PLEASE CLICK ON THE FOLLOWING LINK TO WATCH THE LECTURE:-

https://www.youtube.com/watch?v=gei1DSVjAGw

Coxa Vara

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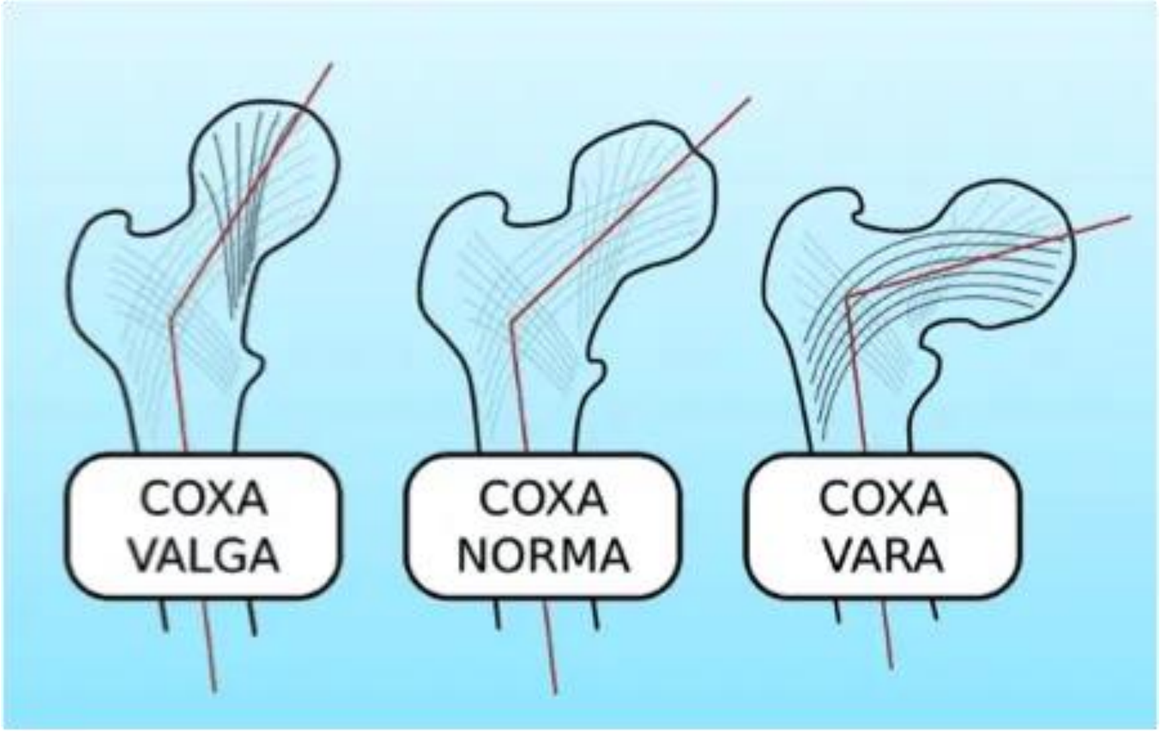
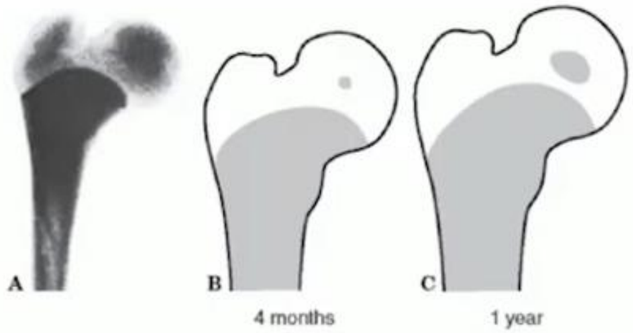
What is Coxa Vara ?

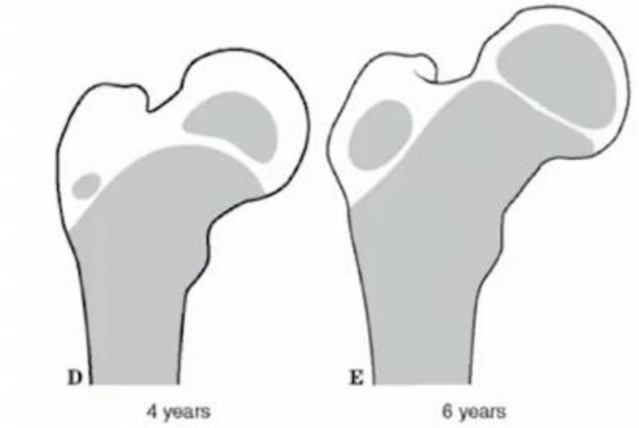
Coxa vara is a decrease in the femoral neck-shaft angle to below 120°, normally ~130°.



