Palliative Surgery for Pathological Fracture of Humerus by Intramedullary Interlocking Nail: Case Report

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INTRODUCTION
Human skeletal system is most commonly affected by metastasis followed by lungs & liver. Majority of bone lesions which are non-mesenchymal in origin are due to metastasis apart from myeloma &lymphoma. Amongst all long bones, humerus comes next to femur to be affected by metastatic deposits. casts, splints & braces have been used conventionally in the management of pathological fracture of humerus but over the years surgical intervention has gained popularity as it promises better pain relief & functional outcome. Factors such as quality of bone, size of the lesion, life expectancy etc. determine the decision making of choosing the best fixation modality. Internal fixation options include intramedullary nail, plate with screws, endoprostheses & arthroplasty.

MATERIALS & METHODS
-Management & treatment of the patient by appropriate evidence-based intervention.
A 54 year old female came to D.Y.Patil Hospital Orthopaedics Unit 3 OPD for consultation in the month of October 2014. It was diagnosed to be pathological fracture of right humerus secondary to right-sided breast carcinoma after thorough history-taking, clinical examination & diagnostic work-up. Patient was immobilized in a functional brace & was advised to follow-up after the completion of her chemotherapy.
In April 2011, she was a known case of colloid goitre who was diagnosed for a lump on her right breast. On 07/05/2011, FNAC was done which was suggestive of hypercellular smear showing duct carcinoma cells on haemorrhagic background & the conclusion was a malignant breast lesion. She underwent LOBC with SCNL biopsy on 03/06/2011.(Fig.1 & 2)
Frozen Section

ESI: Unresectable specimen - On cut surface show grey with tumour measuring 4.5x3.0x0.5 cm. 2 sections were prepared.

ESI: Right infraclavicular lymph node - Two lymph nodes larger measuring 1.2x1.0x0.8 cm.

ESI Diagnosis: Metastatic carcinoma of the breast.

ESI: Consenting epithelial granulomas (Dr. N. A. Jha, SCD).

Gross Description:

Specimen type: Right mastectomy with axilla.

Resected right mastectomy specimen, measuring 18.5x16x5 cm, with overlying skin flap measuring 13x7 cm. The nipple and areola are unremarkable.

Received: Mastectomy specimen measuring 6.0x5.5x5 cm. Cut surface grey-white.

Malignant tumour seen measuring 7x1x1 cm.

On serial sectioning of the mastectomy specimen a cavity is identified measuring 6x5.5x5 cm, located in the central quadrant. It is located 0.3 cm from the nipple and areola 6.7cm from the base.

The remaining breast tissue is unremarkable. Representative sections are submitted.

Lymph nodes:

Axillary nodes - 15 nodes dissected, largest measuring 1.5x1.0x0.5 cm. Cut surface grey-white.

Axillary nodes, single node identified measuring 0.6x0.3x0.3 cm. Rest of fibrous fatty tissue submitted entirely.

Intercostal node - single fibrous fatty tissue measuring 2x1.5x0.8 cm submitted entirely.


The report relates only to the sample submitted.

"All samples/Nodes blocks submitted for evaluation will be retained by the Hospital under normal circumstances."
After being diagnosed with Metastatic Grade III breast carcinoma she underwent 4 cycles of chemotherapy with a 3 week interval between each cycle. Drugs used were Docitaxel + Cyclophosphamide. (Table 1) (Table 1)

<table>
<thead>
<tr>
<th>Date</th>
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<tbody>
<tr>
<td>24/6/2011</td>
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<tr>
<td>15/07/2011</td>
<td>Cycle 2</td>
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<tr>
<td>5/8/2011</td>
<td>Cycle 3</td>
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<tr>
<td>25/09/2011</td>
<td>Cycle 4</td>
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Followed by chemotherapy she then received radiotherapy 25 cycles from 13/09/2011 to 18/10/2011 one cycle per day (Figures 3 & 4).
Later she underwent 6 cycles of chemotherapy from September 2014 to January 2015. Drugs used were Gemcitabine + Carboplatin, administered on D1 & D8 of each cycle with an interval of 3 weeks from the next. She was planned for surgery on 03/03/2015 prior to which she was sent for embolization to Tata Memorial Hospital on 02/03/2015. The surgery performed was “Debulking of the tumour with Intramedullary Interlocking Nailing & Intercalary bridging with antibiotic impregnated bone cement.”
RESULTS & OBSERVATIONS
Elbow range of motion exercises & smiley ball squeezing hand exercises was started from post-operative day 2. After a week, shoulder range of motion exercises were started. Patient was discharged after suture removal on post-operative day 14. On follow-up, after 2 weeks patient had both right shoulder & elbow range of motion full & free.

CONCLUSION
Intramedullary interlocking nailing proved to be an effective & stable internal fixation modality for pathological fracture of humerus which brought early pain relief& mobilization of the affected extremity.