

Solitary Bone Cyst of the Lunate: A Case Report

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Abstract

Unicameral bone cyst of the lunate bone is a rare condition the incidence of which has not been described in literature. We present here a case of a symptomatic lunate cyst in a 40 year old female followed up for two years and operated in view of increase intensity of symptoms and radiological evidence of cortical thinning. The cyst cavity was filled with autologous cancellous bone graft taken from the distal radius.

Keywords: Bone cyst; Lunate; curettage; Bone grafting

Introduction

The simple or Unicameral bone cyst (UBC) is a lesion of unknown etiology that is common in the first two decades of life, primarily between the ages 5 and 15 years. Bone cysts are asymptomatic. They may be occasionally discovered by serendipity on radiographs obtained for other reasons [1].

The lesion is not a true cyst because it is not lined by endothelial cells but rather by a thin fibrous lining of compressed fibrous tissue and blood vessels [1].

Treatment has traditionally consisted of curettage and bone grafting. The curettage technique consists of making a window in the bone and aspiration of the fluid and completely curetting the lining tissue. The cavity is then packed with autograft or allograft bone chips or other bone graft substitutes [1].

Case History

A 40 year old female presented to OPD with left wrist discomfort associated with activity on and off for six months. The radiographs then revealed a radiolucent lesion in the center of the lunate bone. The pain was controlled with the use of analgesics. This patient was followed up for a period of one and a half years after which she experienced an increase in the intensity of pain and this was now associated with nocturnal exacerbations. A decision to operate was taken in view of the increase in symptoms. On examination, there was tenderness over the wrist joint examined dorsally at the mid-point of the inter-styloid line and point tenderness over the lunate bone. Scaphoid shift test was negative. There was no restriction of range of movements of the wrist joint.

Routine lab investigations revealed no abnormality. ESR and CRP were in the normal range. Total counts revealed no evidence of infection.

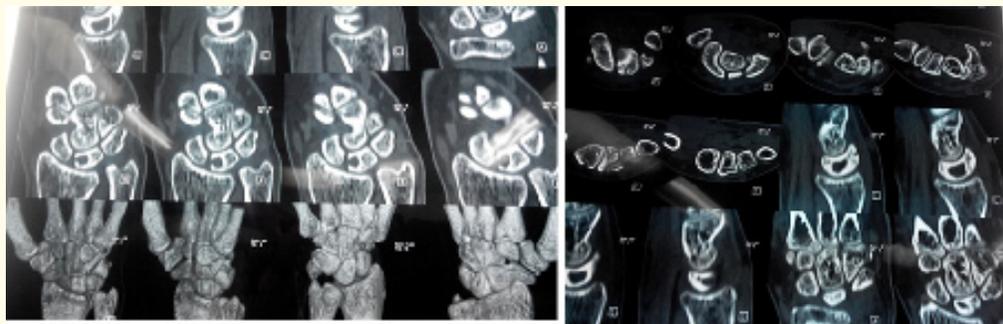
Initial AP and lateral radiographs of the wrist revealed 6-8 mm radiolucent lesion in the lunate involving about half of the bone on the radial side extending to the center. There was no collapse of the bone or cortical thinning of the bone on the radial side. The cyst was aseptate. There was no evidence of involvement of the other carpal bones. Radiographs revealed no signs of radiocarpal arthritis or distal radioulnar joint involvement. Serial radiographs over the follow up period revealed no increase in the size of the lesion but was associated with cortical thinning after 2 years of initial diagnosis of the cyst.

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Figure 1: AP and Lateral view radiographs of the left wrist.

Computed tomography scans of the wrist revealed round hypointense cystic lesion in the centre of the lunate bone measuring 5.3 x 4.7 mm in diameter.



Figures 2&3: Computed Tomography images of the wrist showing the cyst.

Magnetic resonance imaging revealed a cystic lesion measuring 5.3 x 4.7 mm in the lunate bone.



Figure 4: T2 weighted image showing hypointense lesion in the lunate bone consistent with a cyst.



Figure 5: T1 weighted image showing hyperintense lesion in the lunate bone consistent with a cyst.

A volar approach was taken². A 6cm longitudinal incision taken centered over lunate bone and extended proximally. This was done to include the distal metaphyseal portion of radius from which a cancellous bone graft was planned to be taken.

