Clinical Concerns in the Common Marmoset

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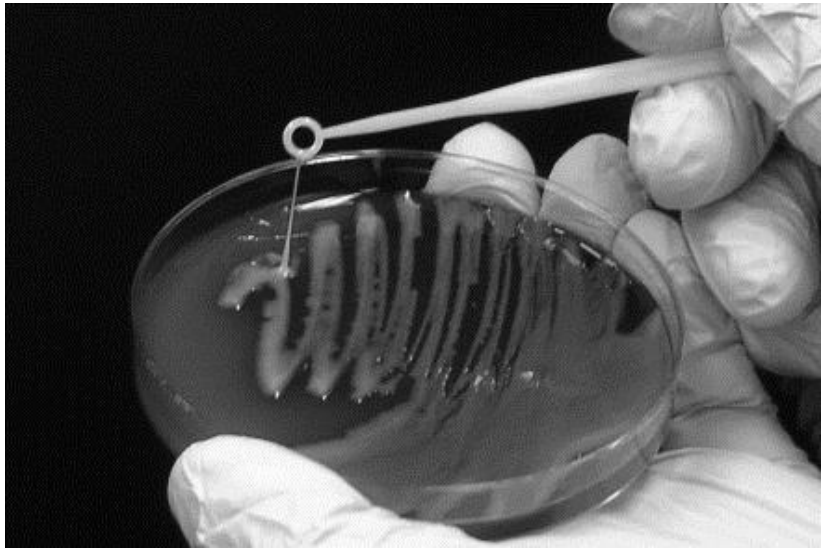
MEDICINE

Gastrointestinal Disease: Infectious

- *Klebsiella pneumoniae*
- Salmonellosis
- *Clostridium difficile* colitis
- Enteropathogenic *Escherichia coli* (EPEC)
- Giardiasis

Klebsiella pneumoniae

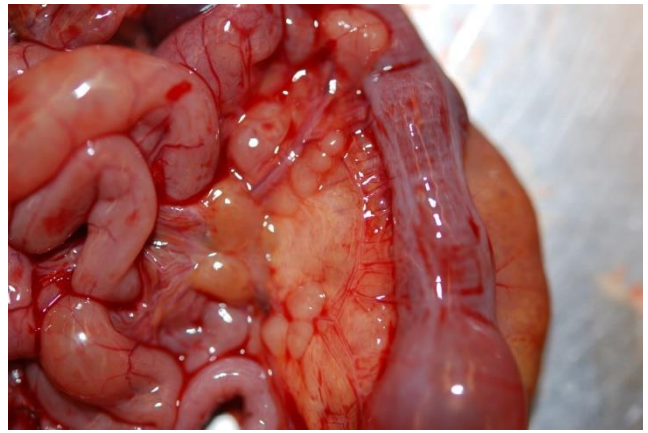
- Pneumonia, septicemia, fibrinous peritonitis, enterocolitis, meningitis
- Clinical presentation: peracute death, diarrhea, lethargy, anorexia
- Diagnosis: culture +/- string test, PCR
- Treatment: abx (baytril, TMS), supportive care
- Prevention: autogenous vaccine, cull



String test for HMV phenotype
Source: Burke, et al.

Salmonella enterica Subspecies *typhimurium*

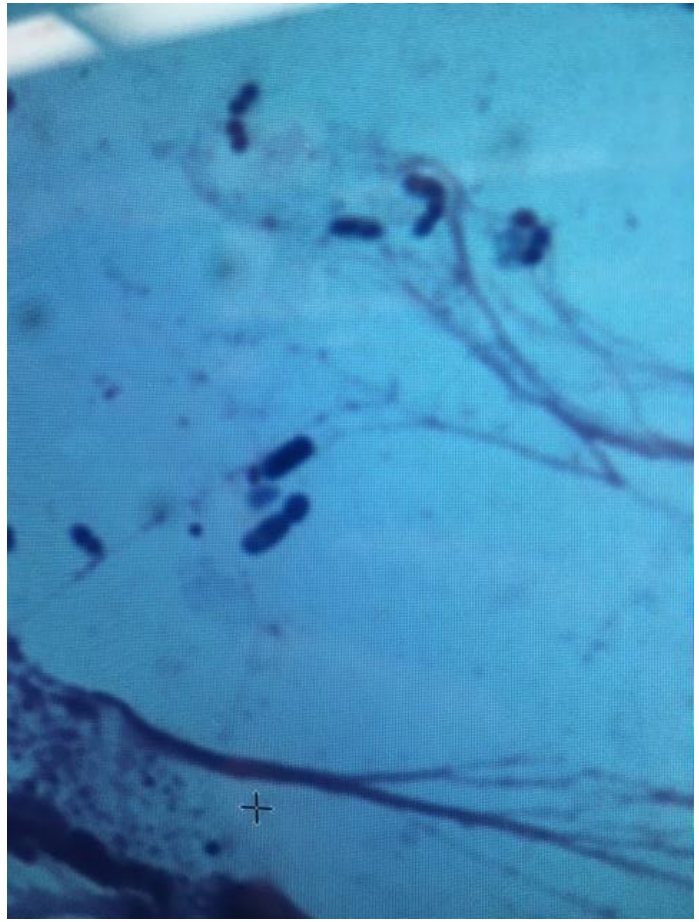
- Clinical signs: mucoid +/- watery +/- hemorrhagic diarrhea, inappetence, weight loss, lethargy, hypothermia, dehydration
- Diagnosis: culture, PCR
- Treatment: baytril (based on culture results), supportive care
- Pathologic lesions:
  1. Intestinal (gas distention and edema, enteritis, necrotizing typhlitis and colitis, crypt degeneration and abscesses)
  2. Extraintestinal (reactive mesenteric LNs, LN necrosis, hepatic necrosis and degeneration, peritonitis)