How does the proximal femur develop postnatally?

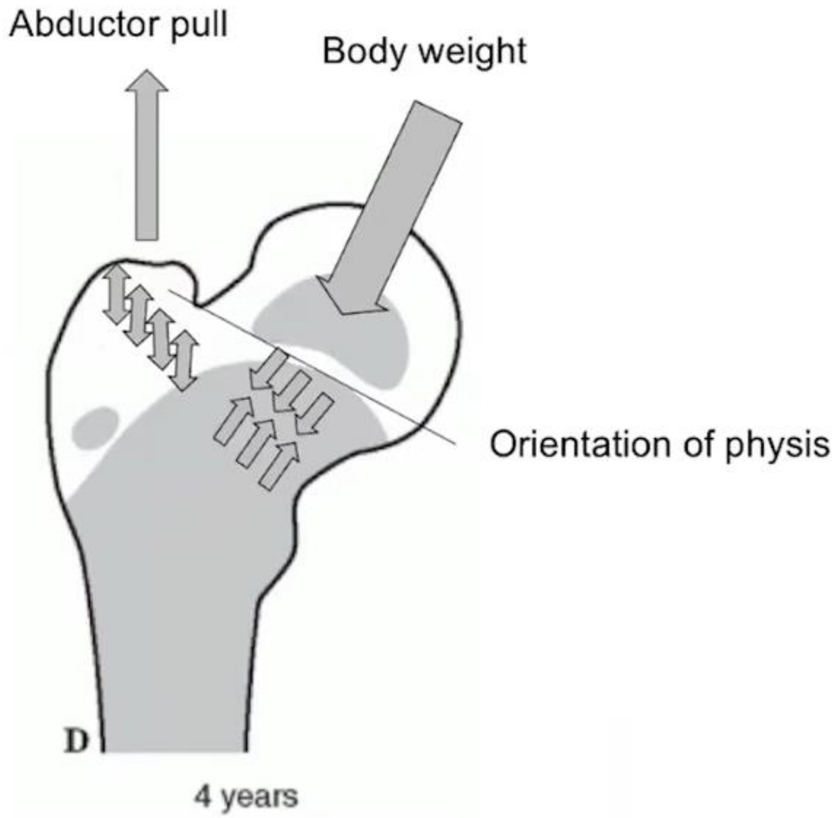
- **Entirely cartilaginous at birth.**
- **Head ossification starts at ~4 months.**
- **Greater trochanter ossification starts ~4 years.**
- **By ~6 years, physis separates into head and trochanteric regions.**





