
Chondrogenic Tumors

w/ Dr. Domson



Overview

- lesions are found in patients of almost all ages and can arise in any location
- The skeletal location is important
- in general, malignant chondrogenic lesions of bone do not respond well to chemotherapy and radiation therapy



Epidemiology

- MC Benign lesion- osteochondroma
- MC bone tumor of the hand- Enchondroma



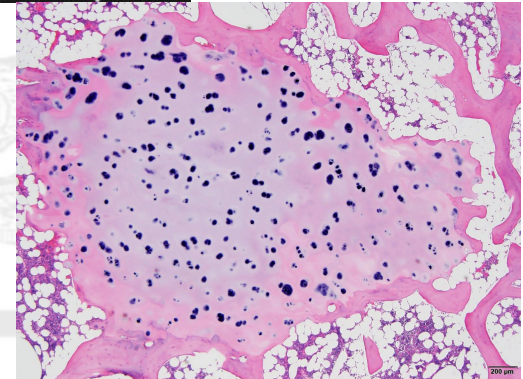
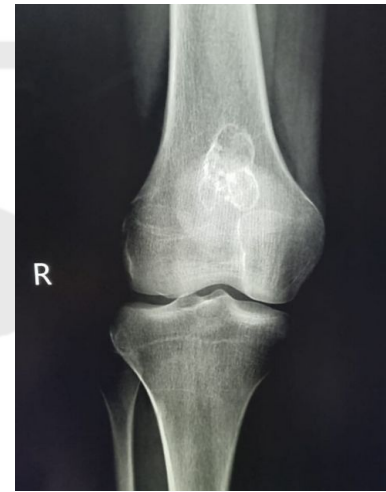
Chondrogenic lesions

- Benign- Enchondroma, Periosteal chondroma, Osteochondroma, chondroblastoma, chondromyxoid fibroma
- Malignant- chondrosarcoma, mesenchymal chondrosarcoma, secondary chondrosarcoma, clear cell chondrosarcoma



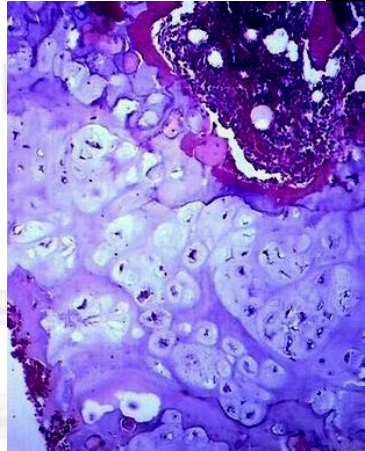
Enchondroma

- Incidental finding (painless), 20-50 y/o
- Location: appendicular skeleton, hands/ feet
- Imaging: well defined popcorn calcified matrix, <50% endosteal scalloping
- Histo: mature single nucleated chondrocytes w/o pleomorphism
- Tx: observation



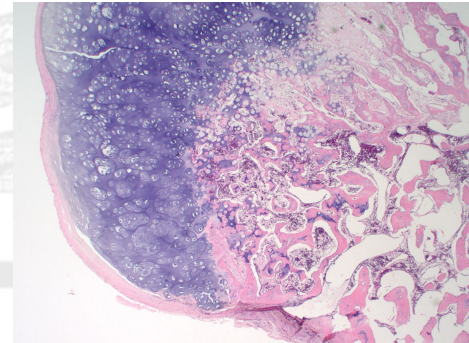
Periosteal Chondroma

- Painful lesion, 10-30 y/o
- Location: surface of bone or appendicular skeleton
- Imaging: saucerization by lucent lesion of cortex w/ sclerotic rim
- Histo: mature, single nuclei chondrocytes w/o pleomorphism
- Tx: if symptomatic- excision or intralesional curettage



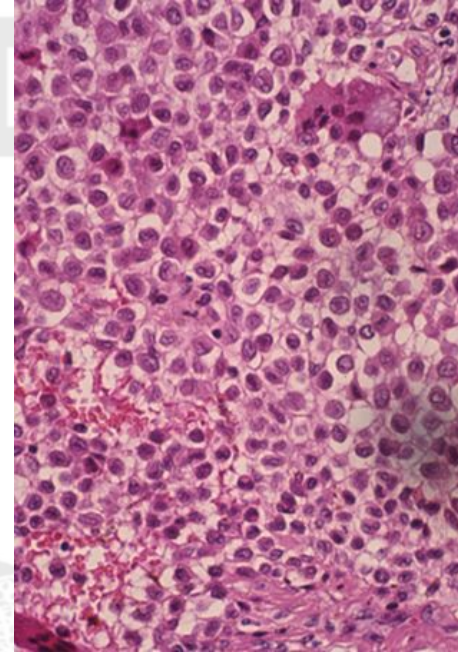
Osteochondroma

- Any age, +/- painful
- Location: metaphyseal, contiguous with medullary canal
 - Sessile- bump on bone, pedunculated- broccoli stalk
- Imaging: cartilage cap <2cm on MRI
- Histo: cartilage cap similar to epiphyseal plate
- Tx: simple excision (higher recurrence if immature)



