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Case Report

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Bilateral simultaneous neck of femur fractures from a single injury in a high-risk patient

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ABSTRACT

Simultaneous bilateral neck of femur fractures resulting from a single traumatic event are exceptionally rare. Often these patients have underlying metabolic bone disorders like renal osteodystrophy, osteomalacia, long term steroid intake, osteoporosis, hyperparathyroidism etc. We present a unique case of bilateral neck femur fractures in a patient with no history or objective proof of metabolic bone disease. This case underscores the significance of recognizing atypical presentations and the need for individualized management. A 70-year-old male patient presented with altered sensorium, disorientation, and bilateral hip fractures following a self-fall at home. The absence of metabolic bone abnormalities, along with pre-existing systemic hypertension and coronary artery disease, made this presentation remarkable. Diagnostic workup revealed hyponatremic encephalopathy, further complicating the high-risk surgical status of the patient. A two-stage approach with bipolar uncemented hemiarthroplasty was chosen, and early mobilization was initiated. Remarkably, the patient returned to pre-injury mobility soon after surgery, illustrating the successful outcome. This case highlights the rarity of simultaneous bilateral neck of femur fractures in patients even without metabolic bone disease, emphasizing the need for careful evaluation and customized management. The collaborative efforts of surgeons, physicians, and anesthetists were pivotal in achieving a positive outcome, demonstrating the remarkable potential of multidisciplinary teamwork in challenging medical scenarios. This case serves as a testament to the dedication and expertise of the medical community in the face of extraordinary challenges.

Keywords: Simultaneous bilateral neck of femur fractures, Metabolic bone abnormality, Bipolar uncemented hemiarthroplasty, Hyponatremic encephalopathy, Multidisciplinary teamwork

INTRODUCTION

Bilateral neck of femur fractures that occur simultaneously is a rare entity. It mostly occurs in patients with underlying metabolic diseases like renal osteodystrophy, osteomalacia, long-term steroid intake, hyperparathyroidsm, osteoporosis, after epileptic attacks or electric shock.[1] Simultaneous bilateral neck of femur fractures occurring from a single traumatic event is exceedingly rare. We present a case of bilateral neck femur fractures in a patient without any known metabolic bone abnormalities, resulting from a single traumatic event. This unique presentation emphasizes importance of considering underlying factors and individualized management.

CASE REPORT

A 70-year-old male patient presented to the Emergency Department with the chief complaint of altered sensorium. The patient's relatives reported a history of disorientation and irrelevant speech persisting for the last 6 hours. Additionally, they provided collateral information about a fall from standing height approximately 4 hours prior when the patient was attempting to visit the washroom.

Before the injury, the patient was able to move without assistance, but post-injury, he was unable to stand up.

The patient's past medical history included a 30-year history of systemic hypertension and a diagnosis of coronary artery disease two years ago. There was no prior history of seizure activity, metabolic bone disease, use of corticosteroids/any other risk factors for fragility fractures.

Upon presentation, the patient displayed disorientation to time, place, and person. A comprehensive examination was conducted by both physicians and orthopedic surgeons. Physical examination revealed that both lower limbs were in an externally rotated position, and limb shortening was observed. Bilateral hip tenderness was noted, and the patient was unable to move either of his hips.

Routine investigations were conducted, which revealed moderate hyponatremia. A diagnosis of hyponatremic encephalopathy was established, and the patient was transferred to the medicine ward for its management. Liver and renal function tests were obtained and were found to be withing normal limits. Plain X-rays of the lumbosacral spine and pelvis, including both hips, were obtained, revealing bilateral displaced neck of femur fractures (transcervical type on both sides) (Figure 1). Osteoporotic changes were also noted.

Figure 1: Pre operative X ray showing bilateral transcervical neck of femur fractures. Osteoporotic changes are also noted.

The decision was made to conservatively manage the hip fractures until the patient's systemic condition improved. Non-invasive skin tractions were applied to both lower limbs, and the patient was managed with a standard regimen for correcting hyponatremia. A comprehensive panel of blood investigations, including serum calcium, phosphate, parathormone, alkaline phosphatase, and vitamin D3, renal function tests were conducted, and all parameters fell within normal limits. The patient received prophylactic anticoagulant therapy to prevent complications associated with long-term immobilization.

