

Unicameral bone cyst of the scaphoid: a report of two cases

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ABSTRACT

Unicameral bone cysts are benign, fluid-filled lesions that occur mostly in long bones (proximal humerus, 50–60%; femur, 30%) of male children aged 5 to 15 years. Occurrence in the scaphoid of an adult is rare. We report 2 such patients who presented with wrist pain, with and without a history of trauma. Both underwent curettage and bone grafting (harvested from the distal radius) and achieved good functional recovery.

Key words: bone cysts; scaphoid bone

INTRODUCTION

Unicameral bone cysts are benign, fluid-filled lesions that occur mostly in long bones (proximal humerus, 50–60%; femur, 30%) of male children aged 5 to 15 years.¹⁻³ The calcaneus is the most affected tarsal bones. Unicameral bone cysts in the carpus are rare

and are mostly located in the scaphoid, capitate, and lunate.⁴⁻⁹ They are usually asymptomatic and detected accidentally in radiographs. For asymptomatic lesions with satisfactory cortical thickness, observation alone may suffice. For lesions with unstable cortical thinning (with or without pain), surgical intervention is necessary. Other factors affecting the decision to opt for surgery include infection, pathological fracture, arthrofibrosis of the wrist joint, and recurrence necessitating immobilisation and prolonged hospitalisation. We report 2 adults with unicameral bone cysts of the scaphoid treated with curettage and bone grafting.

CASE REPORTS

Patient 1

In February 2010, a 48-year-old man presented with acute pain in the left wrist after falling. A tender point in the carpal bone without any palpable mass was noted. Radiology revealed a lucent lesion measuring 7x5 mm in the distal scaphoid (Fig. 1). All blood parameters were normal. Prophylactic antibiotics



Figure 1 Patient 1: radiology showing a lucent lesion measuring 7x5 mm in the distal scaphoid (arrow).

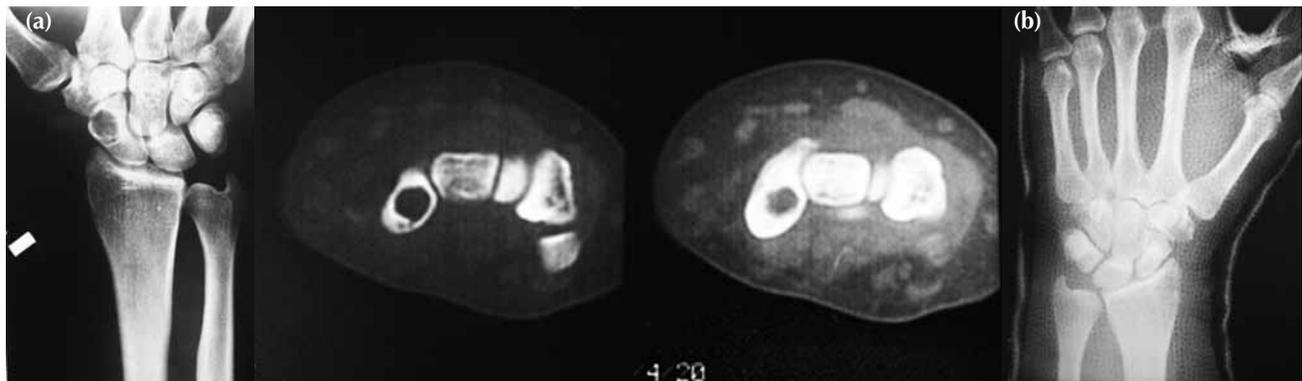


Figure 2 Patient 2: (a) radiology showing a lucent lesion measuring 5x4 mm in the distal scaphoid. (b) At the one-month follow-up, the cavity is filled with bone grafts.

were given. Intra-operatively, a lesion filled with serous fluid and a cavity lined by a thin layer of fibrous tissue were noted. The patient underwent curettage and cancellous bone grafting harvested from the distal radius. Histologically, the curetted lining consisted of fibrous tissue and a few spicules of reactive bone. A thumb-forearm cast was applied for 3 weeks. One month later, the cavity was filled with bone grafts. The patient was pain-free with full range of motion. At the one-year follow-up, the patient remained well.

