

## Periprosthetic Fracture of Femur Fixed With Locking Compression Plate – A Case Report

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**ABSTRACT:-** The number of hemiarthroplasty and total hip arthroplasty done has been steadily increasing. However, periprosthetic fractures of the femur is becoming common after these procedures and is one of the major complication. The presence of the implant makes it challenging and difficult to treat the fracture. Periprosthetic fractures of the femur are associated with high morbidity and mortality. In this case report, we present a case of a middle aged patient with periprosthetic fracture of the femur. A 58 year old male patient was brought to the emergency room with history of trivial trauma 9 months after hemi-replacement arthroplasty was done to his left hip. He presented with complaints of pain and swelling in the left thigh and was diagnosed with a peri-prosthetic fracture of the left femur.

**Results:** Open reduction and internal fixation was done using locking compression plate and screws augmented with cerclage. Follow up was done at 6, 12, 18 and 24 weeks and union recorded at 18 weeks. Follow up at 2 years revealed good functional outcome allowing the patient to do his daily routine activities.

**Keywords:-** periprosthetic fracture, bipolar prosthesis, locking compression plate

### I. INTRODUCTION

Hemi-replacement arthroplasty of the hip is one of the standard line of management of fracture neck of femur with relatively low complications and excellent results. The number of hemiarthroplasty and total hip arthroplasty done has been steadily increasing. However, periprosthetic fractures of the femur is becoming common after these procedures and is one of the major complication<sup>1</sup>. The presence of the implant makes it challenging and difficult to treat the fracture. Periprosthetic fractures of the femur are associated with high morbidity and mortality<sup>2</sup>. The exact prevalence of post-operative periprosthetic fractures is unknown. The cause of these fractures could be due to multiple reasons such as trivial trauma in elderly patients or in patients with diminished bone quality in conditions such as osteoporosis, osteomalacia, Paget's disease and osteopetrosis. In younger, more active patients, the cause could also be high energy trauma. In this case report, we present a case of a middle aged patient with periprosthetic fracture of the femur that we treated.

### II. CASE HISTORY

A 58 year old male patient was brought to our emergency room at Kempegowda Institute of Medical Sciences, Bangalore, with the history of slip and fall at his residence following which he complained of pain and swelling in the left thigh and inability to bear weight over the left lower limb. Patient gave a history of trauma 9 months back and was brought to our hospital where he was diagnosed to have a fracture neck of femur. He was operated subsequently and a hemi-replacement arthroplasty with uncemented bipolar prosthesis was done. Postoperative period was uneventful and patient had resumed daily routine activities. Radiographs of the pelvis with both hip and the left femur were done. Patient was then diagnosed to have a periprosthetic fracture shaft of femur – Vancouver type B1. Patient was then evaluated and posted for surgery where in open reduction and internal fixation using locking compression plate and screws augmented with cerclage with SS wire was done.

### III. RESULTS

Patient was mobilized with walker support and kept non-weight bearing for a period of 6 weeks. Weight bearing was started at 12 weeks and patient was followed up at 18 weeks and 24 weeks. Union was recorded at 18 weeks. Patient was followed up at 2 years and is able to do daily routine activities. Movements at hip with flexion from 0 - 90° with a Active SLR of 70° was achieved.

### IV. DISCUSSION

Kim et al<sup>1</sup>, between 1998 to 2013 studied 11 peri-prosthetic fractures in patients who had undergone total hip arthroplasty or hemi-replacement arthroplasty with long stem prosthesis. 7 of the 11 patients were treated with locking compression plate with cerclage. Union was recorded in these 7 patients at around 16.72 weeks following surgery with good functional outcome. They concluded that open reduction and internal fixation is the treatment of choice in Vancouver type – B1 fractures.

Vancouver type-B1 fractures occur with a well-fixed prosthesis in site, at or just distal to the femoral stem. The rate of non-union in these fractures if conservatively managed due to inadequate fracture stabilization. This also leads to higher morbidity due to prolonged immobilization leading to pulmonary infections and skin ulcerations.<sup>3,4,5</sup>

Ricci et al<sup>6</sup>, recorded that internal fixation with locking plate provided better fracture stability alongside preserving the periosteal blood supply of the fractured bone. These locking plates allowed proximal fixation of the femur with with flat-tipped unicortical screws and was with augmented with cerclage wires to provide additional stability.