Diagnostic Methods

- Culture: media matters!
    1. MacConkey agar – selective for gram-negative/enteric bacteria
    2. Selenite broth – selective for Salmonella
    3. Hektoen agar – selective for Salmonella and Shigella
    4. Xylose-Lysine-Desoxycholate Agar (XLD) – selective for Salmonella and Shigella
- PCR: useful to screen for chronic carriers

Clostridium difficile Colitis



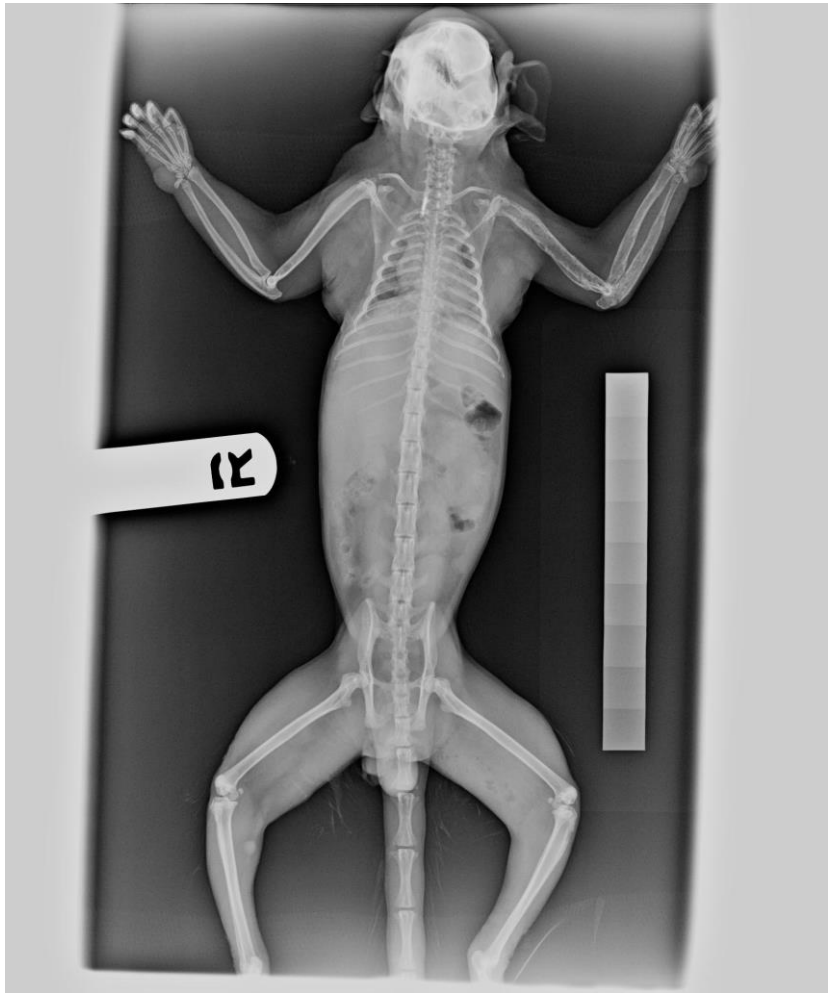
Marmoset Wasting Disease (MWD)

- Idiopathic lymphoplasmacytic enterocolitis and weight loss, absence of diarrhea
- Biomarkers: low serum albumin(<3.5g/dl), low BW(<325g)
- +/- association with metabolic bone disease, presumed secondary to malabsorption of vitamin D
- Treatment: budesonide, vitamin D, calcium, supportive care