Patient 2

In November 2010, a 30-year-old woman presented with acute pain in the right wrist with a tender carpal point. She had no history of trauma. Radiology revealed a lucent lesion measuring 5x4 mm in the

distal scaphoid (Fig. 2). The patient underwent curettage and cancellous bone grafting harvested from the distal radius. Histologically, the curetted lining consisted of fibrous tissue and a few spicules of reactive bone. A thumb-forearm cast was applied for 3 weeks. One month later, the cavity was filled with bone grafts (Fig. 2). The patient was pain-free with full range of motion. At the one-year follow-up, the patient remained well.

DISCUSSION

Simple bone cysts usually cause structural defects to the humerus, femur, and calcaneus.¹⁰ The exact aetiologies remain unclear and include blockage of interstitial fluid drainage in a rapidly growing and remodelling area of cancellous bone,¹¹ venous

obstruction within the bone,¹² disordered macrophage and fibroblast-like cell function, and high levels of prostaglandin E₂, lysosomal enzymes, cytotoxic oxygen free radicals.¹³⁻¹⁶

Most unicameral bone cysts are asymptomatic; symptoms are usually due to pathological fractures. The differential diagnosis includes aneurysmal bone cyst, bony erosion in rheumatoid diseases, intra-osseous ganglion, giant cell tumour, chondromyxoid fibroma, bone cyst associated with carpal osteoarthritis, enchondroma, chondrosarcoma, post-traumatic bone cyst, pseudarthrosis, and aseptic osteonecrosis. Diagnosis is made by computed tomography (CT), magnetic resonance imaging (MRI), and histopathological study.

Aneurysmal bone cysts are benign, expansile tumours of uncertain aetiology; 80% of patients are aged <20 years. The lesions demonstrate homogenous low intensity on T1-weighted images and homogenous high intensity on T2-weighted images.¹⁷ Giant cell tumours of bone are more common; they are benign and usually (50–65%) occur in the metaphysis of long bones (typically the distal femur and proximal tibia).¹⁸ Diagnosis can be made by their radiographic appearance. Intra-osseous ganglion is also benign and can be diagnosed by radiography and histological examination suggestive of intra-osseous synovial proliferation.¹⁹ Nonetheless, the final diagnosis should be confirmed histologically.²⁰

Treatments for unicameral bone cysts vary depending on their location and patient age. For asymptomatic lesions with satisfactory cortical thickness, observation alone may suffice. For lesions with unstable cortical thinning (with or without pain), surgical intervention is necessary. In children, about 15% of the cysts heal without treatment.^{21,22} Up to 15% of the cysts may heal after occurrence of a fracture with observation alone.^{22,23} The success rate of each method and the definition of success varies between studies.²⁴⁻³⁰ Other treatments include

intra-cystic injection of methylprednisolone acetate (to decrease the secretion of the synovial fluid and increase the rhythm of bone cell duplication),²³ mechanical disruption of the cyst lining and/or wall by curettage, structural support with flexible intramedullary nailing,³¹ decompression with multiple drill holes³² and cannulated screws,³³ and any combination of the above.

Intra-cystic injection of steroids achieves less morbidity and higher healing rates than curettage and bone grafting (70% vs. 53%).³⁴ Nonetheless, a multicentre study suggested that such treatment is less effective in calcaneal lesions, for which curettage and bone grafting may be a more predictable and successful procedure.⁵ In a study comparing steroid injection, multiple surgical techniques, and observation alone with 5.6 years of follow-up,²⁷ there was no difference in healing rates. A new minimally invasive technique that combines percutaneous decompression and grafting with medical grade calcium sulphate pellets has been reported.³⁵ It has the highest radiographic healing rate and shorter hospital stay than serial percutaneous steroid injections together with autogenous bone-marrow injection and open curettage with grafting with calcium sulphate bone substitutes (with or without instrumentation).³⁶ Nonetheless, outcomes of most studies were based on radiographic rather than clinical findings, such as fracture, pain, and function. Variability in the radiographic healing scale, duration of follow-up, and sample size are other limitations.

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