Bone Development and Growth

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Bone development occurs either **embryonically** or **postembryonically**. Embryonic development is when cells differentiate and form new tissues and organs. This occurs in humans within the womb. Postembryonic development is any type of developmental changes that occur after one is born. Growing taller and hitting puberty is an example of postembryonic development.

In embryonic development, there is hyaline cartilage forming on the baby in the fetus.
When you are in the fetus your body begins to form by using cartilage. Cartilage is soft, flexible tissue. While still in the fetus, you undergo ossification. During ossification, the cartilage will begin to calcify. The cartilage begins to calcify by layering calcium and phosphorus salt onto cartilage cells. As the cells die off, blood vessels begin to form in the cavities. Osteoblast cells travel through the blood vessels,
Primary ossification or embryonic development occurs in the fetus. Bones in the baby are broken up and as the baby develops postnatally their bones fuse together. In the skull the babies bones float around to lessen brain damage during the birth process.
Secondary ossification or post embryonic development occurs in the postnatal or adolescence years. In the longer bones, the secondary ossification centers can form in the epiphyses.
Stage 5: Bone Replaces Cartilage

Cartilage model

Chondrocytes at the centre of the cartilage disintegrate and initiate calcification of the matrix

Perichondrium

Periosteum

Blood vessels

Secondary ossification centre

Epiphyseal plate

Development of the secondary ossification centre and the epiphyseal plate at the end of the

Primary ossification centre

Medullary cavity

Development of the primary ossification centre and the medullary cavity

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Step By Step

Bone Growth

- Periosteum
- Primary ossification center
- Secondary ossification center
- Hyaline cartilage "model"
- Blood vessels
- Medullary cavity
- Articular cartilage
- Spongy bone
- Epiphyseal plate
- Periosteum
- Compact bone
- Resting cartilage
- Multiplying cartilage
- Maturing cartilage
- Calcified cartilage
- Mature bone

Growth plate
Direction of bone growth
Growth plate

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Works Cited

- google images