Fleischman et al<sup>7</sup>, in their study of peri-prosthetic fractures concluded that open reduction and internal fixation was the main stay of treatment in Vancouver type – B1 fractures. The fixation could be done with cables and non-locking screws in patients with good bone quality but, in patients with poor bone quality, locking screws should be used.

Wood et al<sup>8</sup>, concluded that the use of locking plates for the treatment of these difficult fractures was a viable option.

### V. CONCLUSION

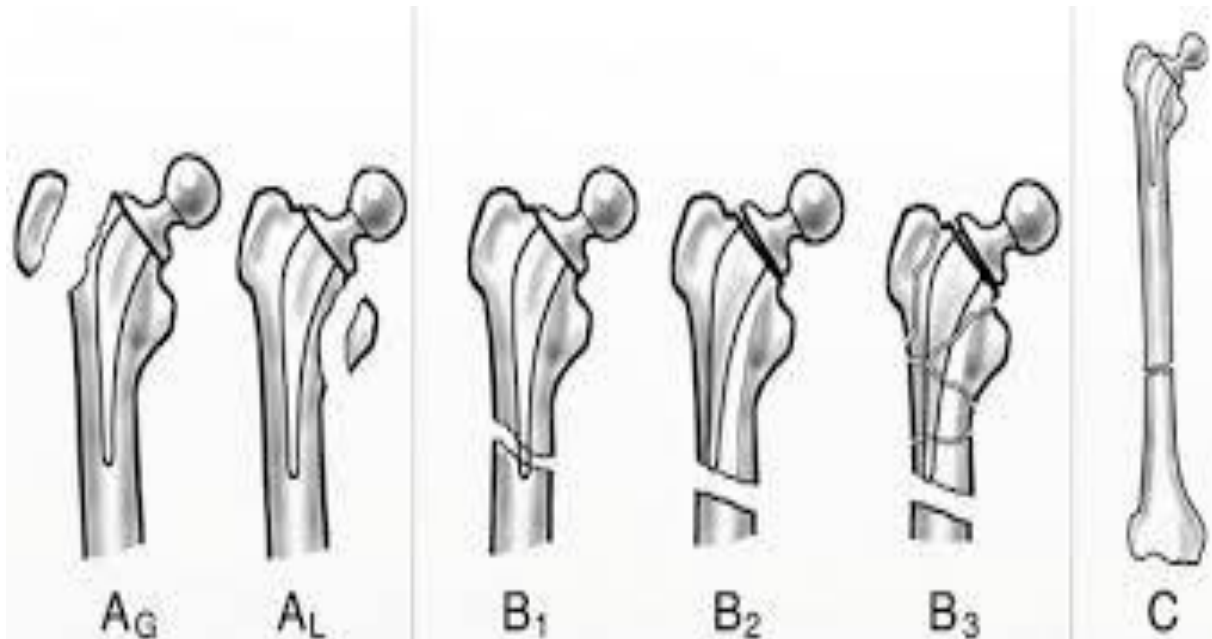
Treatment of peri-prosthetic fractures of the femoral shaft around the femoral stem is a challenging as these fractures require higher surgical skill.

Vancouver type – B1 fractures should be treated with Open Reduction and Internal Fixation.

Internal fixation with locking compression plate augmented with cerclage using stainless steel wire provides for a stable fixation and produces good functional outcome in peri-prosthetic fractures of the femur.

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Type and subtype	Characteristics
A-type fracture	Trochanteric Region
AG	Greater Trochanter
AL	Lesser Trochanter
B-type fracture	Around or just Distal to the Stem
B1	Stem well fixed
B2	Stem loose
B3	Stem loose, poor Bone Stock
C-type fracture	Well Below the Stem

