



## Multiple Myeloma with Subtrochanteric Femur Fracture and Shaft of Humerus Fracture treated with Single Stage IMIL Nailing: A Case Report

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| Article History  | Abstract   |
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| Received: 06 June 2023<br>Revised: 05 Sept 2023<br>Accepted: 06 Nov 2023 | <p><i>Plasma cell dyscrasia include multiple entities from benign plasmacytoma to malignant multiple myeloma. According to literature, about 45% of patients with multiple myeloma experience a fracture in the first year after diagnosis and 65% of patients experience a fracture during the course of the disease. The pathological fracture requires immediate fixation according to Mirell's scoring considering the natural course of the disease and short life expectancy associated with multiple myeloma. Here, we would like to specify a case of multiple myeloma with extensive lytic lesions throughout the body, wherein subtrochanteric femur and shaft of humerus required fixation according to Mirell's scoring <sup>(2)</sup>. We did a single stage intramedullary nailing for subtrochanteric femur fracture and shaft of humerus with 12 and 10 Mirell's score respectively, with no complications in the outcome with regards to pain and quality of life, the fractures go on to unite well.</i></p> |
| CC License<br>CC-BY-NC-SA 4.0  | <p><b>Keywords:</b> Multiple myeloma, pathological fracture, subtrochanteric femur fracture</p>  |

### 1. Introduction

Multiple myeloma a.k.a Kahler's disease is a relatively rare condition. Since the symptoms of the disease appears only in the later stages of the disease, it poses a difficulty in early diagnosis and management. The spectrum of diseases (Plasma cell dyscrasia) vary drastically in severity, with multiple myeloma having extensive disease activity and progression.

The symptoms and signs of multiple myeloma varies from generalised weakness to pathological fracture. The most common symptom being bone pain. Other features such as weight loss, anaemia, thrombocytopenia, peripheral neuropathy, hypercalcemia and renal failure. Radiographically, it might be an incidental finding where it appears as multiple punched out, sharply demarcated, purely lytic lesions without any surrounding reactive sclerosis, although a variant of multiple myeloma may show extensive sclerosis. Histologically, it appears as sheets of plasma cells usually with abundant amyloid. In immunohistochemistry, the myeloma cells stain positive for NK antigen CD56.

Though, the diagnostic and treatment modalities have improved <sup>(3)</sup>, the life expectancy of multiple myeloma patients is still low. So, it is necessary to provide good quality of life in patients diagnosed with the disease. This includes prophylactic fixation <sup>(4)</sup> of bones affected by the disease and prompt treatment of pathological fractures <sup>(5)</sup>.

### Case report:

A 48-year-old male presented with five days history of pain over the left hip following a trivial injury (while mobilising to the bathroom) at his home. The patient was recently diagnosed to be case of multiple myeloma and also has other co-morbidities such as hypothyroidism. The FISH Panel for multiple myeloma was negative, bone marrow aspiration showed 4 percent of plasma cells,

Quantitative multiple myeloma comprehensive panel showed elevated Beta 2 microglobulin (>40480.00), Albumin (3.19), Total proteins(5.55), Alpha 1 globulin (0.18), Alpha 2 globulin (0.86), Beta globulin (0.8), Gamma globulin (0.48), Albumin Globulin Ratio (1.38), M band (absent), Free kappa light chain (35758.67mg/l), Free lambda light chain (1545mg/l), free kappa lambda ratio (2314.48). The patient underwent PET-CT and it showed extensive lytic lesions involving the entire

vertebral column, calvarium, skull base, mandible, clavicles, scapulae, sternum, all bilateral ribs, all pelvic bones, bilateral humeri, bilateral radius and bilateral femur. Most lesions showed associated soft tissue mass.

Post the diagnosis of Multiple myeloma, patient underwent 1<sup>st</sup> cycle of D1 chemotherapy with Inj.DARAMUTUMAB 800mg, Inj. BORTEZOMIB 2mg, Inj.DEXONA 20mg, and also supportive treatment with Inj.PEGASTA 6mg S/C and Inj.NEUKINE 300mcg S/C. Patient also underwent Adjuvant palliative radiotherapy.