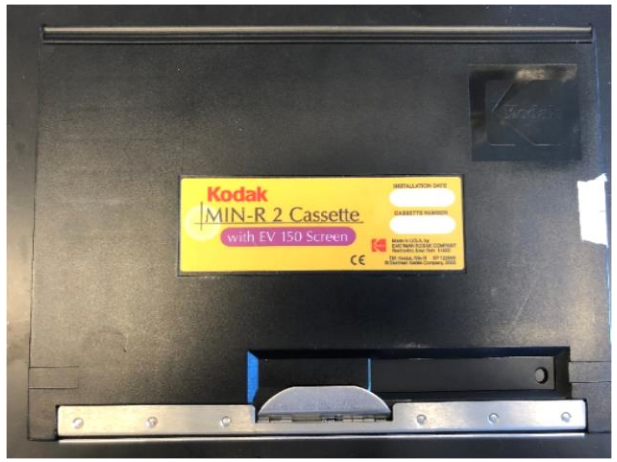
Bone Disease in the Common Marmoset

- Traumatic
- Idiopathic
- Metabolic

Radiographic Techniques: Digital X-ray

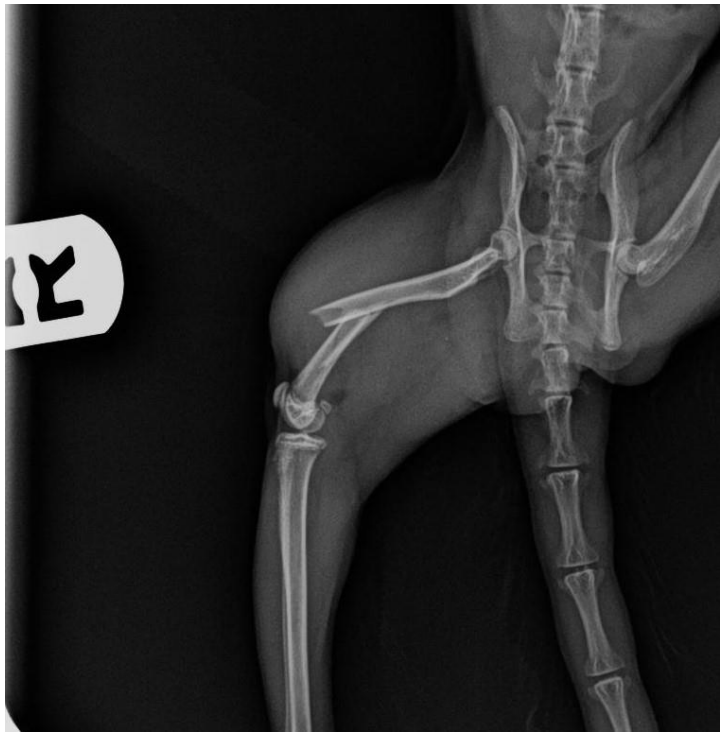


Radiographic Techniques: Faxitron X-ray



Traumatic Wounds and Fractures

- Fight wounds: breeding pairs, same-sex pairs or juvenile groups
- Iatrogenic: cage injuries, hand-catching and restraint