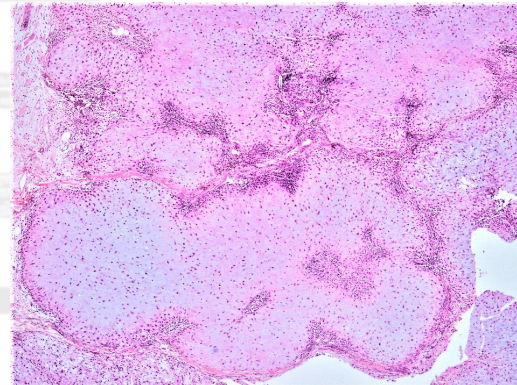
Chondroblastoma

- <30y/o, painful
- Location: metaphyseal, eccentric, lytic w/ sclerotic rim
- Histo: cobblestone appearance w/ chicken-wire calcifications
- Tx: curette w/ high speed burring, cementing/ bone grafting +/- fixation
 - Adjuvant argon beam, liquid nitrogen, phenol



Chondromyxoid fibroma

- 10-40 y/o, painful
- Location: metaphyseal, eccentric
- Imaging: excentric +/- sclerotic rim
- Histo: lobules of cartilaginous cells w/ myxoid background, fibrous tissue + giant cells
- Tx: curettage, burring, cementing/ bone grafting, +/- internal fixation
 - Adjuvant: argon beam, phenol



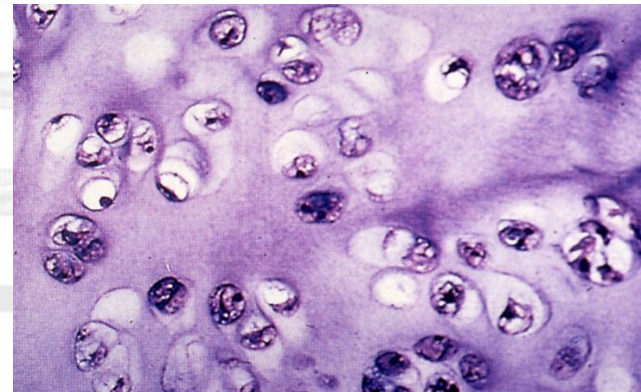
Malignant Tumors

- Chondrosarcoma
- Mesenchymal chondrosarcoma
- Secondary chondrosarcoma
- Clear cell chondrosarcoma



Chondrosarcoma

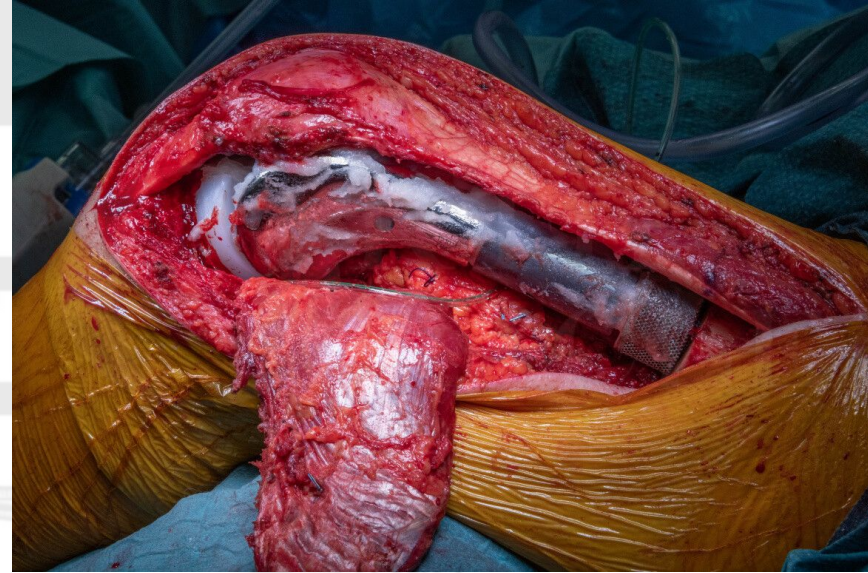
- 40-75 y/o, painful firm mass, axial + appendicular location
- Imaging: low grade- extensive cortical erosion (> enchondroma)
 - Grade 2,3- dedifferentiated, cortical destruction, soft tissue mass, endosteal scalloping
- Histo: low grade- binucleated cells w/ permeation of bony trabeculae
 - High grade- binucleated cells, atypical mitosis, hypercellular
 - Dedifferentiated- high grade sarcoma next to benign cartilage



