarthritis of left hip (A). She was treated with total hip arthroplasty and plate fixation (B). At 6 years after the arthroplasty, the ASF healed and the stem was well-fixed (C).

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.

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