

## Unicameral Bone Cyst

The unicameral or solitary bone cyst is a very common pseudotumor seen in bone in children and is the most common cause for pathological fracture in that age group. The bone cyst is considered to be a hamartomatous developmental process with an unknown etiology. It may be a degenerative process seen in a pre-existing fibrous lesion of bone, such as monostotic fibrous dysplasia. It occurs between the ages of 5 and 15 years and is more common in boys than girls, with half the cases in the proximal humerus and half in the proximal femur. These patients are usually asymptomatic until the time of fracture. The cysts are usually located in the metaphyseal portion of long bones, immediately adjacent to the growth plate during the early years when the lesions are considered active. As the patient approaches maturity, the cyst will start to migrate away from the growth plate and go into what is referred to as the inactive stage. On X-ray, the lesion is well marginated with a thin sclerotic edge at the periphery. It is centrally located in the metaphysis with thinning and slight dilatation of the surrounding cortex and no matrix calcification.

The cyst is filled with a clear serous fluid with increased pressure during the active phase that some experts feel may cause the cyst to enlarge by a hydraulic dynamic mechanism. The cyst is lined by a fibrous membrane that is studded with macrophages and, occasionally, foam cells. In some cases, tissue similar to fibrous dysplasia can be found at either end of the lesion. The periosteal covering over the cyst is normal and for this reason, the pathological fractures heal without difficulty. Because of the potential for repeated pathological fractures, surgeons are tempted to carry out some type of bone-grafting procedure during the early, active phase of the disease but become frustrated with a recurrence rate of 30-50 per cent. The more common and current way to handle bone cysts in the early age group, before bone maturity, is by simple aspiration with a double needle technique with the instillation of methylprednisolone into the cystic cavity to inhibit the macrophage activity and reduce the chance of local recurrence. It slows down the active lytic process of the disease. This injection is usually required every three to six months until the patient reaches maturity, at which time the disease tends to become inactive. Three to eight injections over this period of time may be required to avoid the necessity of a bone-grafting procedure at a later date. The success rate is approximately 85 per cent. In patients over the age of 15 years, steroid injections in the inactive phase of the disease are not beneficial because the macrophage activity has disappeared. At this point, the only acceptable treatment would be a

classic bone-grafting procedure to strengthen the bone and reduce the chance of pathological fracture in the future.

On radiographic examination, a malignant tumor such as an osteosarcoma may masquerade as a bone cyst. If a physician is unable to obtain fluid at the time of aspiration, a biopsy should be performed to rule out this possibility.