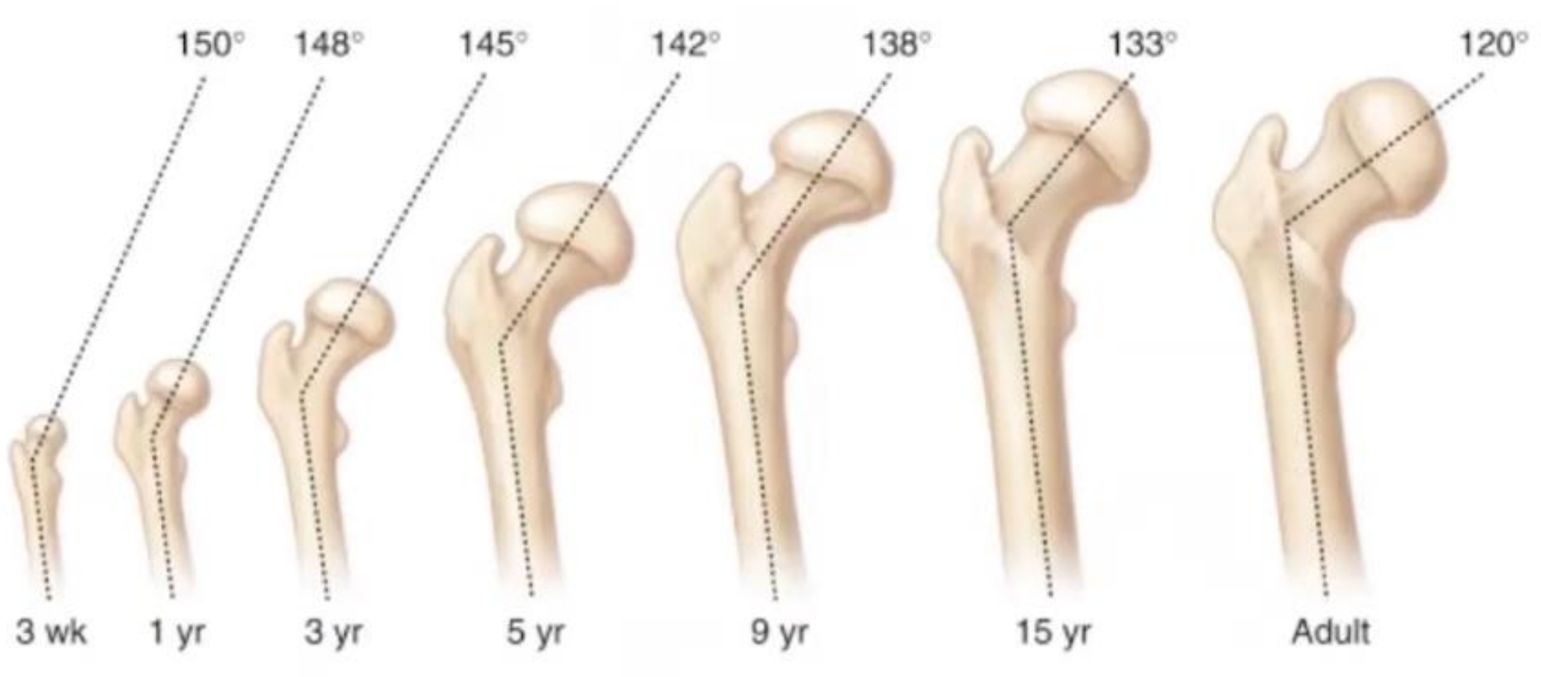
What forces act on the growing femur and how do they influence growth?

- **Compressive force from body weight on the head.**
- **Tensile force from abductors on the greater trochanter.**
- **Growth is stimulated by tension (trochanter) and inhibited by compression (head physis), creating a natural shift from valgus to neutral angle.**



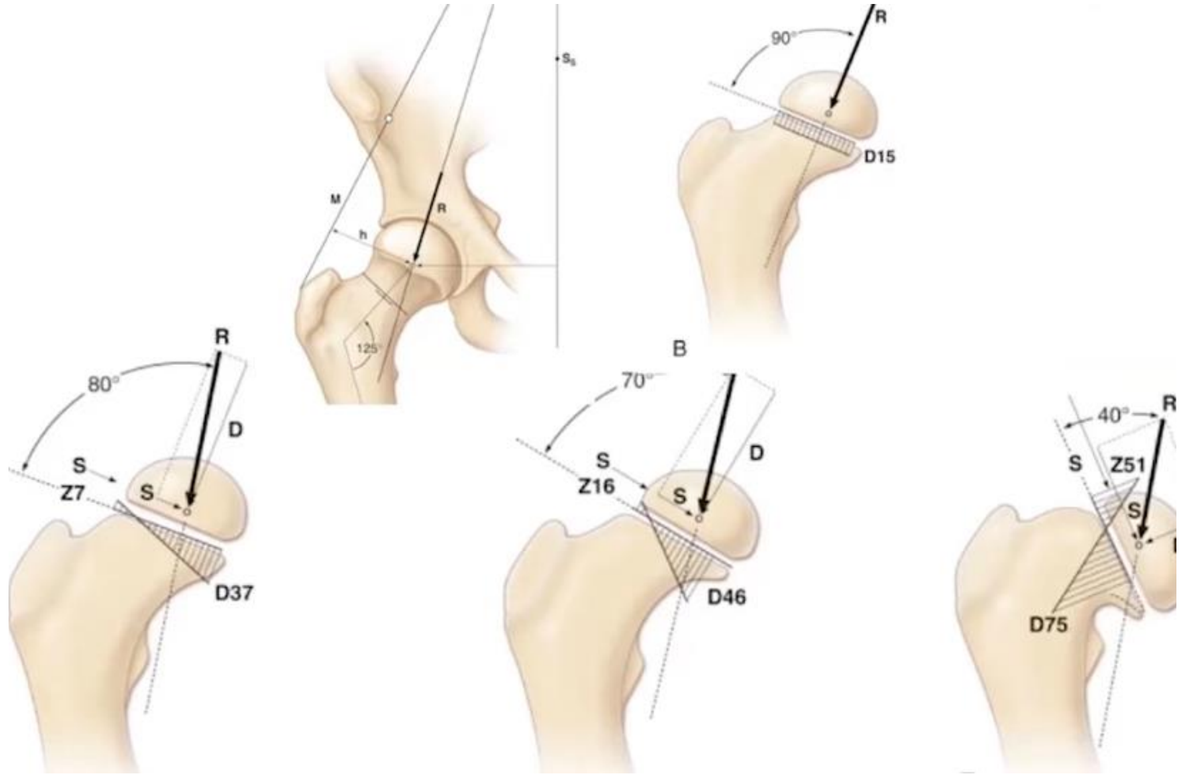
How does walking affect femoral development?

