Case Report

Aneurysmal Bone Cyst of Head of Fibula with Transient Postoperative Neuropraxia of Common Peroneal Nerve

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Abstract

The pain over the knee region is a common complaint noted in routine practice and may require proper investigations to diagnose the etiology. Pain over the proximal fibular area is uncommon more so with no history of injury or overuse. Benign neoplastic lesion of fibula head is rarely encountered on radiographs, and further investigations are directed to exclude the differentials. Excision biopsy of smaller, uncomplicated lesion is a treatment of choice that not only is curative but is important to collect biopsy specimen to confirm the diagnosis. Common peroneal nerve (CPN) in the vicinity of upper fibula poses a challenge in surgical approaches to this region and requires careful identification and handling to avoid any damage. Despite best efforts, neuropraxia of CPN may be noted in few cases. Proper preoperative documentation, counseling, and assurance are crucial to manage this complication. Proper bracing and physiotherapy is encouraged while spontaneous recovery is expected. We report a case of aneurysmal bone cyst of fibular head managed by excisional biopsy that led to the aforementioned complication and full recovery in the follow-up.

Keywords: Bone tumor, cyst, excision, lateral popliteal nerve, neuropathy, proximal fibula

Introduction

The classic aneurismal bone cyst (ABC) is an expansile and hemorrhagic tumor and about 30% of cases are secondary which occur in reaction to another benign bone lesions.[1] These are usually metaphyseal, eccentric, fluid-filled, and multicameral lesion. ABC needs to be differentiated from unicameral bone cyst (UBC) as the treatments differ. ABC is a more aggressive and destructive lesion compared to UBC, and careful management is required in body parts with increased biomechanical stress for risk of fracture. As the true nature and etiopathogenesis of ABC is not clear, these are classified in indeterminate tumor group with locally aggressive behavior.[2] There has been supportive evidence of certain oncogene translocation in primary ABC, whereas secondary ABC does not show any specific translocation. The reported incidence is 0.14 per 100,000 of population per year, and most cases are reported in <20 years of age.[2,3] It usually occurs in the long bone metaphysis, and fibular origin is lesser common than other long bones such as tibia, femur, or humerus. The advent of magnetic resonance imaging (MRI) has increased their identification and sensitivity to pick fluid-fluid level, which are not specific but highly suggestive of ABC, proper delineation of the lesion, and most importantly, differentiation between primary and secondary types.[4] The fibular head is an uncommon site of any bone neoplasm and, due to its anatomy, may pose challenges to treatment.

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Case Report

A 26-year-old female presented to us with insidious pain over lateral aspect of her right knee region that was increasing in severity for the past 5 months. There has been no history of any trauma or associated comorbidity, and the pain had no radiation, relation to posture or diurnal variation. The pain, however, increased on prolonged walking or activities involving kneeling and transient relief on rest or pain medications. There was no relevant associated systemic

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feature noted and there was tenderness appreciated over proximal fibula region without any local rise of temperature. The distal neurovascular status was intact. The radiographs of the knee revealed a cystic lesion limited to fibular head area with slight cortical expansion but no appreciable breach of cortex [Figure 1a]. The MRI was advised and the confirmation of the lesion was done. MRI showed a cystic lesion with hyperintensity on T2-weighted images but no specific fluid-fluid levels along with the differential diagnosis of UBC, ABC, and giant cell tumor (GCT) and no associated adjacent abnormalities [Figures 1b and 2]. The plan to have wide-excision biopsy was laid out following informed consent. A linear incision centering over the fibula head was made and careful dissection was done to expose the common peroneal nerve (CPN) that lies in close vicinity to head of fibula [Figure 3a]. After careful identification, gentle handling and loop protection of CPN, the lesion was accessed carefully, and the *en bloc* excision with few centimeters of intact fibula below the lesion was performed for histopathological sampling. There was fragmentation and thinning of cortex at some parts of lesion with visible large coagulated mass inside the lesion [Figure 3b]. There was no egress of any fluid noted from the lesion and the excised part was carefully kept aside for biopsy. The wound was closed and the wound healed uneventfully and postoperative radiograph showed proper excision of the lesion [Figure 3c] and biopsy was suggestive of ABC of fibula head. There was, however, inability to fully dorsiflex the ankle and paresthesia in the distribution of CPN. The probable diagnosis of neuropraxia was made as there was careful isolation and handling of CPN during the operation but nerve injuries may occur despite all precautions due to inadvertent stretching or pressure over the nerve in some cases. The radiographs at the each follow-up showed no recurrence of the lesion [Figure 4a]. The passive exercises and splint was provided along with methylcobalamin medication for 3 weeks leading to gradual resolution of neuropraxia spontaneously within 4 months' time, and gradual regain of power to actively dorsiflex the ankle [Figure 4b and c]. There was full regain of preoperative ankle movements and no recurrence or any immediate or remote complication of the technique was noted in the follow-up of 2 years.

