Volume : 5 | Issue : 5 | May 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Research Paper

Primary Chondrosarcoma of Metacarpal

Medical Science

KEYWORDS :

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ABSTRACT

Chondrosarcomas are considered to be relatively slow growing, malignant cartilaginous tumors with a longer natural history. It is essential to distinguish them from the benign chondromas which are dormant, asymptomatic lesions. The occurance of these lesions in the hand is very rare.

In this case report we present a 46 year old lady with pain and deformity of the non-dominant hand. Clinical and radiological evaluation suggested features of an expansile, lytic lesion in the fifth metacarpal with breach of the cortex and a pathological fracture. No signs of metastasis or any such similar lesions were noted in the rest of the body. Surgical wide resection of the lesion with bone grafting and plate fixation was performed.

The histopathology confirmed a diagnosis of chondrosarcoma. The patient was followed up at regular intervals with serial radiographs. At the end of one year the patient was noted to have good radiological union.

As this was a rare condition which was managed a successfully, we present it as a case report.

INTRODUCTION:

Chondrosarcomas are rare malignant tumours of the bone with hyaline cartilage differentiation. The incidence is of approximately 0.1/100,000 per annum, presenting between 30 and 60 years of age with an equal prevalence between the sexes.[1]

The most common sites of occurrence are the femur, tibia and humerus. The chondrosarcomas of the hand account for just 1.5%.2 Resection around the metacarpophalengeal joint (MCPJ) can lead to significant functional losses1. Limited reconstructive options currently exist and tend to be based on grafting and arthrodesis after partial or whole ray amputation, which result in a viable but functionally limited digit1.

CASE REPORT:

A 46-year-old lady presented with complaints of pain and deformity of left hand for 2 weeks following a trivial fall. Examination revealed swelling and deformity noted over fifth metacarpophalangeal joint with bony crepitus and abnormal mobility.

Radiographs revealed multiloculated lytic lesion over the head and neck of fifth metacarpal with a fracture noted over the shaft. CT of the hand showed expansile lytic lesion in the fifth metacarpal bone with cortical breach and pathological fracture of the shaft (Figure 1,2).

The patient underwent excision biopsy of the lesion with K-wire stabilization. Biopsy of the lesion reported hyperkeratosis of the epidermis with inflammatory cells. Clusters of giant cells mainly comprising of lymphocytes were noted in the dermis which was suggestive of an inflammatory response. The tumor was cartilaginous showing lobules of chondrocytes with nuclear atypia. They primarily comprised of spindle cells. These features were consistent with a well differentiated low grade Chondrosarcoma. She was evaluated completely to rule out any signs of metastases.

Wide resection of The lesion and iliac crest bone grafting with mini-plate fixation was done at a later date.

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She was reviewed periodically and functions of the hand was monitored. Radiographs were taken on every review so as to rule out any recurrence.

The last review which was done one year post-operative. She was noted to have and acceptable radiological union of the fifth metacarpal and had stiffness of the metacarpo-phalangeal, first and second inter-phalangeal joint (Figures 3-7). But, had full range of motion of the distal interphalangeal joint.

DISCUSSION:

Although chondrosarcomas of the hand are malignant they are slow growing and seldom metastasize. However, local recurrence is not uncommon and they can be locally aggressive, with the small size of the hand facilitating spread between compartments. Because of this and their low radio- and chemosensitivity, current European guidelines recommend low-grade peripheral chondrosarcomas to be surgically excised, aiming to remove the tumour with a

covering of normal tissue over it; higher grade tumours require wide local margins.1

Resection of the metacarpal or ray amputation, is often performed as the definitive therapeutic option, with reconstruction being performed later as a secondary procedure. After resection, autologous bone graft with arthrodesis is usually the reconstructive technique of choice to preserve the digit, but at the expense of a rigid MCPJ. The reduced dexterity and potential impingement on the global functioning of the rest of the hand means that amputation of the affected digit may be preferentially considered. By using a technique that seeks to reconstruct the MCPJ, rather than fuse it, greater function and dexterity can be maintained.3

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Options currently available for achieving this include osteoarticular allograft, autograft from the metatarsals, combined autograft with arthroplasty, and enbloc metacarpal replacement using silastic prosthesis. Osteoarticular allografts meet both the structural and strength requirements for reconstructing the metacarpal whilst minimizing bulk and offering an osteoconductive matrix. However, the risks of transplanted foreign tissue make this technique unpopular.4 Autografts using the metatarsals can similarly be used but risk significant donor site morbidity and can pose problems in achieving an appropriate size match.

Swanson arthroplasties currently remain the gold standard for prosthetic reconstruction of the MCPJ.5 They are used largely for the surgical treatment of arthritis, and less commonly following trauma or neoplasia.

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Images:

Figure 1: X-ray AP view of the left hand showing multiloculated lytic lesion over the head and neck of fifth metacarpal with a fracture noted over the shaft.

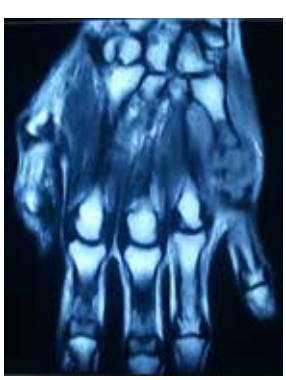

Figure 2: CT of the hand showing expansile lytic lesion in the fifth metacarpal bone with cortical breach and pathological fracture of the shaft.

Figure 3 Figure 4

Figure 3,4: X-ray Antero-Posterior and lateral views of the left hand showing acceptable union of the metacarpal shaft with mini-plate insitu, at one year follow up.

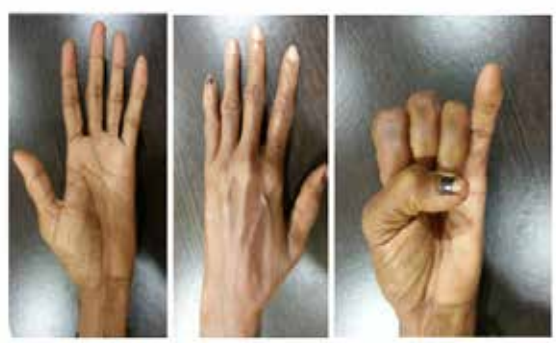

Figure 5 Figure 6 Figure 7

Figures 5,6,7: Showing complete extension of the fifth digit. Note the limitation of flexion of the fifth digit in figure 7, at one year follow up