The Subtrochanteric femur fracture which belonged to type 2B according to Seinsheimersclassification<sup>(6)</sup> of subtrochanteric fractures and X ray of Right humerus showed a lytic lesion involving the mid shaft of humerus. Based on Mirell's criteria<sup>(2)</sup>, the score for lesion over the humerus was 10 and the score for subtrochanteric femur fracture was 12. Hence, both required fixation<sup>(7)</sup>.

Extensive preoperative workup was done and patient was operated with Long PFN for the subtrochanteric femur fracture and IMIL nail for humerus. There was no intraoperative and post operative complications. Patient was started on physiotherapy on post operative day 1. Dressing was done on post operative day 2 and patient was discharged on post operative day 3 and was referred to oncologists for further care.

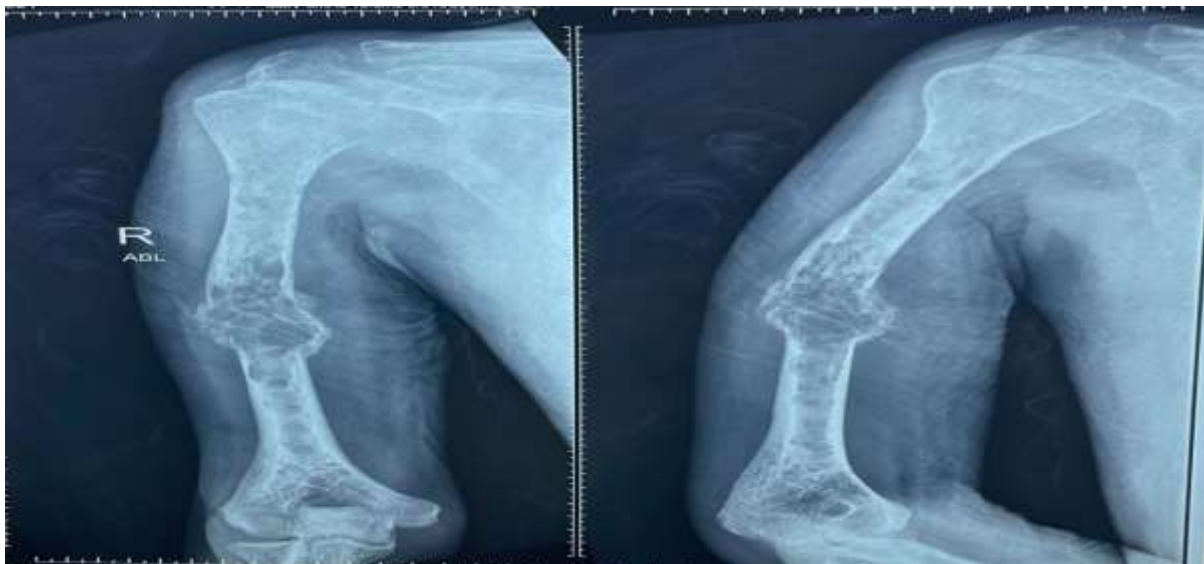
### 3. Results and Discussion



**Fig-1**, shows the skull X ray of the patient and it showed multiple, small, well circumscribed, lytic, punched out lesions,



**Fig-2,** shows the Subtrochanteric femur fracture of the left femur



**Fig-3,** showing a lytic lesion involving the mid shaft of humerus in the X-ray.

Most neoplastic disorders including multiple cell myeloma and other plasma cell dyscrasias requires frequent skeletal survey and also requires prophylactic fixation of bones if necessary. This results in improving the quality of life of the diseased individual and also reduces the morbidity associated with it.

Though there are many studies which report pathological fractures associated with multiple myeloma, most are related to fractures of vertebra<sup>(8,9)</sup>. Other studies report the prognosis of the patient, prevention<sup>(10)</sup> and modalities to treat the disease<sup>(11)</sup>.

This case report documents that single stage fixation of both fractures (humerus and Subtrochanteric femur) with intramedullary interlocking nails, holds good with adjuvant chemo and radiotherapy inspite the patient being high risk and the disease itself being pertained to the bone marrow.

Early diagnosis and treatment is the most important component of treatment in all pathological lesions of the bone along with treatment of the disease in concern, eliminating conservative management as an option, thereby resulting in improved quality of life.

#### **4. Conclusion**

This is unique case as a single stage nailing procedure was performed for multiple fractures, considering the disease activity and patient factors in mind. The optimal fixation of these fractures is essential for preventing further morbidity of the diseased patients, thereby improving the quality of life.

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