- **Walking induces mechanical forces that shape the proximal femur.**
- **The angle reduces from ~150° at birth to 120–130° in adults due to growth modulation by tension/compression.**



What is the pathophysiology of developmental coxa vara and how does it affect hip mechanics?

- **The femoral physis becomes vertically oriented, misaligned with normal compressive forces.**
- **This causes increased compression medially and tension laterally, leading to asymmetric growth.**
- **Slanted physis creates shear forces, promoting premature physeal closure and a short femoral neck.**
- **The elevated greater trochanter shortens the abductor muscles, weakening them and causing a Trendelenburg gait.**



What are the four types of coxa vara?

Congenital

Present at birth, associated with femoral deficiencies

Developmental

Appears after birth (~4–5 years), not seen in early infancy

Dysplastic

Associated with systemic bone disorders (e.g., rickets, skeletal dysplasia)

Acquired

Post-traumatic or post-infective (e.g., malunion, AVN, neonatal sepsis)

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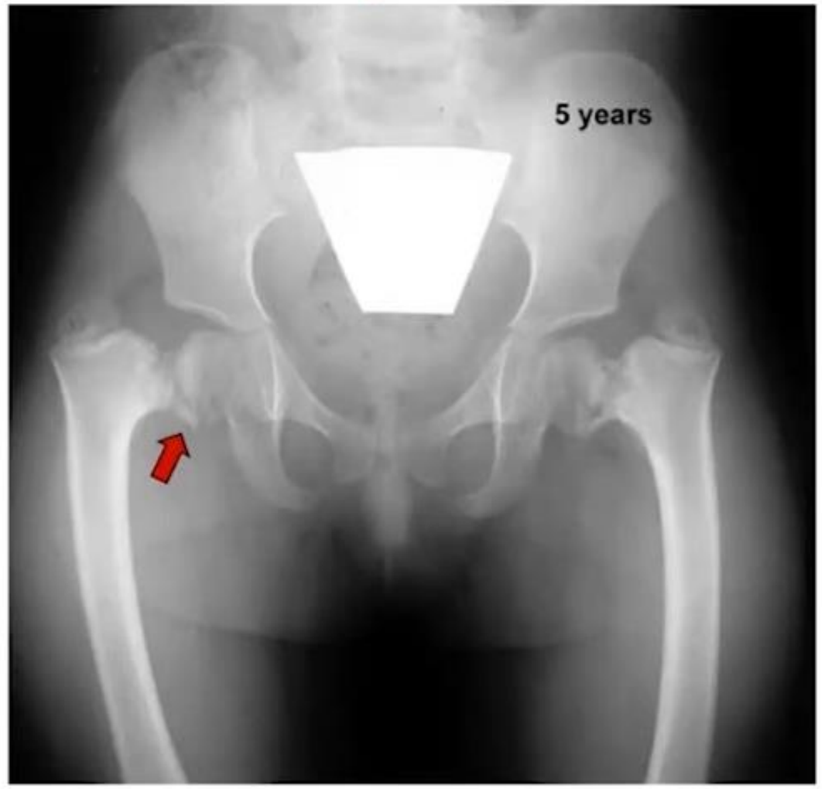

