Prophylactic Orthopaedic Surgery

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Abstract

We report a case of 37-years-aged male who presented asymptomatic, with unilateral proximal femoral simple bone cyst (SBCs). SBCs are cystic fluid-filled lesions encountered in proximal femur sometimes discovered serendipitously while radiologically investigating for other problems. After radiographic confirmation of the SBCs, we performed curettage and bone grafting with prophylactic internal fixation. Prophylactic osteosynthesis needs to be done in case of cystic lesions involving more than two-thirds of the diameter of the bone to prevent pathological fracture. The advantage of this combination of curettage and bone grafting with internal fixation offers more stability by providing immediate structural support to prevent pathological fracture and provides immediate postoperative rehabilitation with earlier return to normal activities.

When evaluating patients with lower extremity pain, clinically mimicking sciatica, it is important that clinicians should examine the hip apart from spine since most of the cystic lesions are discovered incidentally.

Background

The proximal femur is one of the most common locations for benign bone tumours. SBCs are cystic fluid filled lesions encountered in proximal humerus followed by proximal femur. This was sometimes discovered serendipitously while radiologically investigating for other problems. Complications arising from the cystic lesions of proximal femur include weakening in the bone causing loss of stability leading to pathological fracture, ending in varus deformity, sometimes nonunion with more chances of recurrences.

We describe the surgical treatment of an SBC of the proximal femur including the femoral neck using a compression hip screw after curettage and bone graft. The advantage of this method is that it offers more stability by providing immediate structural support to prevent pathological fracture and provides immediate postoperative rehabilitation with earlier return to normal activities.

Case Presentation

A 37-year male presented to outpatient department with 8-month history of low back ache associated with left lower extremity pain that was worse for the past two days. There was no history of trauma or any other medical comorbidities. Physical examination of spine showed no significant positive findings. He had full range of motion in both hips, knee and ankle. Examination of hip was normal.

Radiographic investigations revealed a well-defined central osteolytic lesion with a thin rim of cortical sclerosis in the metaphyseal region involving the head, neck, and intertrochanteric area (Fig. 1). There were no signs of aggressiveness of the lesion such as periosteal reaction, cortical scalloping or destruction or any other soft tissue lesion.

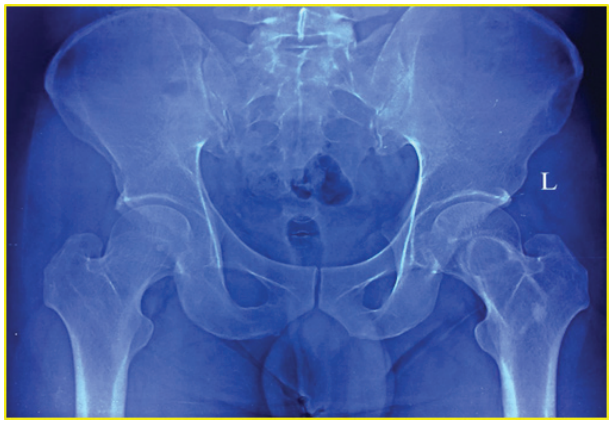

Fig. 1. X-ray pelvis with both hip AP View showing osteolytic lesion in left proximal femur.

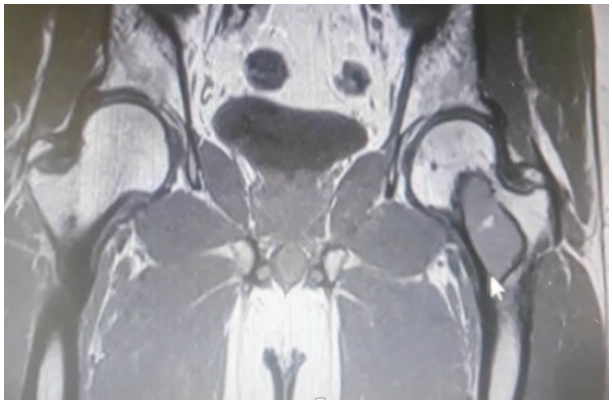

Fig. 2. MRI pelvis with both hip coronal cut showing homogeneous enhancing lesion which is hypo intense on T1 W.

