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## The Core Curriculum

### Unicameral bone cyst

#### Objectives

1. Describe the three stages of benign bone tumors of the Musculoskeletal Tumor Society
2. Discuss the pathology of unicameral bone cyst, and stage this lesion in the Musculoskeletal Tumor Society classification
3. Describe the anatomic location of unicameral bone cyst, both by bones affected and location within the bone
4. Describe the radiographic features of unicameral bone cyst
5. Discuss the natural history of unicameral bone cysts
6. Describe the difference between active and inactive cysts
7. Discuss treatment approaches to active and inactive cysts

#### Discussion points

1. What is the rationale of intralesional steroids as a treatment for unicameral bone cyst? Of bone graft substitutes?
2. What features increase the likelihood of pathologic fracture through a unicameral bone cyst?

#### Discussion

Unicameral bone cyst is a relatively common lesion of the child's bone. They appear to originate from the growth plate and represent a failure of ossification and remodeling of metaphyseal bone. Cysts contiguous with the growth plate are classified as active cysts; cysts with bone intervening between the lesion and the growth plate are inactive. The proximal humerus and proximal femur account for 90% of cases of unicameral bone cyst. The failure of metaphyseal remodeling accounts for an increased width of the bone at the site of the cyst, but the diameter is not larger than that of the physis. The cyst is surrounded by a thin rim of bone. In the absence of fracture, there is no reactive bone. Unicameral cysts are usually not difficult to diagnose radiographically, but MRI has been reported as helpful in differentiating unicameral from aneurysmal cysts in troublesome cases. Extension of unicameral bone cyst across the physis has been reported.

The Musculoskeletal Tumor Society has developed a three stage system for classification of benign bone tumors. Stage 1 lesions are static, latent, and typically self-healing. Stage 2 lesions are active, but within the confines of the bone, and are associated with bone remodeling or destruction. Stage 3 lesions are active, locally aggressive, and tend to

extend beyond the cortex into the surrounding soft tissue. Depending on the maturity of the cyst, unicameral bone cysts are Stage 1 or 2 lesions. The natural history of unicameral cyst is favorable, with healing expected by skeletal maturity. Once the cyst is healed, there is no evidence of its having been in the bone.

Treatment then, is only indicated to prevent pathologic fracture of the bone. If the percentage of bone occupied by the cyst is > 85% in both radiographic planes, the risk of fracture was high, and spontaneous healing did not follow fracture. Treatment historically was curettage and bone graft. Scaglietti reported on the usage of corticosteroid injection in 1979, and that has been the treatment of choice until recently, when more disappointing results have been reported with intralesional steroids. The rationale of steroid injection was to interfere with the integrity of the cells forming the cyst wall lining. Presently, injection with bone graft substitutes with or without bone graft appears to be favored. Rarely, especially for lesions of the proximal femur, open curettage and grafting may still be indicated.

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