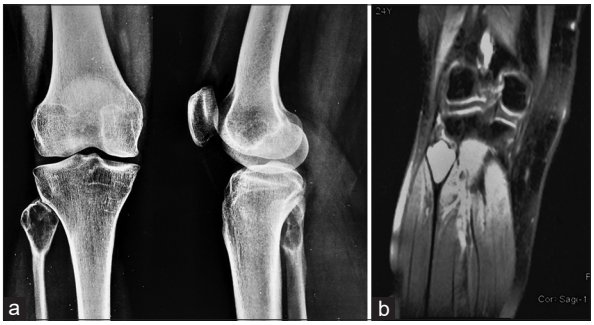

Figure 1: The orthogonal radiograph of the knee showing a lytic lesion with thinning of cortices but without breach over head of fibula (a). The magnetic resonance imaging of the area delineating the lesion with hyperintensity suggestive of fluid content (b)

Discussion

The peculiar position of fibular head lesion has a propensity to compress CPN in some proximal fibular mass lesions. There have been report of proximal fibula ABC in an adolescent causing CPN palsy relieved by surgical decompression of nerve and curettage of the cyst.[5] There is another report of *en bloc* excision for ABC of proximal fibula in a 13-year-old-female presenting with painful mass and without associated neurovascular problems.[6] Subperiosteal resection of fibula ABCs have been tried and found to be effective method that avoids morbidity related with other techniques and helps bone regeneration.[7] In an interesting report, proximal third fibula was used to successfully reconstruct distal fibula following *en bloc* excision of distal fibular ABC in an 8-year-old female child.[8] The use of anti-resorptive therapies such as zoledronic acid or novel drugs for osteoporosis like denosumab has been tried in selected cases with good results but no robust evidence exist to support their widespread usage.[9,10] The probability of GCT with ABC like changes are also found in few cases and also reported from fibular head lesions so the biopsy is instrumental to appropriate diagnosis.[11] The two popular surgical treatment, curettage and *en bloc* excision, have their own pros and cons. The curettage has lesser surgery but high

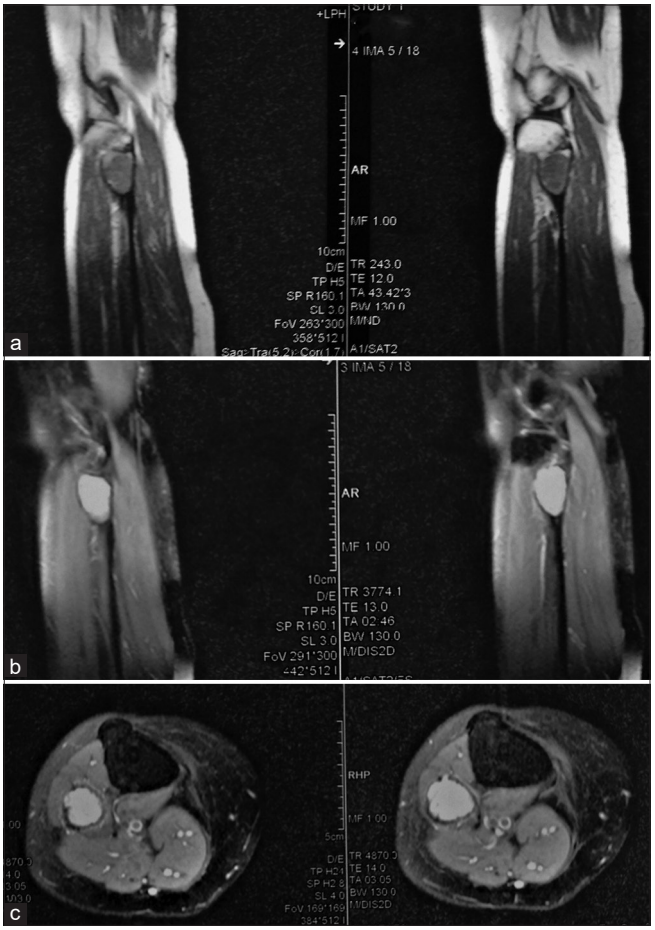

Figure 2: The sagittal T1 weighted (a), fat suppressed (b) and axial (c) images showing the lesion as expansile one with thinning of bony cortices

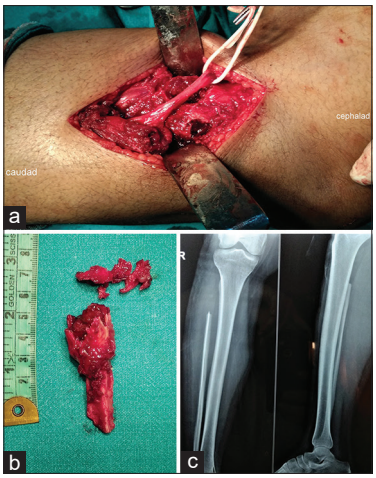

Figure 3: The intraoperative image showing careful identification and protection of common peroneal nerve adjacent to the lesion (a). The lesion following excision with part of normal fibula (b) and immediate postoperative radiograph showing excised bone (c)

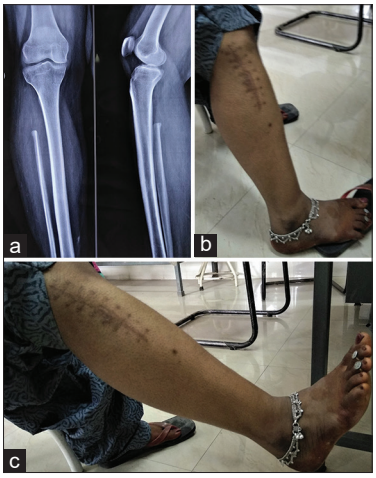

Figure 4: The radiograph at succesive follow up showing no recurrence (a) while there is no wound complication (b) and gradual recovery of ankle movements (c)

risk of recurrence, while *en bloc* excision has less recurrence at the cost of extensive incision and its complication. *En bloc* excision may be more suitable for recurrent lesions or those with more bone destruction and lesion at expandable location.[12] The proper explanation of inadvertent nerve stretching leading to neuropraxia should be done in all cases where important nerves lie in vicinity of operative field or require handling during the surgery. Despite gentle handling and protection, some of the cases do display postoperative neuropraxia, and proper counseling and assurance are vital for its management. These cases require no additional procedures as spontaneous healing is observed in majority of them.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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