Chondrosarcoma contd

Tx: grade 1- curettage, burring +/- phenol

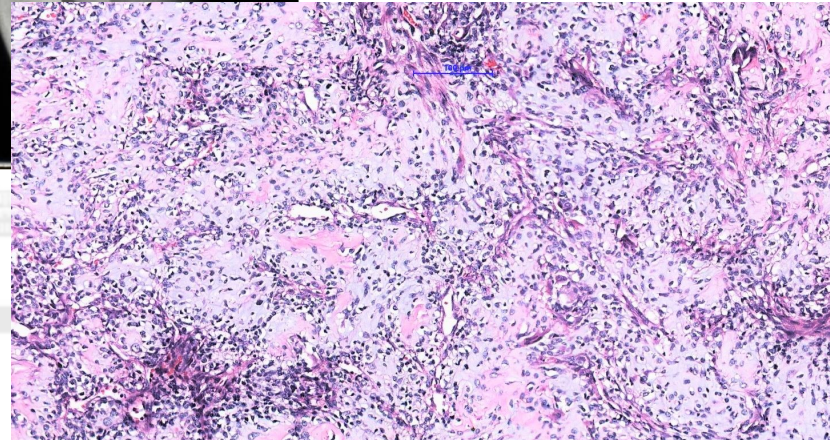
- Grade 2- wide surgical excision
- Chemotherapy not always used



<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.orthoraacle.com%2Flibrary%2Fchondrosarcoma-of-the-femur-extra-articular-resection-and-endoprothetic-reconstruction-adler-panthum-plus-lateral-gastrocnemius-flap%2F&psig=AOvVaw3mxt4m5c2fMcoyxpDk-I&ust=1703116988260000&source=images&cd=vfe&opi=89978449&ved=0CBQQJrxqfwoTCNi0oavbnIMDFAAAAAAdAAAAABAD>

Mesenchymal chondrosarcoma

- 10-40 y/o, painful firm mass, axial/ appendicular skeleton
- Imaging: lytic destructive bone lesion, cartilage matrix may be present
- Histo: low grade cartilage w/ small atypical cells (similar to round blue cell tumors)
- Tx: wide surgical excision
 - Chemotherapy- some role, some use high dose radiation



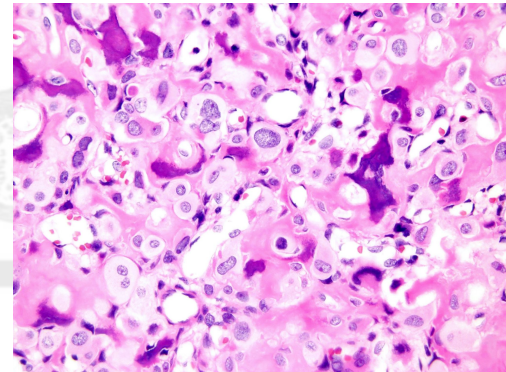
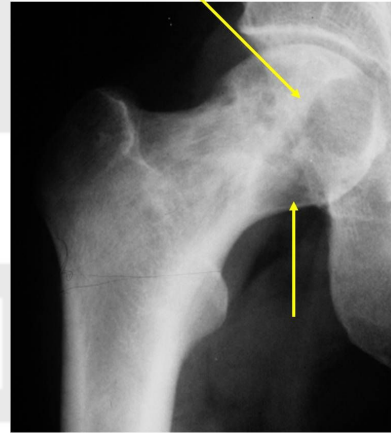
Secondary chondrosarcoma

- Age carries, painful firm mass
- Imaging: cortical breakthrough, or growth of prior enchondroma
- Histo: same as chondrosarcoma
- Tx: Grade 1- curettage, burring + adjuvants
 - Grade 2- wide surgical excision
 - Chemo- no role



Clear cell chondrosarcoma

- 50-75 y/o, painful
- Location: epiphyseal lesion, MC femoral head, lytic lesion w/ sclerotic rim
- Histo: atypical cartilage cells w/ large clear cytoplasm, giant cells
- Tx: wide surgical excision



Syndromes w/ Chondrogenic Bone lesions

- Multiple hereditary exostoses- Autosomal dominant, EXT1,EXT2, EXT3
 - Patients have shortened long bones
- Ollier enchondromatosis- sporadic- IDH1, IDH2,
- Maffucci syndrome- enchondromas + soft tissue hemangiomas



Thank you Dr. Domson!

- Resources:
 - AAOS ROCK