Traumatic Fractures: Surgical Fixation

Fractures: External Coaptation

Idiopathic Bone Disease

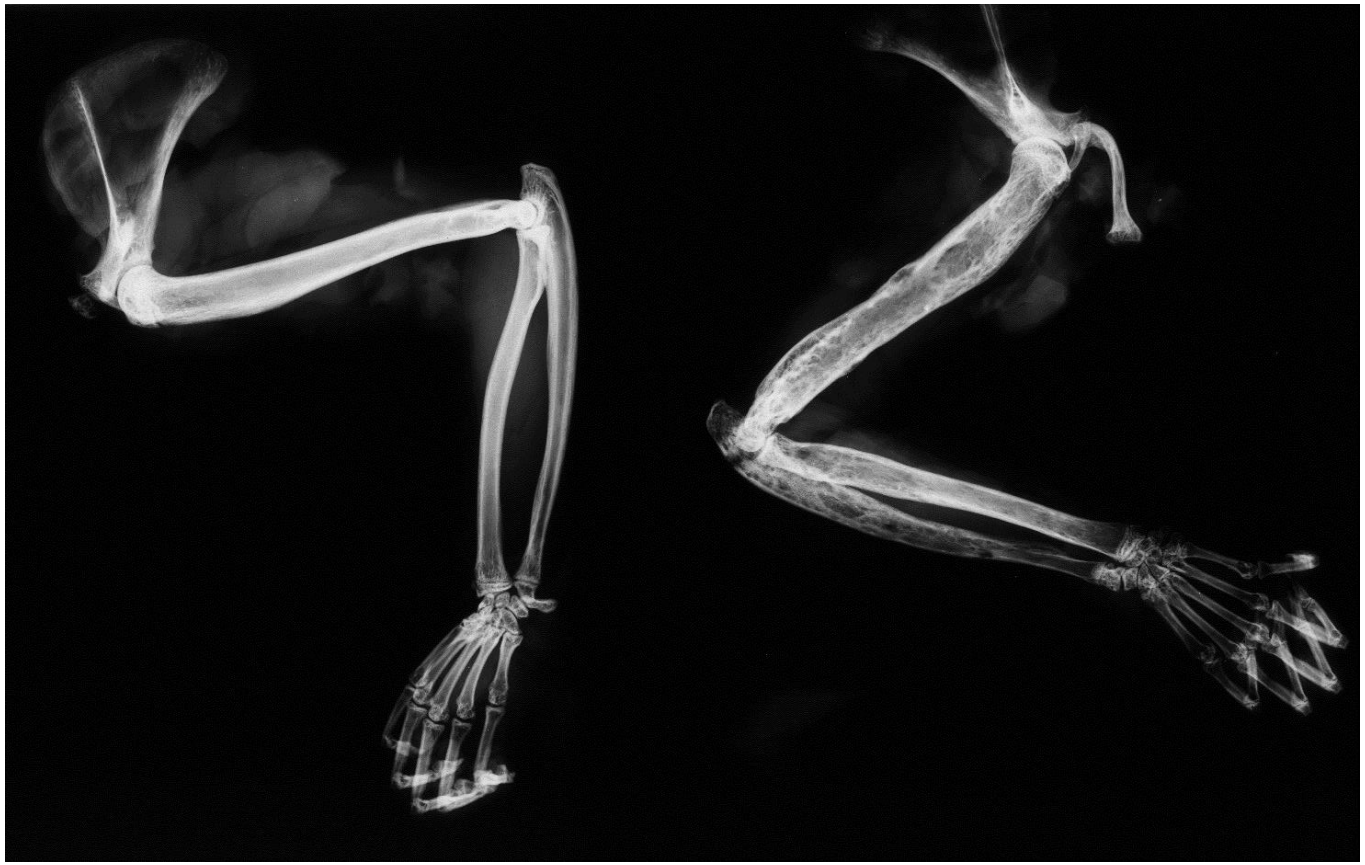
- Paget's disease?
- Bones affected: long bones, unilateral
- Radiographic findings: severe, localized or locally extensive areas of