Fig 1: Vancouver Classification

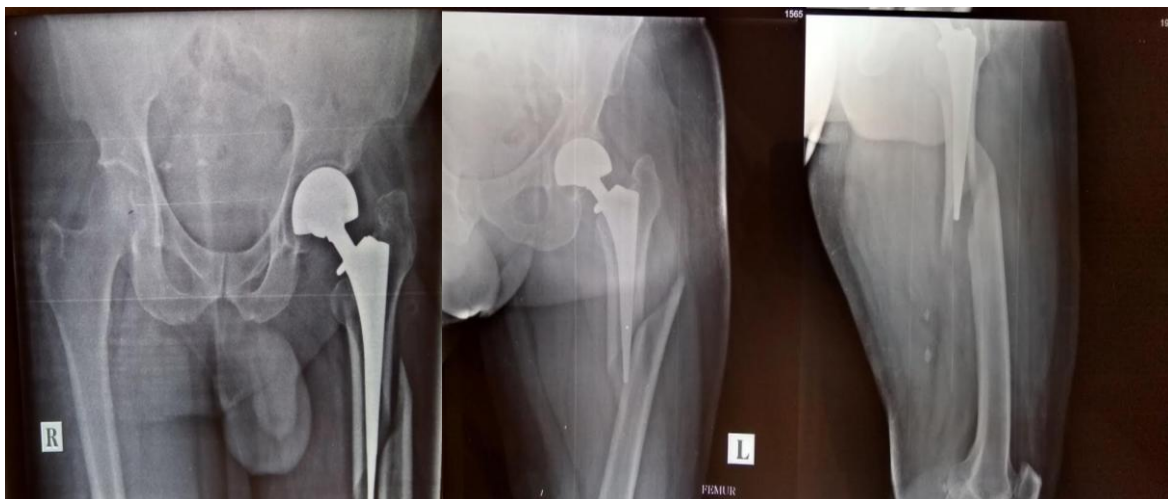
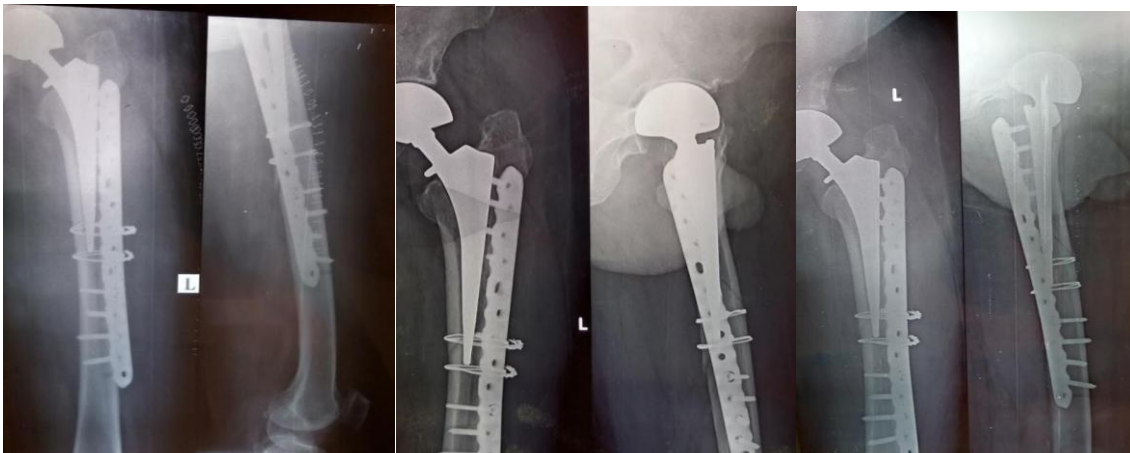


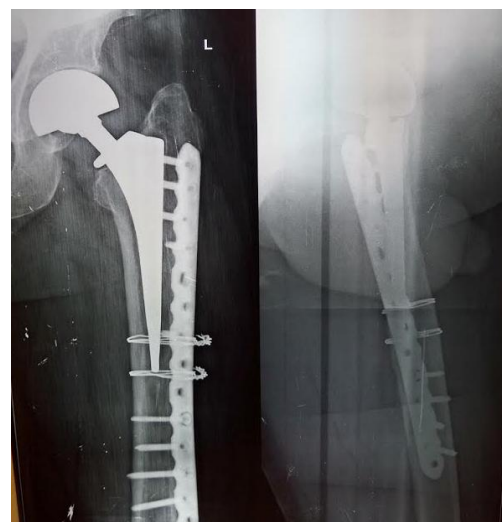
Fig: 2 PRE-OP X RAY



**Fig 3: POST OP X RAY Fig 4: 6 WEEKS FOLLOW UP Fig 5: 18 WEEKS FOLLOW UP**



**Fig 6: 24 WEEKS FOLLOW UP**



**Fig 7: 2 YEARS FOLLOW UP**



**Fig 8: Flexion of hip and knee**



**Fig 9: Straight Leg Raising**



**Fig 10: Adduction**

**Competing Interests:**

The authors declare that they have no competing interests.

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