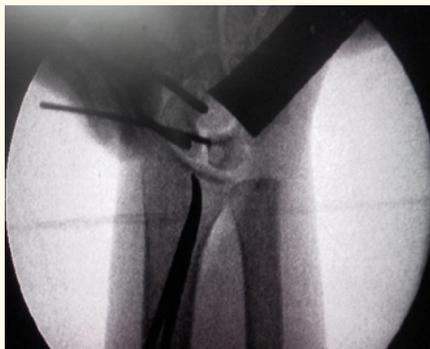


Figure 6: shows K wire placed intraoperatively to identify the site to make the cortical window over the cyst.

Following the skin incision blunt dissection was done carefully protecting the palmar cutaneous branch of the median nerve². Wrist joint capsule was exposed. Stay sutures were taken in the capsule and the intercarpal ligaments with 2-0 vicryl before incising them so that they can be sutured back at the end of the procedure.

Lunate bone was exposed and the cystic region of the bone was confirmed under fluoroscopic guidance. A 2 mm K-wire was used to drill holes and make a cortical window in the roof of the cyst under fluoroscopic guidance (figure 4). The cyst was evacuated and curettage was performed through the cortical window manually without using a power burr (figures 5 and 6). Yellowish-brown necrotic material was removed and sent for histopathological examination.

Through the distal radial metaphyses a cortical window was made and autogenous cancellous bone graft was taken and incorporated into the cyst cavity after a thorough wash. We preferred using distal radius as a site for bone graft in order to prevent second surgical procedure and another scar.



Figure 7: The arrow shows the site for making the cortical window over the cyst.



Figure 8: The arrow points towards the decompression of the cyst through the cortical window.

The capsule and the intercarpal ligaments were identified and closed with the help of previously taken stay sutures. A well-padded plaster of Paris slab was put post-operative and as a protective splint for two weeks. A few days later histopathology confirmed the lesion to be a unicameral bone cyst.

Discussion

A solitary bone cyst is a tumor-like lesion typical of the immature skeleton, characterized by the presence of an intramedullary cavity full of liquid. The etiology of these unicameral bone cysts is still unknown [3]. These are usually formed close to the metaphysis, juxtaposed or near the physis and they tend to grow thus weakening of the bone. They account for 3% of all bone tumors, and 80% cases have a predilection for the proximal humerus and proximal femur⁴. The other sites of involvement are the heel and iliac bone [3].

These lesions are usually diagnosed in childhood and appear between the 3rd and 14th year of age with approximately a 2-2.5:1 male: female ratio³. The lesions are usually asymptomatic but may present as pathological fracture. They can also present with pain and edema occasionally associated with deformity. Although diagnosis is frequently straightforward, management remains controversial. It is believed that if a cyst is incidentally discovered and asymptomatic, it is reasonable to observe it over time, should it prove to be active it would then be appropriate to treat it. However, if the cyst remains asymptomatic and the patient is able to carry out his or her activities without restrictions, the observation period can be continued because the cyst may resolve spontaneously. Because the results of various management methods are heterogeneous, no single method has emerged as the standard of care [3,4]. The main indication for surgery is to prevent or treat pathological fracture [5].

Traditional methods, such as prednisolone therapy, usually involve multiple anesthetics and injections and are associated with high recurrence rates. Major surgical procedures, such as wide exposure, curettage, and bone grafting, may be somewhat more effective [6].

Described treatment options for a Unicameral Bone Cyst (UBC) include simple observation, curettage and grafting (autogenous or allogeneous), steroids, demineralized bone matrix, and bone marrow injection.

In our case, the decision to operate was taken based on the increase in the intensity of symptoms and serial radiographs that showed cortical thinning of the lunate bone. The etiology of this cyst remains unknown.

Kienböck's disease, osteoid osteoma, giant cell tumor, enchondroma, aneurismal bone cyst (ABC), nonossifying fibroma and fibrous dysplasia are less likely possibilities [6].

The diagnostic dilemma in our case was to differentiate the cyst from Kienböck's disease. But ultimate diagnosis of benign lunate cyst was made based on the fact that the disease did not progress significantly over the two year follow up period and there was absence of arthritis of the wrist joint and no associated collapse of the lunate bone. Hence the diagnosis of Kienböck's disease was ruled out. Also histopathology confirmed the diagnosis of unicameral bone cyst.

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Conflicting Interest (If present, give more details): None

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