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Management of same-side neglected femoral neck and subtrochanteric fractures in an elderly osteoporotic patient: A case report

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Abstract

Background: Ipsilateral neglected femoral neck and subtrochanteric fractures in elderly osteoporotic patients are rare and complex injuries that pose significant management challenges due to poor bone quality, altered anatomy, and high risk of nonunion. Optimal treatment strategies require tailored surgical approaches and adjunctive therapies to restore function and prevent complications.

Case Presentation: A 65-year-old female presented with two months of worsening left hip pain following trivial trauma and inability to walk after a second fall one week prior. Physical examination showed left lower limb shortening and external rotation. Radiographs revealed a Sandhu type 3 neglected femoral neck fracture and a Russell-Taylor type 1A subtrochanteric femur fracture in severely osteoporotic bone (Singh index grade 1; Dorr type C). Surgical management involved a lateral approach with placement of a 250 mm uncemented long-stem bipolar prosthesis and cable fixation of both existing and iatrogenic fractures occurring intraoperatively.

Results: Postoperative care included Teriparatide, calcium, and vitamin D3 supplementation for six months. The patient underwent immobilization and passive range of motion exercises for eight weeks, progressing to gradual weight-bearing once radiologic evidence of union was confirmed. At six months, the patient achieved stable fixation, restored limb length, pain-free ambulation, and radiographic union.

Conclusion: This case highlights the effectiveness of cementless long-stem bipolar arthroplasty combined with cable augmentation and osteoporosis-specific pharmacotherapy for managing complex ipsilateral neglected femoral neck and subtrochanteric fractures in elderly osteoporotic patients. Early diagnosis, individualized surgery, and structured rehabilitation are crucial for successful outcomes.

Keywords: Neglected femoral neck fracture, subtrochanteric femur fracture, osteoporosis, bipolar long-stem prosthesis, cable fixation, teriparatide therapy

Introduction

Ipsilateral neglected femoral neck and subtrochanteric fractures are exceedingly rare in elderly patients and present unique diagnostic and management challenges, often following trivial trauma in the context of osteoporosis ^[1, 2]. This scenario is associated with high rates of nonunion and functional decline, especially when a femoral neck fracture is missed and becomes established over time ^[3]. Surgical decision-making must consider anatomical disruption, poor bone quality, and the potential for additional intraoperative complications ^[1]. Recent reviews have emphasized the necessity of individualized and evidence-based protocols to achieve optimal outcomes in these complex cases ^[4].

Case Report

A 65-year-old female presented with left hip pain for two months, which worsened over the past week. She had two episodes of trivial trauma, the first occurring two months ago, after which she was walking with support, and a second trauma one week ago. On examination, left lower limb was shortened by 2 cm and externally rotated.

Radiographs revealed a neglected left NOF (Sandhu type 3) and a subtrochanteric femur fracture (Russel Taylor type 1A). The X-ray also showed Grade 1 Singh index and Dorr type C characteristics, indicating severe osteoporosis, which suggested that both fractures were pathological.

After optimization of patient's general condition. Under spinal anesthesia, patient was placed in lateral position and lateral approach to hip was used to reduce the fracture, which was challenging due to osteoporosis and difficult fracture alignment. Intraoperatively, splitting of the posterior cortex from the pyiform fossa to the lesser trochanter was identified, and gentle manipulation led to iatrogenic extension of the fracture. The remaining head of femur

was removed. Definitive management involved insertion of a 250 mm long-stem, 37 mm uncemented bipolar prosthesis spanning the femoral neck and shaft, with cable fixation stabilizing both pre-existing and iatrogenic fractures. Cementation was not possible due to comminution. The surgery lasted 2.5 hours with 500 ml blood loss.

Postoperatively, the patient received Injection Teriparatide 20 microgram subcutaneously, calcium, and vitamin D3 for six months. She underwent immobilization and passive range-of-motion exercises for eight weeks, progressing to non-weight-bearing mobilization and later graduated weight bearing upon radiographic evidence of union.



Fig 1: Pre op Xray



Fig 2: lateral approach



Fig 3: Resected head

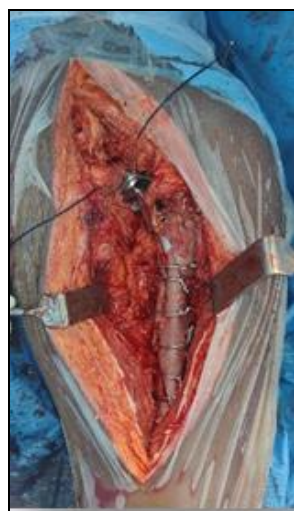


Fig 4: Prosthesis placement and cable fixation, **Fig 5:** Post op Xray



Fig 6: Pre op and Post op limb attitude

Discussion

Neglected femoral neck fractures commonly progress to nonunion and avascular necrosis, especially in aged osteoporotic bone [3]. When coexistent with subtrochanteric fractures, complex biomechanics and poor local biology further complicate management. Literature supports use of cementless long-stem bipolar arthroplasty for such scenarios, providing both proximal and distal stability and reducing implant failure risk [2, 4]. Cable augmentation is advocated for additional support in cases with intraoperative comminution or extension, particularly where bone quality is poor [2, 5]. Alternative fixation options, including cephalomedullary nails or plates, may not provide sufficient stability due to compromised bone stock, and elevated complication rates are reported in such cases. Cementing is avoided due to comminution risking leakage [1, 2].

Adjunctive pharmacotherapy, specifically Teriparatide, shows strong evidence for enhancement of bone healing and accelerated union in elderly patients with hip fractures [4]. Early passive mobilization and judicious weight bearing have been shown to improve patient outcomes and facilitate functional recovery in complex femoral fractures [1, 4, 5].

Recent reviews and case studies support a tailored, multidisciplinary approach focusing on rapid restoration of limb alignment, active rehabilitation, and close radiologic monitoring [1, 2, 3]. The strategy implemented in this case aligns with contemporary recommendations and resulted in favourable limb length, pain-free ambulation, and radiological union at six months.

Conclusion

Management of ipsilateral neglected femoral neck and subtrochanteric fractures in elderly osteoporotic patients should combine long-stem bipolar arthroplasty, cable augmentation, osteoporosis-specific pharmacotherapy, and graded rehabilitation. Careful surgical planning and evidence-based postoperative protocols are crucial for restoring function and quality of life in these challenging scenarios.

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Conflict of Interest

The authors declared no potential conflicts of interest with regards to this article. Each author certifies that he or she has no commercial associations that might pose a conflict of interest in connection with the submitted article.

Ethical standards

Institutional ethics committee approved the study. Informed consent was obtained from the participant included in the study.

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