radiolucency, typically well-demarcated, cortical thinning or full thickness loss of cortical bone
- Histologic findings: marked osteoclastic bone resorption w/corresponding areas of periosteal new bone, highly cellular BM

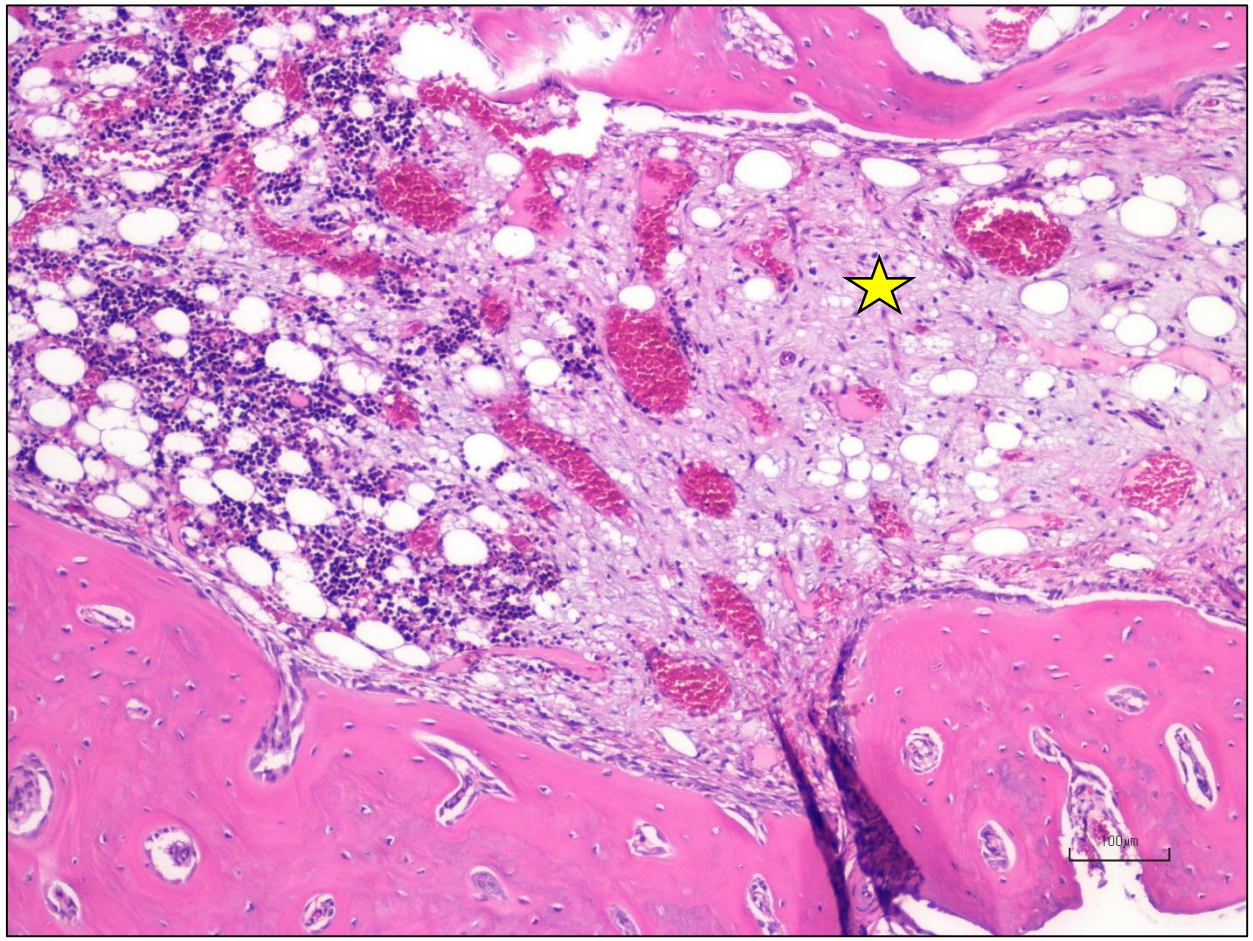
Source: WNPRC
Olson, et al.

