

Aneurysmal Bone Cyst of Calcaneum – A Rare Case Report

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Abstract

Introduction: Aneurysmal Bone Cyst is a benign reactive bone lesion filled with multiple blood-filled cavities, locally destructive and expansile lesion. The incidence of Aneurysmal Bone Cyst in tarsal bone is less than 12% of which calcaneum account for about 1.6% of all Aneurysmal Bone Cysts. Here, we report a case of Aneurysmal Bone Cyst of calcaneum which is one of the rarest sites.

Case report: A 10-year-old boy presented with a 3-month history of pain and swelling in right heel, He had previous history of trivial fall and underwent 3 native bandages. On examination he was found to have bony hard swelling from the calcaneum. X-ray and computed tomography were suggestive of an expansile lytic lesion with sclerotic borders with internal septations. Differential diagnosis of Giant Cell Tumour and Aneurysmal Bone Cyst were made. Extended curettage with fibular strut graft augmented with synthetic bone graft substitute (Modified Hydroxyapatite blocks) was done. Histopathology suggestive of Aneurysmal Bone Cyst. Outcome was measured using AOFAS ankle hind foot score.

Discussion: Aneurysmal bone cyst of calcaneum though very rare site of occurrence, should be considered as one of the differential diagnosis for patients with heel pain. Due to inadequate autogenous bone graft, synthetic bone graft substitute was used to fill the defect in paediatric age group. Patient was made to weight bear at 6 weeks and good graft uptake was seen on 3 months postoperatively. At 2 years follow up patient is pain free with excellent AOFAS Ankle hind foot score. To conclude Aneurysmal bone cyst of calcaneum is rare site of its occurrence and for paediatric age group surgical curettage augmented with Fibular strut grafting with bone graft substitute is a valid treatment option.

Introduction

About 85% of cases of Aneurysmal Bone Cyst are younger than 20 years. They are primary benign active vascular lesions of multiple blood-filled cavities, locally destructive and expansile lesion. It is most commonly encountered in the metaphysis of long bones. The incidence of Aneurysmal Bone Cyst in tarsal bone is less than 12% of which calcaneum account for about 1.6% of all Aneurysmal Bone Cysts [1,2].

Thus, here we report our case of rare site of Aneurysmal Bone Cyst calcaneum in the paediatric age group treated with curettage with fibular strut graft bone and graft substitute (Synthetic Calcium Hydroxyapatite crystal).

Case report

A 10 years old boy presented with 3-month history of pain and swelling in right heel, swelling and pain gradually increased for the past 1 month and had difficulty in walking. He had previous history of trauma and underwent 3 native bandages. On examination he was found to have bony hard swelling arising from the calcaneum.

X-ray and computed tomography were suggestive of a solitary expansile lytic lesion with sclerotic borders with internal septations, (well defined, radiolucent) occupying 90 percent of calcaneum with narrow zone of transition, without cortical breach, without periosteal reaction and not involving the soft tissue (Figures 1 and 2).

Further proceeded with CT which showed expansile lytic lesion of right calcaneum of size 4.8 × 4.4 × 4 cm without matrix mineralization with multiple internal septae, no adjacent soft tissue mass.

Surgical procedure

Patient in Left lateral position, by lateral approach, L-Shaped incision made from base of the 5th Metatarsal to posterior aspect of lateral malleolus, Peroneal tendon was retracted. Multiple drill holes were made on the lateral wall of the calcaneum and cavity opened which was filled with multiple fibrous septae and blood. All the contents were scooped out and sent for Histopathological examination (Figures 3-7).

The defect of the size measured 5 cm, so fibular strut graft kept within the cavity and augmented with bone graft substitutes - G Bone (synthetic calcium hydroxyapatite crystals) due to inadequate autogenous bone graft.

HPE report showed dense cellular fibro collagenous tissue with numerous multinucleated osteoclastic giant cells interspersed with multiple clefts like cystic spaces and some of them are filled with blood, the cyst walls are lined by giant cells. Area of edema, haemorrhage



Figure 1: Diffuse bony swelling from calcaneum.

