Chondroblastoma

Definition
Benign tumour of immature cartilage cells. Also known as Codman's tumour.

Epidemiology
M>F 2:1
Approximately 59% in second decade.
1/5 as common as GCT, comprising around 1% of primary bone tumours.

Aetiology
Probably cartilaginous in nature (so classified by WHO).
Associated with genetic abnormalities in chromosomes 5 and 8.

Localization
Centred in an epiphysis.
Most often appear in the end of a major tubular bone.
40% of Mayo lesions involved the distal femur and proximal tibia. The proximal humerus is also common.
Older patients have a tendency to get chondroblastoma in the temporal bone.

Symptoms
Pain
Swelling, limp, joint stiffness. They frequently cause effusions.
Lesions in the temporal bone can be associated with progressive hearing loss

Physical findings
Tenderness, decreased range of motion in a joint, muscular atrophy, palpable mass, soft tissue swelling.

Radiographic findings
Characteristically appears as a central area of rarefaction.
97% of lesions either involve the epiphysis purely or pass from the epiphysis across the growth plate into the adjacent metaphysis.
The finding of a lesion involving both sides of an open growth plate is practically diagnostic of a chondroblastoma.
Mineralization occurs in one third.
Half the tumours have a thin sclerotic rim.
Periosteal new bone is seen only rarely.

Bone scans are hot.

MRI shows decreased signal intensity on T1 images and intermediate to increased signal on T2.

Chondroblastomas of the pelvis have a marked tendency to originate near the triradiate cartilage.

Pathology
Macroscopic
The tumours are normally quite small, ranging from 1-7 cm in Mayo files.
It has no pathognomonic features. It is often greyish pink and has areas of haemorrhage and calcification.

Microscopic
Large collection of chondroblasts with a surrounding matrix of immature fibrous tissue, containing scattered giant cells.
Brown-yellow pigment is found in the cytoplasm of the tumour cells in around 25%.
A "chicken wire" pericellular calcification is characteristic

Differential diagnosis
GCT – epiphyseal lesion in a skeletally mature individual
EG
Infection
Clear cell chondrosarcoma

Treatment
Curettage +/- bone graft.
Local recurrence occurs in around 10-20% and can be treated with repeat curettage.
Resection is rarely necessary.
Radiotherapy is almost always unnecessary and may lead to post radiation sarcoma.

Prognosis
Usually completely cured by curettage and bone graft, but there is a 15% recurrence rate.
May get soft tissue recurrences, "quasimalignant" metastasis to the lungs and locally aggressive tumours.