Aneurysmal Bone Cyst

The aneurysmal bone cyst is another clinical entity that presents as a hemorrhagic pseudotumor in bones in the pediatric age group, most typically in the femur, tibia, pelvis and spine. It has many of the characteristic clinical features of giant cell tumor, except in a younger age group, and is frequently associated with other well-known neoplastic conditions such as a giant cell tumor, chondroblastoma, osteoblastoma, fibrous dysplasia, or in some cases of osteosarcoma, specifically the hemorrhagic type. It is a very lytic, destructive lesion of bone occurring in patients between the ages of 10 and 20 years. Its characteristic feature is an aneurysmal appearance seen on X-ray that, in the early stages, is extremely destructive, osteolytic and permeative, taking on the radiographic features of a malignant tumor such as a hemorrhagic osteosarcoma. In two-thirds of the cases in the spine, the aneurysmal bone cyst is seen most often in the posterior elements, but in one-third it will be seen in the vertebral body. With giant cell tumor in the spine, the lesions are almost always found in the vertebral body.

At the time of surgical biopsy, the surgeon will note a large amount of hemorrhage in a cystic lesion that has a very friable, mossy lining at the periphery but also reactive bone as it forms a shell around the hemorrhagic cyst. Microscopically, the mossy tissue will be loaded with large, reactive-type giant cells and the background stromal tissue will be made up of benign-appearing spindle cells with a large amount of interstitial hemorrhage and reactive bone formation, and even a few mitotic figures will be noted similar to the situation seen in hemorrhagic osteosarcoma. However, in hemorrhagic osteosarcoma, the number of mitotic figures would be very large. The surgeon must be very careful when sampling a biopsy of this type of lesion to obtain multiple specimens, especially from the fleshy portion of the tumor, to rule out the possibility of an adjacent osteosarcoma.

As far as treatment is concerned, this lesion tends to involute spontaneously as the child matures into a young adult. However, because of early progressive destruction and pain associated with these osteolytic lesions, surgeons will usually curette the tumor and then repair the defect with bone graft or, in some cases, methyl methacrylate and Steinman pins. With large pelvic lesions or large spinal lesions that are difficult to resect surgically, intra-arterial embolization is a good technique to stimulate rapid involution of the tumor. Radiation therapy is very effective in controlling massive lesions of the pelvis and spine, however,

one runs the risk of a secondary sarcoma arising 5 to 15 years later.