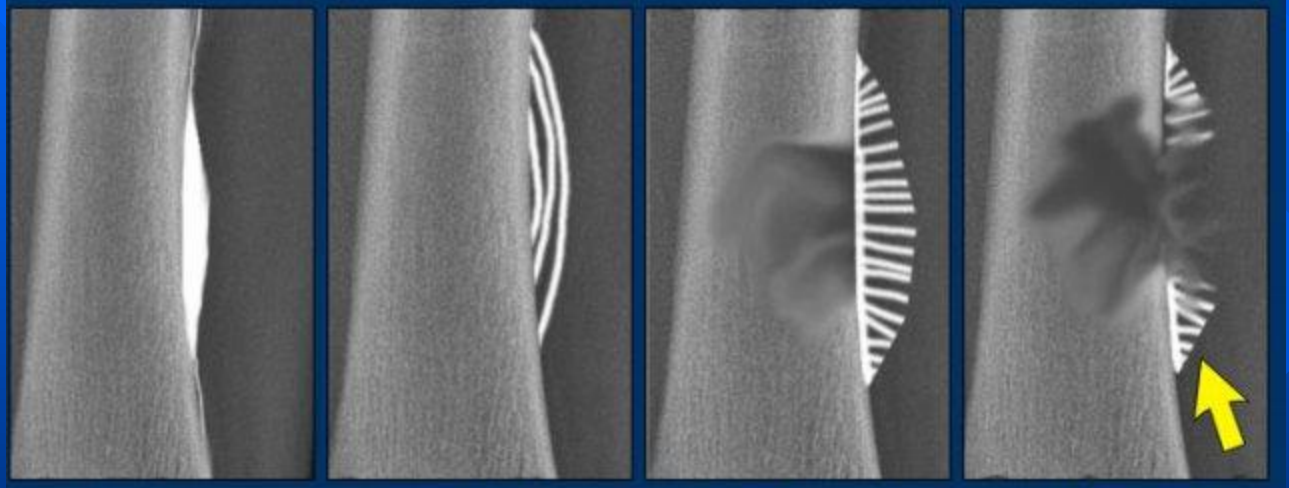
Periosteal Reaction

- Focal
  - Fracture
  - Tumor
  - Infection
- Diffuse
  - hypertrophic osteoarthropathy (HOA)
  - pachydermoperiostosis
  - vascular insufficiency
  - thyroid acropachy
  - fluorosis