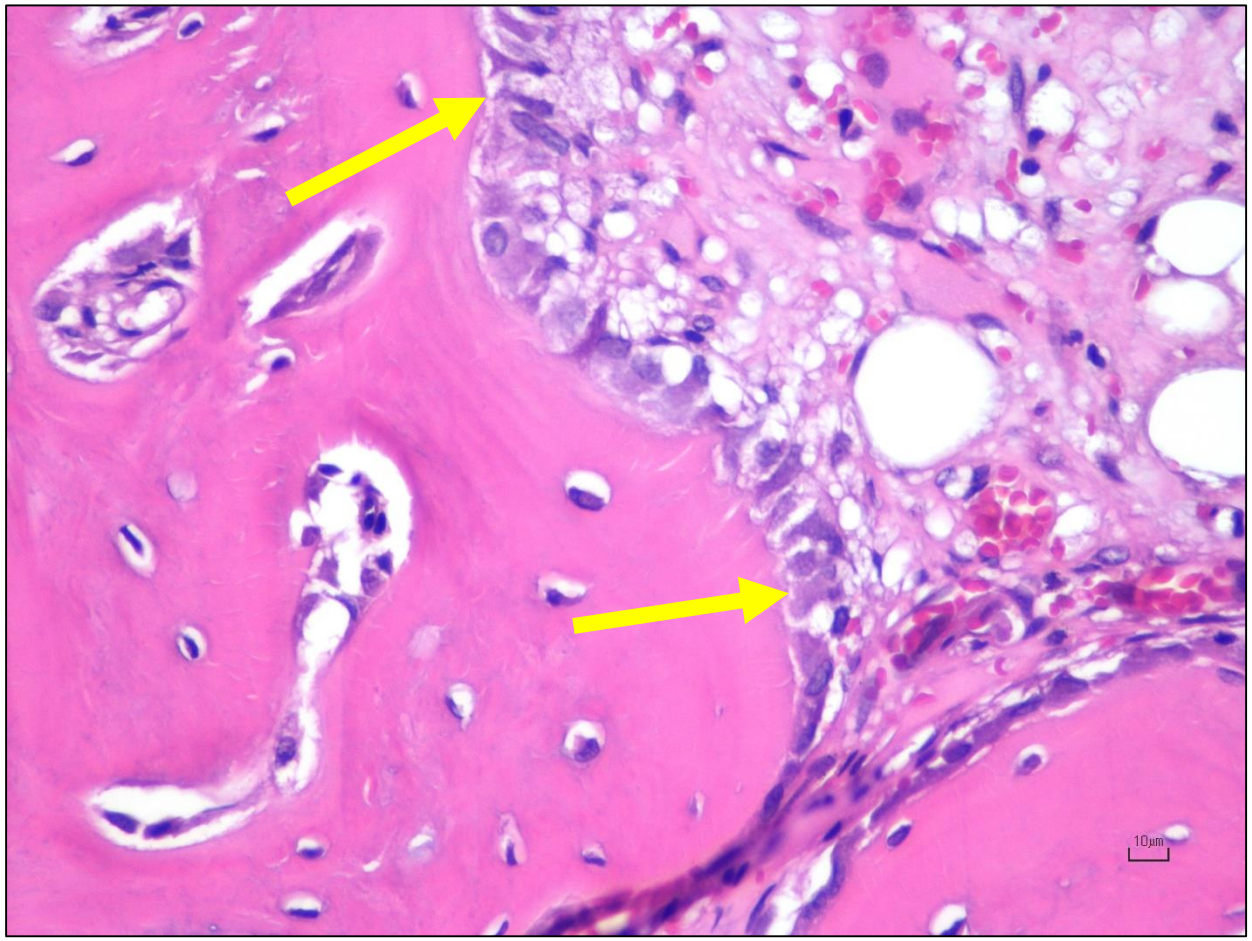
Idiopathic Bone Disease

- Fibrous dysplasia (FD)?
- Reported at WNPRC and recently seen at JHU
- Bones affected: long bones, unilateral
- Radiographic findings: diffuse multilocular expansile lesions with increased bone diameter, lytic lesions (early), lack of clearly defined cortices
- Histologic findings: replacement of cortical lamellar bone by trabecular woven bone, hypocellular BM

Metabolic Bone Disease: Fibrous Dysplasia?

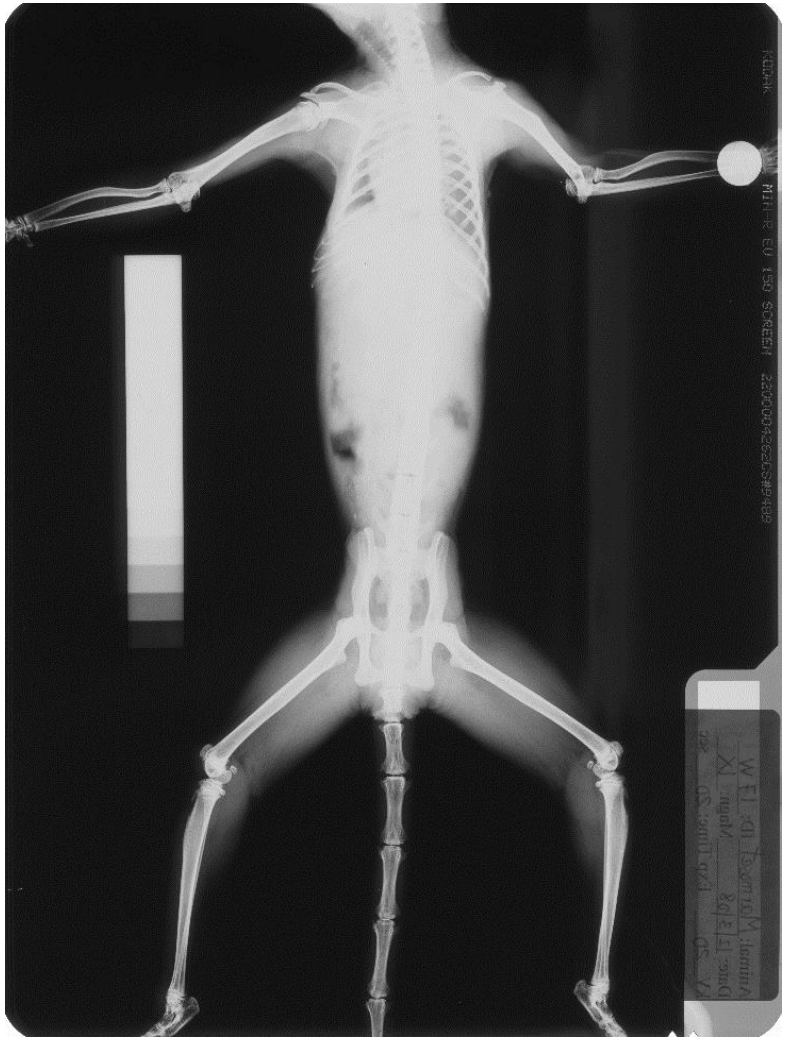



100μm


10μm

Metabolic Bone Disease: Ricket's

- Prolonged vitamin D deficiency
- Reported at JHU
- Juveniles
- Bones affected: growth plates of long bones
- Radiographic findings: widened growth plates, stunted growth, bowed legs, kyphosis
- Histologic findings: widened zone of hypertrophic chondrocytes