Pre-anesthetic workup revealed poor cardiac function, and in consideration of this, as well as the poor electrolyte values, the patient was deemed very high risk for surgery. After correction of hyponatremic abnormality and proper optimisation, informed consent for high-risk surgery was obtained from the patient and his relatives. The patient was managed surgically with a two-stage approach, involving bipolar uncemented hemiarthroplasty on both hips. A posterior approach was adopted on both occasions, and uncemented hemiarthroplasty was performed bilaterally. The right hip was addressed first, followed by the left hip, with a two-day gap. Follow-up radiographs confirmed satisfactory prosthesis placement (Figure 2).

Figure 2: Immediate postoperative X-rays showing bilateral prosthesis *in situ.*

Patient was initiated on full weight-bearing mobilization with a walker and hip range of motion exercises starting on postoperative day one. At the six-month follow-up, the patient had returned to his pre-injury mobility status, was able to walk without assistance, was pain-free, and exhibited no functional limitations (Figure 3).

Figure 3: Clinical image 6 months post op shows complete return to pre injury functional status.

DISCUSSION

Simultaneous bilateral neck of femur fractures are very rare occurrences. Nevertheless, there are several instances documented in medical literature where bilateral fractures of the neck of the femur (NOF) have been associated with primary or secondary bone conditions. These conditions include hypocalcemia, osteomalacia, osteoporosis, hyperparathyroidism, long-term steroid intake, renal osteodystrophy, radiotherapy, multiple myeloma etc. Bilateral NOF fractures have also been reported in cases involving persistent and sustained mechanical stress.[2]In contrast, uncomplicated trauma is an uncommon cause of bilateral NOF fractures. Rare instances of bilateral NOF fractures have been documented following seizures induced by epilepsy, certain medications, or electrical injuries.[3]

In our specific case, we present a patient with neither a documented history nor any clinical evidence of metabolic bone disease. This patient experienced a self-fall, an event that typically results in a single-sided neck of femur fracture. However, what sets our case apart is the occurrence of simultaneous fractures in both necks of the femur, making it an exceptional and unusual presentation.

The medical literature outlines various surgical approaches for the treatment of bilateral neck of femur fractures. These options encompass techniques such as closed reduction with percutaneous pinning and total hip arthroplasty.[4] Sood and colleagues have detailed a single-stage repair method for bilateral hip fractures, performed with the patient in a supine position.[2]We opted for a two-stage repair, keeping in mind the patient’s comorbid conditions. Uncemented hemiarthroplasty was planned as the patient’s available bone stock was deemed sufficient and also, given the patient’s poor cardiac function, uncemented approach was necessary to prevent bone cement implantation syndrome.[5]

The care and handling of this patient were characterized by a sense of urgency and a coordinated approach. Despite the patient's compromised general health, the expeditious assessment by a collaborative team of both physicians and orthopedic surgeons facilitated a swift diagnosis and effective treatment. Immediate attention was given to addressing systemic issues, followed by a prompt anesthetic evaluation and surgical intervention. Additionally, early mobilization played a crucial role in achieving a favorable outcome. What adds a notable dimension to our case is the successful management of a patient with an extremely high surgical risk profile. This accomplishment was made possible through the combined efforts and expertise of surgeons, physicians, and anesthetists working in unison.

CONCLUSION

The presented case stands as a compelling illustration of medical rarity, as it combines the unusual occurrence of simultaneous bilateral neck of femur fractures with a patient who bore no evidence of metabolic bone disease. This unique convergence of factors made for an extraordinary clinical challenge.

What truly sets this case apart, however, is the remarkable synergy between the high-risk surgical status of the patient and the collective competence of our medical team. In the face of substantial odds, the patient's complex medical needs were expertly addressed through a harmonious collaboration between surgeons, physicians, and anesthetists. This successful management underscores the power of teamwork, diligent care, and the unwavering pursuit of optimal patient outcomes, even in the face of the most challenging circumstances. This case serves as a testament to the tenacity and proficiency of the medical community when confronted with the extraordinary.

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