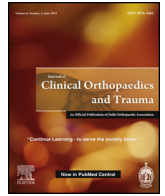




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Case report

Nora's lesion of 2nd metacarpal treated by wide excision, autologous fibular grafting and metacarpophalangeal joint replacement: A rare case report[☆]

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ABSTRACT

Bizarre paroxysmal osteochondromatous proliferation (BPOP) is a rare benign neoplastic lesion predominantly affecting small bones of the hand and known for its recurrence after local excision. We describe a rare case of BPOP involving second metacarpal of the dominant hand which was treated using a novel technique. Wide excision and reconstruction with non-vascularised fibular autograft was performed along with metacarpophalangeal joint replacement. At a follow up of two years, there was no evidence of recurrence and patient had good functional outcome. Hence this modality of treatment could be considered in dealing such cases of BPOP involving the small bones of hand.

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1. Introduction

Bizarre paroxysmal osteochondromatous proliferation (BPOP) was first described by Nora and his colleagues in 1983.¹ It is an extremely rare lesion usually involving the bones of hand. There have been fewer than 150 cases of BPOP reported involving various bones.^{2–4} Given the rarity of the condition there is no consensus on its treatment. Majority of the cases have been treated with local excision,⁵ however few authors have suggested wider excision to reduce the chance of recurrence.⁶ We present a new method of treatment in BPOP involving metacarpals of hand. It includes partial excision of metacarpal and reconstruction with fibular grafting and metacarpophalangeal joint replacement.

2. Case report

A fifty-year-old female presented to our outpatient department with swelling in the right hand (dominant) of one year duration. There was gradual increase in the size of swelling from size of pea to approximately that of a lemon. There was no history of trauma or fever or any other complaint. It was not associated with pain. On examination a diffuse bony hard swelling of size 4 × 4 cm was localised to the dorsal aspect of the index metacarpal with no tenderness (Fig. 1). There was no distal neurovascular deficit. Rest of the clinical examination was unremarkable.

Radiograph of the right hand revealed a well-defined heterogeneous radiolucent lesion appearing to be arising from the surface of 2nd metacarpal with matrix calcification (Fig. 2). Magnetic resonance imaging (MRI) and computed tomography (CT) of the hand showed a well-defined lytic destructive lesion arising from the extensor aspect of the second metacarpal contiguous with the medullary cavity of the underlying bone and internal lobulations suggestive of chondroid matrix (Figs. 3 and 4). Core biopsy was done from the lesion which revealed tumoral proliferation with osseous, cartilaginous and fibrous components suggestive of BPOP (Fig. 5). The patient was then planned for wide excision of the lesion and reconstruction with fibular grafting and metacarpophalangeal joint arthroplasty using NeuFlex prosthesis (DePuy Orthopaedics, Warsaw, IN, USA).

[☆] This work was performed at All India Institute of Medical Sciences, New Delhi, India.

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Fig. 1. Clinical photograph of the lesion. A diffuse bony hard swelling of size 4 × 4 cm was localised to the dorsal aspect of the index metacarpal of the right hand.

Under general anaesthesia and tourniquet control, a straight midline skin incision was given over the dorsum of second (index) metacarpal extending upto proximal phalanx. The extensor tendon was retracted to one side. The mass was dissected from all sides taking care not to breach the pseudocapsule. Metacarpal osteotomy was done two centimetres proximal to the lesion and the mass was removed along with the second metacarpophalangeal joint. After excision of the mass, the wound was thoroughly washed with normal saline. Appropriate sized (five cm) non-vascularised fibular

graft was harvested from ipsilateral leg. The fibular graft was then shaped and trimmed to be placed over the defect in the second metacarpal. The articular cartilage was then removed from the proximal phalanx of second digit with the help of micro-oscillating saw. The medullary canal was opened with the help of micro rasp. Sequential broaching was carried out in both proximal phalanx and harvested fibular graft. The trial silicone prosthesis of size one was then inserted in the proximal phalanx and the fibular graft. The fibular graft was fixed to remaining base of metacarpal with the help of 2.4 mm locking compression condylar plate (AO, Synthes). After checking stability of the construct, the trial prosthesis was removed and definitive prosthesis of size 1 was then inserted and the joint reduced. After thorough washing of wound, it was closed in layers. The finger was splinted for two weeks and subsequently active range of motion exercises were advised to the patient. There was no post-operative complication (Fig. 6).

The excised mass was sent for histo-pathological examination. On microscopy, there was fibrocartilaginous tissue with high cellularity; small chondrocytes were scattered in myxoid stroma. There were areas of immature bony trabeculae with high osteoblastic activity. The spindle cells were arranged loosely along the trabeculae. No cellular atypia or mitoses was seen. The above-mentioned findings confirmed the final diagnosis of BPOP of the second metacarpal. At a follow up of two years, there was no evidence of recurrence. The patient was able to write and pinch with good functional outcome (Fig. 7).

3. Discussion

BPOP in hand presents as an osseous exophytic growth. It affects men and women of all age groups with equal frequency.⁶ Patients usually present with a non-tender and firm mass over the dorsum of hand. Sometimes joint motion may be limited due to its location at the end of the joint. Its aetiology and pathophysiology are not known. Some authors have proposed traumatic event in its aetiology^{3,7} while others have refuted the same.⁸ Yuen et al. in their unitary hypothesis have proposed that BPOP along with florid



Fig. 2. Plain radiograph of the right hand. A well defined heterogenous radiolucent lesion appear to be arising from the surface of 2nd metacarpal with matrix calcification.

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