

## Orthopaedic Trauma for PAs and NPs

Wednesday, October 17, 2017 (8:00am - 8:25am)

**Title of Talk:** Fracture Healing

**Presenter:** John A. Scolaro, MD, MA

- I. Introduction
- II. Bone architecture
  - a. Anatomy
    - i. Cortical (lamellar/compact)
    - ii. Cancellous (trabecular/spongy)
  - b. Periosteum
- III. Bone cells
  - a. Osteocytes
  - b. Osteoblasts
  - c. Osteoclasts
- IV. Modes of fracture healing
  - a. Primary – absolute stability/compression
    - i. Cutting cones
    - ii. Surgical techniques
      1. Lag screw
      2. Compression plate
      3. Buttress plate
      4. Tension band
  - b. Secondary – relative stability
    - i. Phases of bone healing – callus
      1. Injury/inflammation/hematoma
      2. Soft callus
      3. Hard callus
      4. Remodeling
    - ii. Surgical techniques
      1. Splint/cast
      2. External fixator
      3. IM nail
      4. Bridge plate
- V. Factors affection fracture healing
  - a. Violation of fixation principles
  - b. Vascular/soft tissue injury (trauma or iatrogenic)
  - c. Medical/social comorbidities
  - d. Infection
- VI. Nonunions
  - a. Hypertrophic
  - b. Oligotrophic
  - c. Atrophic
- VII. Conclusion