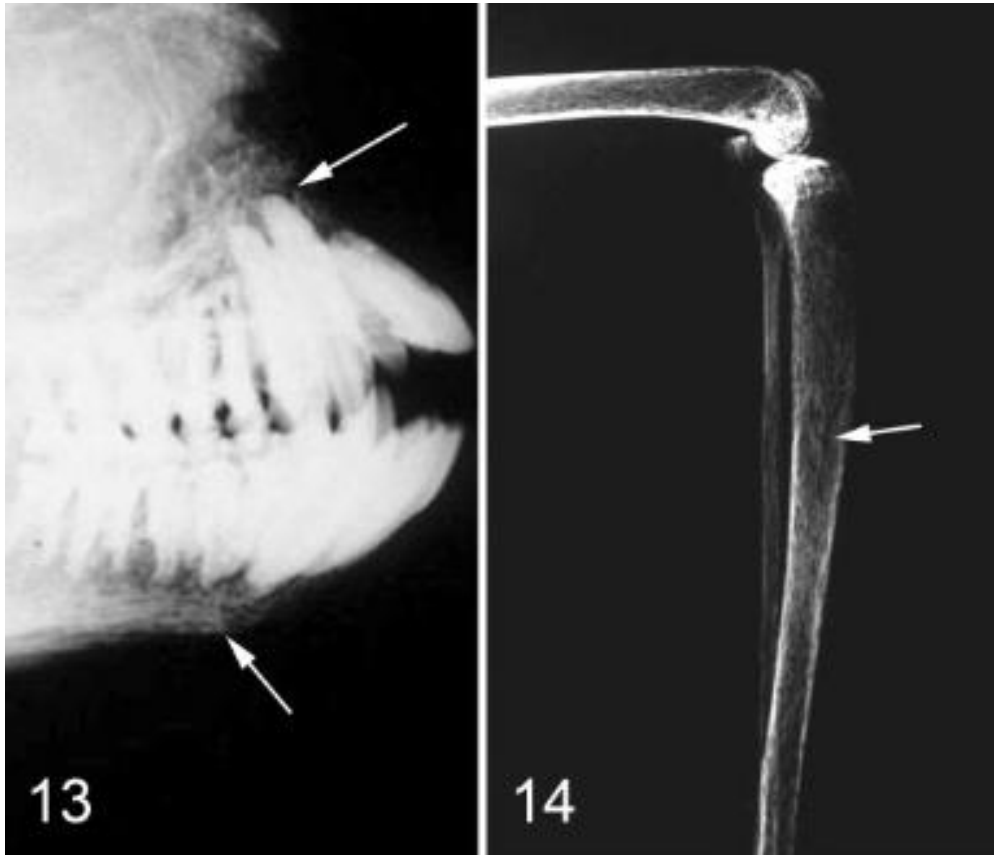


Normal, age-matched

Affected

Metabolic Bone Disease: Fibrous Osteodystrophy (FOD)

- Reported at JHU
- Bones affected: long bones, mandible, maxilla, vertebrae
- Radiographic findings: multifocal areas of radiolucency or “moth-eaten” lysis
- Histologic findings: increased numbers of osteoclasts, incomplete dental alveoli/tooth sockets, periosteal new bone formation

