Learning Point of the Article:
Low Vitamin D levels in elderly post-menopausal patients leads to osteopenia and needs to be considered as a crucial predisposing factor for long bones fracture.

Abstract
Introduction: Simultaneous bilateral neck of femur fracture is rare. Majority of them are due to low energy incidents with underlying conditions such as malnutrition, chronic renal failure, cystic fibrosis, celiac disease, seizures, steroid abuse, or osteomalacia.

Case Report: A 68-year-old woman was referred with a 1-year history of bilateral hip pain and a 9-month history of inability to bear weight. She was diagnosed as a displaced bilateral femoral neck fracture secondary to osteomalacia. Due to the long duration of this condition and associated comorbidities, staged bilateral hip hemiarthroplasty was done. A good function was noted after surgery to 4-month follow-up.

Conclusion: Osteomalacia should be suspected in any patient with long-standing bone pain and muscle weakness regardless of age. Numerous options in the form of percutaneous screws, bipolar hemiarthroplasty, and total hip arthroplasty have been mentioned in the literature regarding the management of simultaneous bilateral femoral neck fractures. Staged bipolar hemiarthroplasty was done due to the associated comorbidities.

Keywords: Neck femur, osteomalacia, hemiarthroplasty.

Introduction
Simultaneous bilateral femoral neck fractures are extremely rare and have been associated with high-energy trauma [1], or due to underlying conditions such as celiac disease [2], malnutrition-induced osteomalacia [3, 4], cystic fibrosis [5], steroid abuse [6], and eclampsia-induced seizures [7]. Osteomalacia is a disorder which results in inadequate mineralization of newly formed organic matrix due to low levels of serum Vitamin D. It can lead to muscle weakness and bone pain and even rendering the patient bedridden [8]. Numerous treatment methods have been described in the literature for managing simultaneous bilateral neck femur fractures such as percutaneous screws, fixation with valgus osteotomy [9], and bipolar or total hip arthroplasty [7].

Case Report
A 68-year-old woman presented with a 1-year history of chronic pain in both hips. Pain was dull aching, progressive, and insidious in onset. For 3 months, she used a stick for weight-bearing until a day after a trivial fall, she developed acute, sharp shooting pain over the left hip region. Due to financial constraints, the patient remained bedridden for the next 9 months. She used to take some medication in the form of pain killers. About a month before, the patient visited a local doctor who took a “plain pelvic with both hips” radiograph which revealed displaced bilateral femoral neck fracture.

Patient’s medical history included ST-elevation myocardial infarction 2 years back, for which she was taking cardiac medications. There was no history of smoking or alcohol intake, Koch’s disease.

On examination, both active and passive motions were...
Earlier, such injuries were seen in association with powerful muscular contractions induced by electroconvulsive therapies [10]. Since then, these have been associated with high-energy trauma [1], or due to underlying conditions such as celiac disease2, malnutrition-induced osteomalacia [3, 4] cystic fibrosis [5], steroid abuse [6], and eclampsia-induced seizures [7].

Due to the low socioeconomic status, bone densitometry was not obtained. However, an upper gastrointestinal endoscopy was done to rule out celiac disease which can lead to intestinal mal-absorption resulting in Vitamin D deficiency, leading to bilateral femoral neck fractures.

The patient was diagnosed with bilateral fracture neck of femur secondary to osteomalacia (Fig. 1) and decision to operate was taken. Due to the cardiovascular risk, the anesthesia team preferred to do staged hemiarthroplasty rather than single-stage hemiarthroplasty which was our initial plan.

The patient was operated under regional epidural anesthesia. Hemiarthroplasty with bilateral modular prosthesis was performed in a lateral position with one hip at a time (Fig. 2a, 2b). The cartilage of the acetabulum was intact, and the heads of the femurs were decided to be replaced with bipolar prosthesis.

Post-operative radiographs were obtained on the 1st post-operative day. The patient was encouraged to do static quadriceps and active-assisted/active SLR exercises once the patient feels comfortable. The patient was made to sit on the bedside and full bearing walking with walker was started 24 h after the surgery. The patient was discharged from the hospital 7 days after surgery after confirming healthy wound status.

The patient was given subcutaneous enoxaparin for deep vein thrombosis prophylaxis and injection of Vitamin D supplementation to correct the deficiency followed by oral Vitamin D sachets per weekly for 2 months.

At 1-week follow-up, sutures were removed. Four weeks later, the patient was able to walk without support. After a follow of 1 year, she was walking comfortably without the support and her serum Vitamin D had returned to normal levels.

Discussion

Simultaneous, bilateral neck of femur fractures may be considered rare, and there have been few cases reported in the literature.

Earlier, such injuries were seen in association with powerful muscular contractions induced by electroconvulsive therapies [10]. Since then, these have been associated with high-energy trauma [1], or due to underlying conditions such as celiac disease2, malnutrition-induced osteomalacia [3, 4] cystic fibrosis [5], steroid abuse [6], and eclampsia-induced seizures [7].

Carter et al. have reported a case 67-year-old female sustaining bilateral femoral neck fractures secondary to combined Vitamin D deficiency and steroid use [11]. Narcotic drug abuse can also lead to bilateral femoral neck fracture, as reported by Hootkani et al. [12] Selek et al. reported three patients sustaining simultaneous bilateral femoral neck fractures due to osteomalacia secondary to celiac disease [13]. Bilateral femur neck fractures can also occur in children, as reported by Upadhyay et al. [14].
Osteomalacia is a disorder of mineralization of newly synthesized organic matrix secondary to Vitamin D deficiency in adults. It is due to the combined result of inadequate dietary intake or intestinal mal-absorption and deficient sun exposure as in the present case.

Numerous treatment methods have been described in the literature for managing simultaneous bilateral neck femur fractures such as percutaneous screws, fixation with valgus osteotomy, and bipolar or total hip arthroplasty. Sood et al. described single-stage treatment of bilateral hip fractures in the form of bilateral hemiarthroplasty in supine position through anterolateral approach, but we could not opt for single-stage procedure due to the cardiovascular risk and did staged bipolar hemiarthroplasty and the recovery of the patient was uneventful.

**Conclusion**

Serum levels of Vitamin D should be measured in any patient presenting with long-standing bone pains and muscle weakness for the evaluation of osteomalacia. The underlying cause of osteomalacia must be diagnosed to improve the outcome. Nutritional osteomalacia is one of the cause, which can lead to bilateral neck femur fractures and, therefore, individuals presenting with such clinical scenarios to be considered for the Vitamin D, serum calcium, phosphorus, alkaline phosphatase, and parathyroid hormone workup.

**Clinical Message**

Bilateral neck femur fracture is a rare entity. The management of the elderly postmenopausal patient with long-standing and poorly managed bilateral hip pain, especially in the patient with malnutrition, needs utmost care. Early detection, clinical awareness, and appropriate laboratory workup undertaken to seek better treatment. Pertinent management, both medical and surgical, can provide better treatment outcomes with lesser chances of post-operative complications.

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