

Simultaneous Bilateral Femoral Neck Fractures Following Electroconvulsive Therapy

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ABSTRACT

Fracture neck of femur occurs commonly among elderly people with osteoporosis being the risk factor favoring its occurrence. Its occurrence among young adults, though uncommon, follows high-energy trauma with multisystem affectation. Fracture neck of femur poses a management challenge to the surgeon in deciding on the best option of treatment, in achieving accurate reduction and fixation, and in dealing with complications which may be inevitable. Fracture neck of femur following electroconvulsive therapy is rare. Simultaneous bilateral femoral neck fractures following electroconvulsive therapy are even rarer. Simultaneous bilateral femoral neck fractures management is technically demanding, requiring considerable experience, appropriate instrumentation, and equipment. It is also associated with high morbidity which includes nonunion and avascular necrosis. These fractures can be prevented by the use of modified electroconvulsive therapy. This case seeks to reemphasize the rarity of simultaneous bilateral femoral neck fractures following electroconvulsive therapy, highlight the challenges of managing this condition and proffer ways of avoiding its occurrence.

Key words: Electroconvulsive therapy, Fixation techniques, Modified electroconvulsive therapy, Simultaneous bilateral femoral neck fractures

INTRODUCTION

Femoral neck fractures account for 50% of hip fractures and are common in elderly people beyond the age of 70 years.^[1,2] About 80% of these fractures occur in women.^[2] The incidence in the younger patients is low, and it is associated with high-energy trauma with comminution and other associated injuries.^[2-4] Risk factors for fracture neck of femur include female sex, increasing age, poor health, tobacco and alcohol use, a previous fracture, and low estrogen level.^[2,5,6] Femoral neck fractures are usually intracapsular and become progressively displaced following its occurrence. This forms the basis for the Gardens classification. They

are associated with high chances of nonunion and avascular necrosis.^[2]

Femoral neck fractures are treated with the sole aim of achieving early ambulation by obtaining early anatomical reduction and stable internal fixation or prosthetic replacement.^[7] Nonoperative treatment for traumatic fractures is indicated only rarely for patients who are at extreme medical risk for surgery. In the young patients with normal bone, emergency closed/open reduction with internal fixation is required.^[8,9] Fracture neck of femur is associated with high rates of osteonecrosis and nonunion. Outcomes, however, depend on the severity of injury including the amount of displacement, comminution, and the extent of vascular compromise to the femoral head, as well as the timing and adequacy of the reduction and fixation.^[2,9] Even when surgery has been performed satisfactorily,

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10–15% of patients develop complications of avascular necrosis and nonunion.

In the elderly patients also, the choice of treatment is between stable reduction and internal fixation or prosthetic replacement. The choice, however, depends on the age, preinjury functional status, quality of bone, and life expectancy. Fixation of these fractures is usually achieved with the use of cancellous or dynamic hip screws.^[10] It is, therefore, obvious that fracture neck of femur poses a management challenge to the surgeon because it is technically demanding, requires careful review in deciding on the best option of management, and the complications that may follow treatment for which the surgeon has no control over. These complications are principally those of nonunion and avascular necrosis.^[8-10]

Injuries have been reported to occur following electroconvulsive therapy, especially when given unmodified.^[11] Fracture neck of femur following electroconvulsive therapy is however very rare.^[11,12] Simultaneous bilateral femoral neck fractures following electroconvulsive therapy are even rarer.^[13] These fractures are technically demanding requiring considerable experience, appropriate instrumentations, and equipment. They are also associated with high morbidity, nonunion, and avascular necrosis. When it occurs in a young adult, the morbidity is even higher.^[14] We report this case to emphasize the rarity of simultaneous bilateral femoral neck fractures following electroconvulsive therapy, highlight the challenges of managing this condition, and proffer ways of avoiding its occurrence.