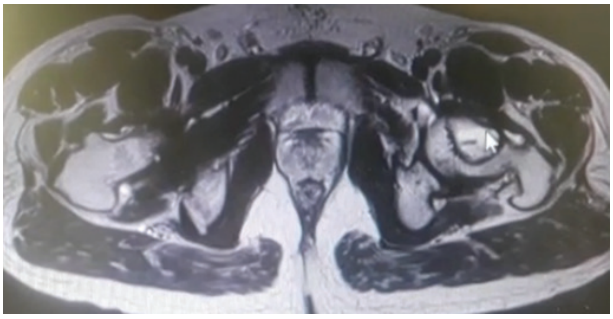

Fig. 3. MRI pelvis axial cut showing homogeneous enhancing lesion which is hyper intense on T2 W.

Magnetic resonance imaging (MRI) showed, hypo intense on T1W (Fig. 2) & hyper intense on T2W(Fig.3) images with homogeneousity throughout the lesion suggestive of unicameral bone cyst apart from lumbar disc protrusion without nerve root compression. All other differentials were ruled out.

Finally, based on the asymptomatic, and radiologically benign nature of the lesion we recommended surgery which would include curettage of the bone lesion, bone grafting, with osteosynthesis (Internal fixation with dynamic hip screw – Fig. 4).

Biopsy of the curettage lesion showed features of simple bone cyst.

Postoperatively, the patient was allowed full weight bearing mobilization and was discharged on postoperative day 3. Radiographs at 6 month showed no recurrence of lesion with bone graft consolidation.

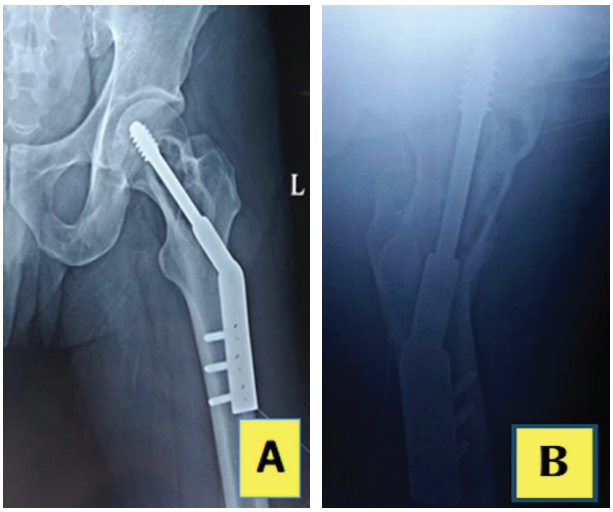

Fig. 4. Postoperative X-ray left hip AP View (A) & lateral view (B) showing osteosynthesis in left proximal femur.

Discussion

Simple bone cysts (SBCs) are common benign bone tumours seen in growing child [1]. SBCs are more common in males (70%) and typically present in proximal humerus (70%) or femur (20%). Whereas the correct figures are unknown, it is estimated that approximately 75% present with pathological fracture [2]. They produce no symptoms until the pathological fracture occur. Usually SBCs are diagnosed at the time of pathological fracture [1]. Conventional methods for the treatments of simple bone cysts are observation, curettage, bone grafting and steroid injections. Also, cyst decompression as an option of treatment, considering the hypothesis that obstructed venous outflow may be the cause of SBCs [3,4]. Bone graft substitutes such as demineralized bone matrix have been used to fill the bone defects seen in SBCs [5,6]. In our case, the SBC was asymptomatic even though the lytic lesion involved more than two third of the femoral neck extending in to the intertrochanteric region indicating functional instability, in which case the pathological fracture risk is more [7]. So, we adopted surgery, which was appropriate. We used curettage, bone grafting, and osteosynthesis with dynamic hip screw in lateral approach – a technique previously described [8]. A minimally invasive technique without osteosynthesis, involving only the curettage of the lesion followed by cauterization and filling the defect with bone grafting has been described [9,10]. But there is a risk of pathological fracture without internal fixation (Fig. 5)

Fig. 5. X-ray left hip AP View showing cystic lesion with pathological fracture in proximal femur.

There are few reports in the literature on prophylactic internal fixation of bone cysts at risk for pathological fracture in the proximal femur [11].

Conclusion

It is important to examine hip in case of spine pathology as well as of leg radiculopathy.

Curettage, bone grafting and internal fixation should be done for SBCs to prevent pathological fracture and to avoid restriction of sporting like activities.

Here we have done prophylactic internal fixation for the bone cyst in view of the risk of pathological fracture in proximal femur.

References

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