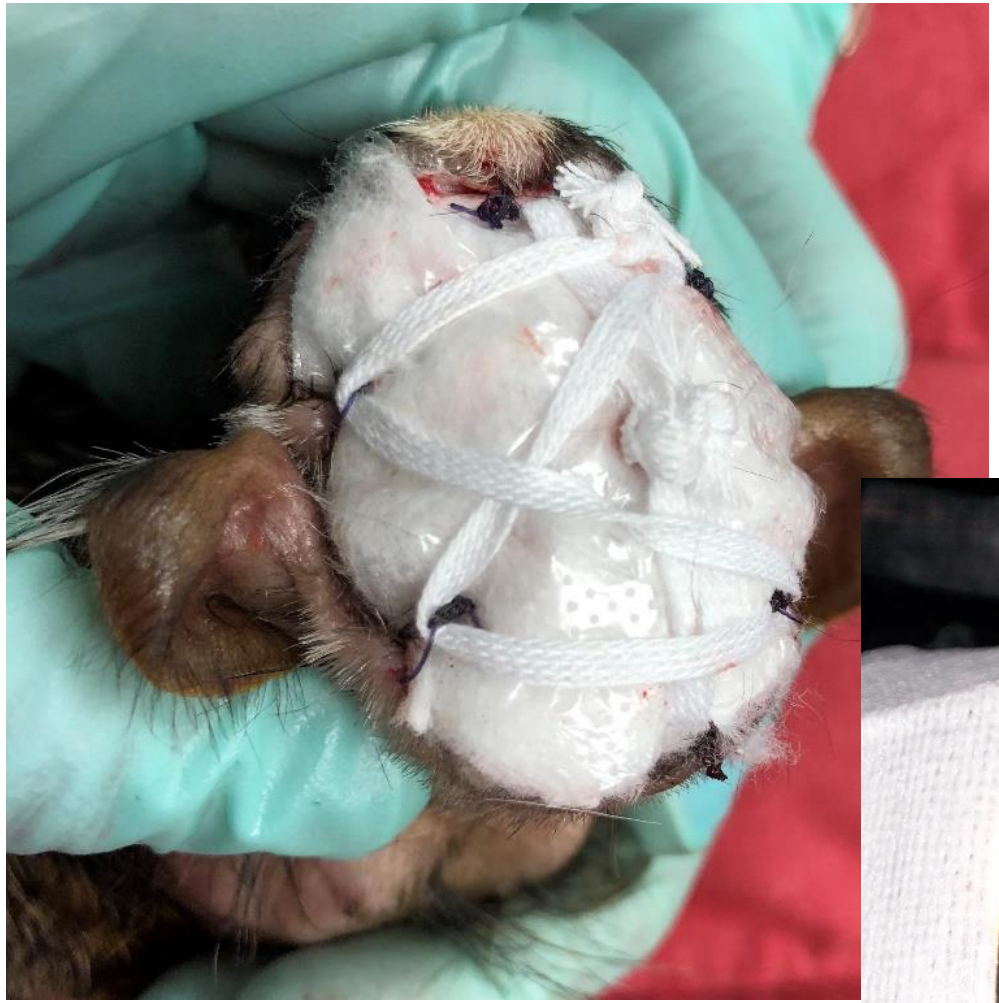


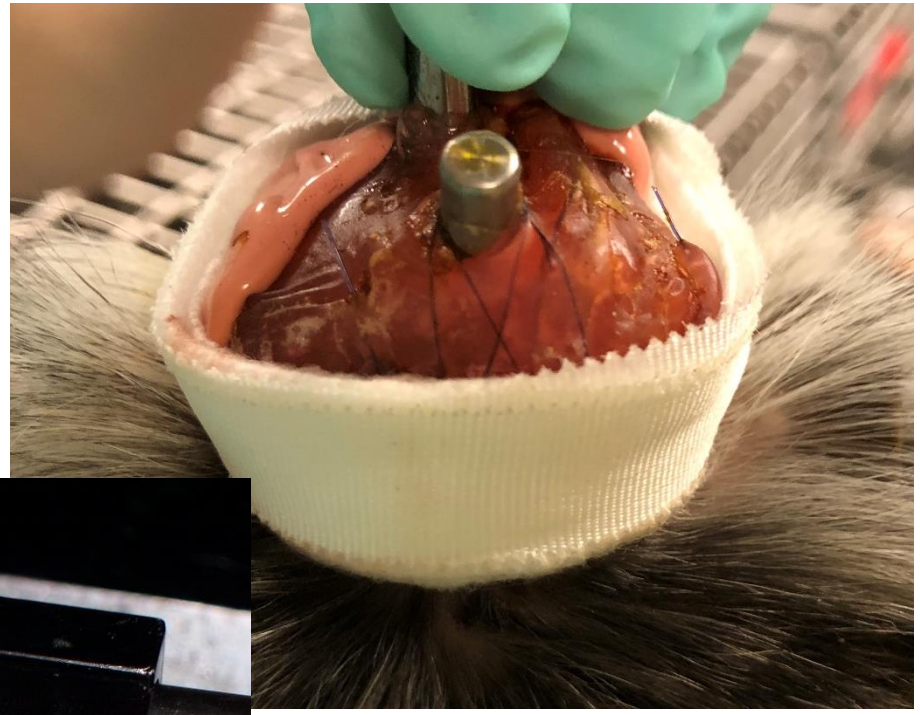
Source: JHU
Olson, et al.

Source: NIH

Complications with Cranial Implants

- Margin infections: *Pseudomonas aeruginosa*, *Burkholderia cepacia*, *Serratia marcescens*, *Klebsiella pneumoniae*, *Staphylococcus xylosus*
- Excess granulation tissue
- Skin retraction
- Loss of implant
- Tissue growth beneath implant
- CNS disease: intra-cranial abscess, meningitis, meningoencephalitis





Other Important Diseases

- Viral: Herpes simplex 1, measles, LCMV, lymphocryptovirus
- Aging: chronic renal disease, amyloidosis, chronic liver disease, neurodegenerative disease, obesity and Type II diabetes
- Neoplastic: lymphoma, intestinal adenocarcinoma, SCC

Dental Disease

- Tooth root abscesses, loose teeth, devitalized teeth, periodontal disease, fractures, malocclusion
- Diagnostics: oral exam, dental rads if available
- Treatments: lance and drain facial abscesses, extraction, antibiotic and anti-inflammatory medications as indicated

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