CASE REPORT

M.A. is a 31-year-old schizophrenic who was admitted in our hospital with 2 weeks history of pain in both hips and inability to walk, which was noticed after having an unmodified electroconvulsive therapy. He had no other systemic complaints. Examination of the lower limbs revealed them being in attitude of external rotation. The patient could not straight leg raise and had tenderness in both hips. He had X-rays of the pelvis and hips, which revealed displaced bilateral subcapital fracture neck of femur (Stage iv Gardens) [Figure 1]. He had closed reduction and internal fixation with two cancellous screws under image intensification on the left due to difficulties getting cannulated screws and had open reduction and internal fixation with two cancellous screws for right hip fracture because the image intensifier broke down while attempting closed reduction. Patient did well postoperatively. He remained on admission for 16 weeks to avoid risking loss of fixation as we did not have dynamic hip screws at that time, which provides better stability. X-rays were repeated at 16 weeks which revealed fractures to have



Figure 1: Preoperative pelvic X-ray showing Stage IV bilateral femoral neck fractures

united [Figure 2]. He was thereafter gradually ambulated and discharged at twenty weeks. Patient continued to attend follow-up at our outpatient clinic for about 3 years after which he defaulted. There was no significant hip pain as at the last visit and has continued to attend follow-up visits at psychiatry clinic.

DISCUSSION

Simultaneous bilateral femoral neck fractures following electroconvulsive therapy or other causes are rare with a number of cases reported in the last 60 years being <30.^[15] Electrical shock whether accidental or controlled account for about 50%, whereas violent injury and epilepsy account for the remainder.^[13] The number of reported cases arising from electroconvulsive therapy has declined dramatically as <10 cases have been reported in the last forty years.^[16] The introduction of modified electroconvulsive therapy has been largely responsible for this.^[16] Modification of the electroconvulsive therapy entails the use of general anesthesia that is characterized by its briefness and repetitiveness resulting in several imperatives: Anesthesia of short duration, deep narcosis with muscular relaxation, and ambulatory character.^[17,18] Thus, anesthetic drugs to be used should have a fast onset of action, to obtain a rapid and as alert as possible postanesthesia awakening.^[18] Suitable anesthetic drugs being used include thiopentone, propofol, and methohexitone.^[19] Modified electroconvulsive therapy is now the gold standard. In Nigeria, its use among psychiatrists still remains low with many centers still administering the unmodified electroconvulsive therapy. Reasons proffered included lack of awareness and shortage of physician anesthetist.^[20] This case resulted from an unmodified electroconvulsive therapy with this report serving as a reminder of propagating the benefits of modified electroconvulsive therapy.



Figure 2: Postoperative X-ray at 16 weeks confirming union of fractures

Our patient presented late after 2 weeks of fracture and still had closed/open reduction and internal fixation with cancellous screws. Fracture neck of femur and indeed Gardens Stage IV requires and immediate treatment if complications of nonunion and avascular necrosis are to be averted. Delays of over 48 h are associated with increased incidence of this complications.^[21] It is advocated that with such delays, the best option of treatment would have been a bipolar hemiarthroplasty.^[22] This is true, especially in the elderly. In the young adult, the best option of treatment modality is reduction and internal fixation.^[23] Factors to be considered are those of age, functional demands, and comorbidities.^[23] Good outcome with internal fixation after delayed presentation has been reported.^[24] Our patient achieved union within 16 weeks and follow-up of 3 years duration did not reveal evidence of avascular necrosis. Internal fixation of femoral neck fracture in the young is better than hemiarthroplasty which carries high chances of dislocation and reduced survivability.^[25] We therefore also advocate reduction and internal fixation of fracture neck of femur in the young adult even after moderate delay in presentation.

CONCLUSION

Fracture neck of femur following electroconvulsive therapy is rare. Simultaneous bilateral femoral neck fractures following electroconvulsive therapy are even rarer. Simultaneous bilateral femoral neck fractures management is technically demanding and associated with high morbidity. These fractures can be prevented by the use of modified electroconvulsive therapy.

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Conflicts of interest

There are no conflicts of interest.

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