

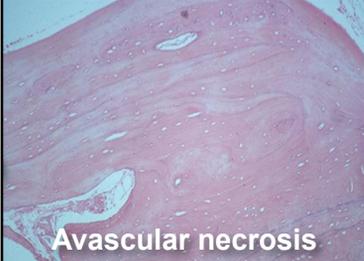
Chronic Ischemic Bone Disease (CIBD)

Classification, Diagnoses

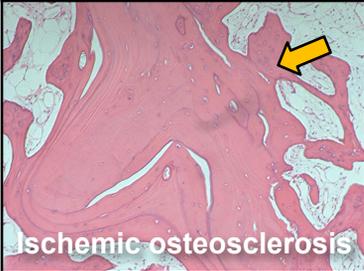
[See additional handout for microscopic descriptions]

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Avascular necrosis



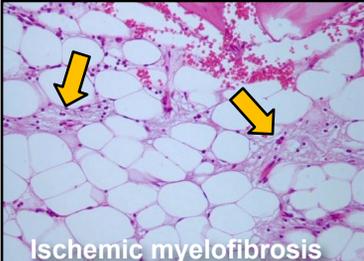
Ischemic osteosclerosis



Honeycombed bone



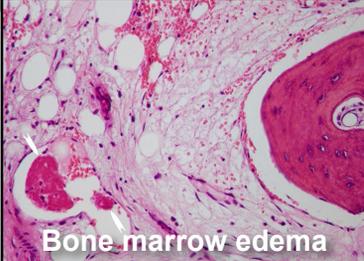
Poorly forming new bone



Ischemic myelofibrosis



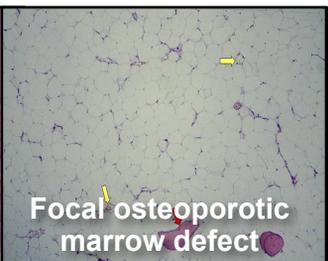
Reticular fatty degeneration



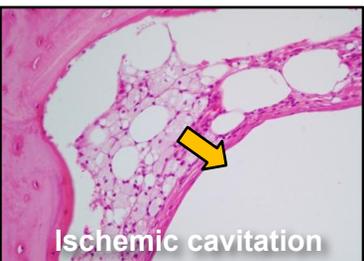
Bone marrow edema



Intramedullary fibrous scar



Focal osteoporotic marrow defect



Ischemic cavitation

Ischemic Bone Diseases:

- ❑ **Avascular necrosis** Dead bone; large regions with missing osteocytes.
- ❑ **Osteonecrosis:** Dead bone (all osteocytes are missing). Also used as umbrella term for all ischemic bone disease.
- ❑ **Partially nonviable bone:** Ischemically damaged bone shows clusters (not scattered) of missing or pyknotic osteocytes (must process bone properly to evaluate).
- ❑ **Ischemic osteosclerosis:** Sheets of lamellar bone and/or thickened trabeculae, usually with focal regions showing missing osteocytes; often with microcracks.
- ❑ **Bone scar:** Variant of ischemic osteosclerosis (see above); atypical healing from medullary infarction.
- ❑ **Condensing osteitis:** Variant of ischemic osteosclerosis (see above); at apex of nonviable tooth; response to dental infection.
- ❑ **Honeycombed bone:** Same as ischemic marrow atrophy (see below).
- ❑ **Poorly forming new bone:** Region of immature, newly forming bone (lamellar, typically) which did not remodel to full maturity; no remaining osteoblastic activity; fibrous background changes to mature fat cells.

Ischemic Marrow Diseases:

- ❑ **Marrow congestion (dilated vessels):** Normal marrow except that capillaries or veins are dilated more than 6 RBC diameters; may be cause of pain.
- ❑ **Ischemic myelofibrosis:** Fat cells slowly are replaced by a loose, wispy fibrous tissue which seems to be streaming between the fat cells; a few mast cells, perhaps a few chronic inflammatory cells; often multifocal.
- ❑ **Reticular fatty degeneration:** Mild version of ischemic myelofibrosis; fibers look ragged.
- ❑ **Intramedullary fibrous scar:** Dense collagen fibers aggregated into scar tissue with very little vascularity or inflammation; sharp outer borders; may be myxoid in areas.
- ❑ **Bone marrow edema:** Classic CIBD, with dilated vessels, myelofibrosis, plasmotaxis, focal hemorrhage, focal fat necrosis (all types), a few mast cells, a few chronic inflammatory cells; involved bone is almost always viable.
- ❑ **Regional ischemic osteoporosis:** Low bone density with thin, widely spaced trabeculae, a thin cortex, and diffuse or multifocal signs of ischemic marrow damage.
- ❑ **Focal osteoporotic marrow defect:** Low bone density with thin, widely spaced, inactive trabecula, a thin cortex, and minimal, if any, signs of ischemic marrow damage.
- ❑ **Ischemic marrow atrophy (honeycombed bone):** Inactive, almost always viable bony trabeculae with no or almost no attached fatty marrow or hematopoietic marrow; may have small amounts of attached fibrous tissue; only a valid feature if no rotary instrument touched the cancellous bone sample.
- ❑ **Ischemic cavitation:** Intramedullary void, greater than 5 mm. diameter, with little or no soft tissue lining; scraping walls may yield: fibrous tissue, viable trabeculae, scattered chronic inflammatory cells, plasmotaxis, focal hemorrhage, ischemic myelofibrosis; surgeon must indicated the presence of the void. **Ischemic microcavitations** are small variants.
- ❑ **Traumatic bone cyst:** Variant of ischemic cavitation (see above), found primarily in young persons, usually asymptomatic, easily treated with curettage (inducing new hemorrhage).