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Figure 2: X-ray shows expansile lytic lesion of calcaneum with multiple septations.



Figure 3: CT shows expansile lytic lesion of right calcaneum of size 4.8 x 4.4 x 4 cm without matrix mineralization with multiple internal septae septations.



Figure 4: Calcaneal cavity opened by lateral approach by preserving peroneal tendon.



Figure 5: Multiple blood-tinged osteoid tissue with fibrous tissue sent for histopathology.

and hyalinization are also seen. Occasional foci show bony spicules. Features consistent with Aneurysmal Bone Cyst. [Figure 8].

Post-operative Protocol

Post-operative period was uneventful, Due to lack of soft tissue cover, Wound healing was delayed, and patient was kept on below knee



Figure 6: Calcaneal defect augmented with modified hydroxy apatite blocks.



Figure 7: Fluoroscopy image of fibular strut augmented with modified hydroxy apatite blocks.

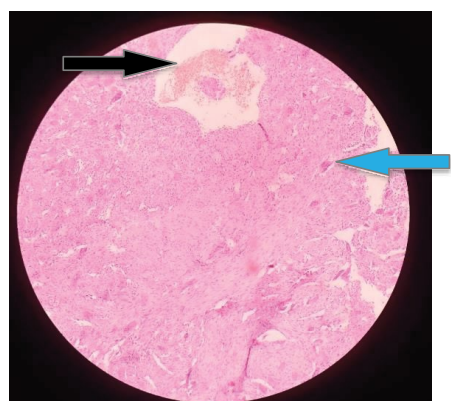


Figure 8: Black arrow shows cystic spaces with haemorrhage blue arrow shows multinucleated giant cells.

cast and non-Weight bearing for 6 weeks and serial follow up X-Ray taken which showed good graft up take and consolidation. Functional outcome was measured using AOFAS ankle hind foot scale.

At 2 years follow up patient had better outcome and with graft consolidation without any disturbance in gait with full ankle range of motion and excellent AOFAS ankle hind foot scale. [Figures 9-10].

Discussion

Term Aneurysmal Bone Cyst was first used in 1942 Jaffe and



Figure 9: Shows serial follow-up X-rays with good graft uptake.



Figure (10-A): Shows pain free gait.



Figure (10-B): Full ankle range of movements.

Lichtenstein on Aneurysmal Bone Cyst lesions seen on radiograph [3]. The incidence of Aneurysmal Bone Cyst in tarsal bone is less than 12 % of which calcaneum accounts for about 1.6% of all Aneurysmal Bone Cysts.

Aneurysmal Bone Cyst are locally destructive and expansile lesion and impinges the surrounding tissue causing, pain and swelling and rarely pathological fractures [2].

Cystic lesions that affect calcaneum includes, Simple Bone Cyst, Aneurysmal Bone Cyst, Chondroblastoma, Giant Cell Tumor, Osteo Sarcoma (Telangiectatic Variety) [3]. Therefore, exact diagnosis warrants clinical, radiological and histological correlation. Being and unusual site HPE confirmation is necessary to differentiate it from other cystic lesions.

Eighty five percent of the cases of Aneurysmal Bone Cyst are under 20 years of age.

60% cases originate from metaphysis, while 28% originate from the meta epiphyseal and sub chondral part [4].

Despite various modalities of treatment such as wide excision or arterial embolization, surgical curettage is sufficient to treat most cases of Aneurysmal Bone Cyst of calcaneum [5].

So, our patient was treated with surgical curettage with Fibular strut graft with bone graft substitute to fill the cavity. At 2 years follow up patient had no recurrence of the lesion without any infection.

Conclusion

So, any patient with chronic heel pain and swelling should be subjected to radiographic imaging. The cause of heel pain of calcaneum may be any of the above-mentioned lesions. Management protocol varies from lesion to lesion.

To conclude Aneurysmal Bone Cyst of calcaneum being extremely rare, proper diagnosis and appropriate management is necessary to prevent recurrence. Surgical curettage supplemented with Fibular strut grafting with bone graft substitute (Synthetic Calcium hydroxyapatite crystals) is a valuable option in paediatric age group.

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