

Osteogenesis Or Ossification

- *Process of bone tissue formation
- *Before week 8, human embryonic skeleton is made of connective tissue membrane & hyaline cartilage
- *After week 8, bone tissue begins to replace connective tissue membrane & hyaline cartilage

Intramembranous Ossification

- *Conversion of mesenchymal connective tissue into bone without passing into cartilagenous state
- *Occurs in flat, short & irregular bone



Intracartilaginous Ossification

- *Conversion of hyaline cartilage into bone
- *Primary ossification center is first area to start ossifying it usually appears during prenatal development, in diaphysis
- *Secondary ossification center occurs after birth formed in epiphysis
 - *hyaline cartilage remains over surface of epiphysis as articular cartilage
 - *cartilage remains between epiphysis & diaphysis as epiphyseal plate of cartilage

Growth In Bone Length

1-Epiphyseal cartilage divides to create more cartilage

2-Diaphyseal cartilage transformed into bone

*At puberty, growth in bone length is increased

by combined activities of GH, TH & sex hormone

*Once reach adulthood & bone reaches maximum length
the whole plate gets calcified, forming epiphyseal line



Growth In Bone Width

1-Osteoblast beneath the periosteum, secrete bone matrix on external surface of bone

2-Osteoclast on endosteum, breaks down bone widening medullary cavity