Periosteal reaction

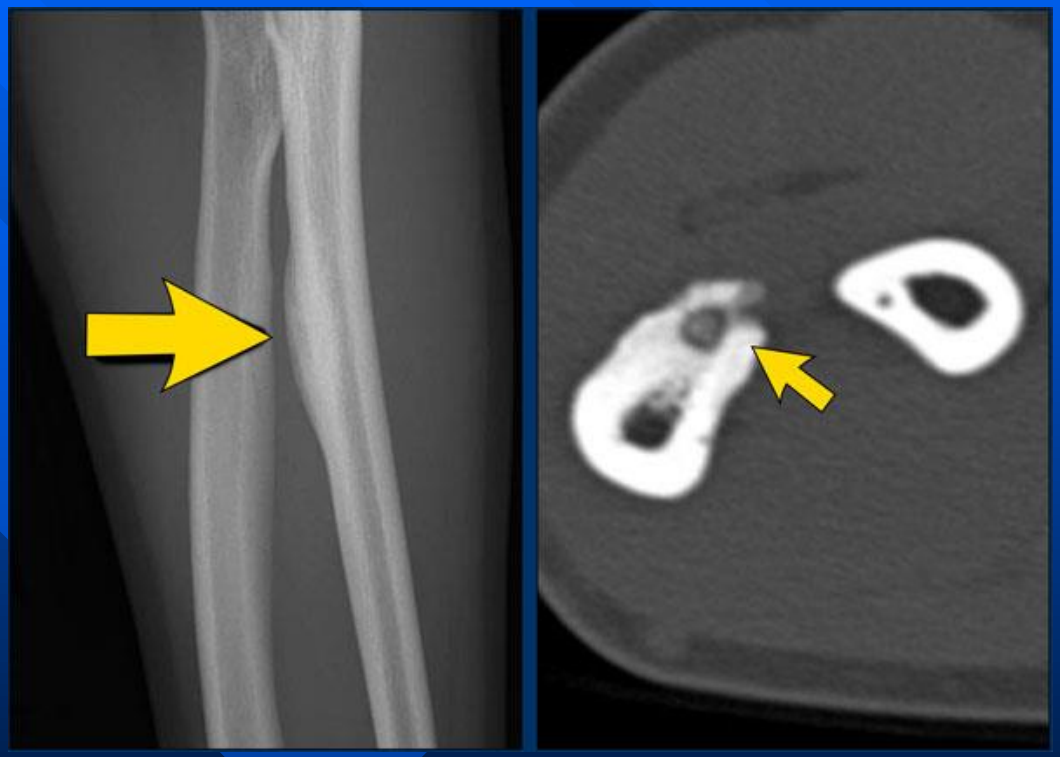


Solid	Lamellated	Spiculated	Codman's
Benign	Agressive	Agressive	Very agressive

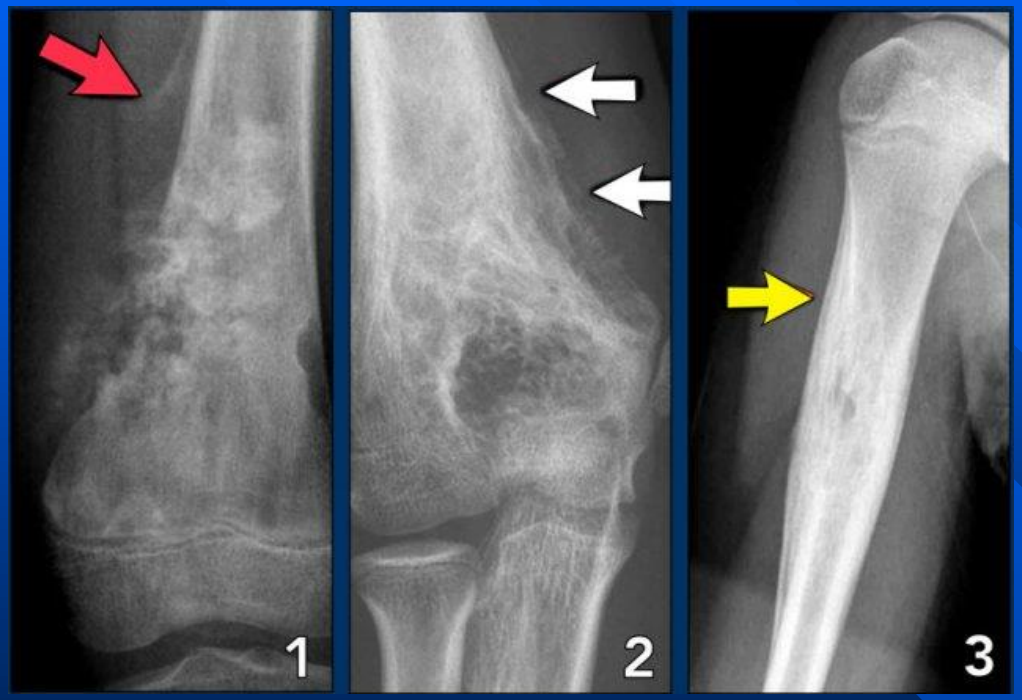
Benign Rx

- Detecting a benign periosteal reaction may be very helpful
- Malignant lesions *never cause* a benign periosteal reaction.
- A benign type of periosteal reaction is a thick, wavy and uniform callus formation resulting from chronic irritation.
- In the case of benign, slowly growing lesions, the periosteum has time to lay down thick new bone and remodel it into a more normal-appearing cortex.

- **Image**
  Benign periosteal reaction in an osteoid osteoma.
  Large arrow indicates solid periosteal reaction.
  Small arrow indicates nidus.



Aggresive

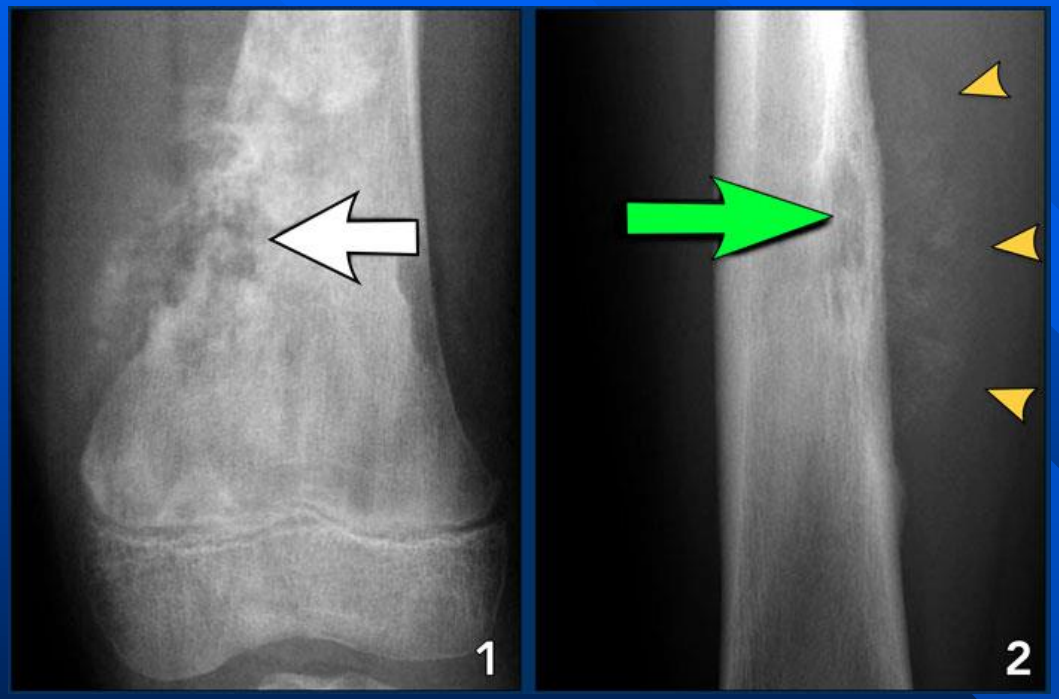


1. Osteosarcoma with interrupted periosteal rection and Codman's triangle proximally (red arrow).
2. Ewing sarcoma with lamellated and focally interrupted periosteal reaction. (white arrows)
3. Infection with a multilayered periosteal reaction.

Cortical Destruction

- Cortical destruction is a common finding, and not very useful in distinguishing between malignant and benign lesions.
- Complete destruction may be seen in high-grade malignant lesions, but also in locally aggressive benign lesions like EG and osteomyelitis.
  More uniform cortical bone destruction can be found in benign and low-grade malignant lesions.
- Endosteal scalloping of the cortical bone can be seen in benign lesions like Fybrous dysplasia and low-grade chondrosarcoma.

Cortical Destruction



1. Osteosarcoma
   Irregular cortical destruction
2. Ewing's sarcoma
   Cortical destruction (green arrow) and aggressive periosteal reaction (arrow heads).