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Dysplastic

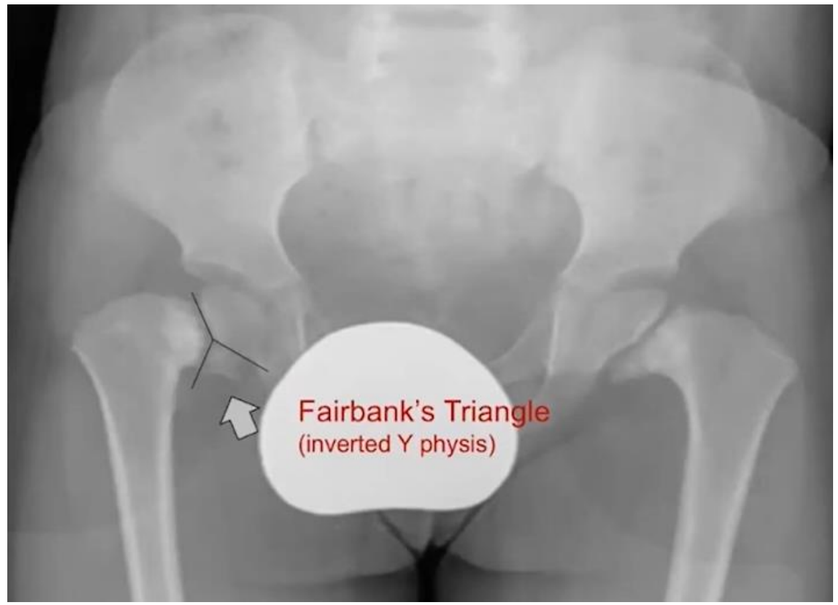
Associated with systemic bone disorders (e.g., rickets, skeletal dysplasia)

Vit D resistant rickets

What is the hallmark radiographic sign of developmental coxa vara?

Fairbank’s Triangle

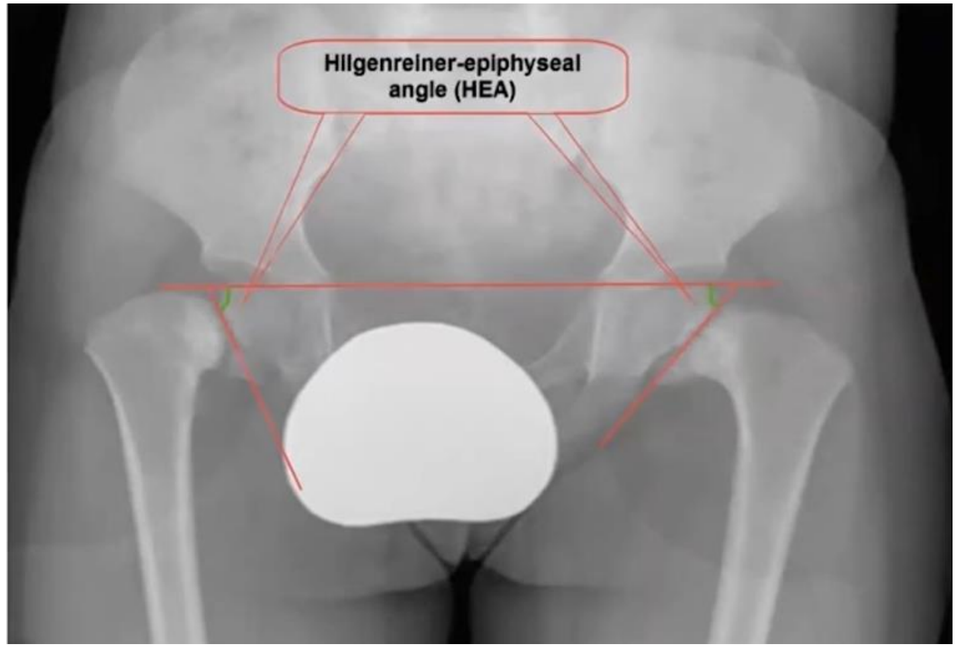
- A triangular metaphyseal defect.
- Seen at the inferomedial femoral neck.
- Pathognomonic but not always present.



How is progression risk in developmental coxa vara assessed?

Hilgenreiner Epiphyseal Angle

- <45°: Low risk, may improve.
- 45–60°: Moderate risk, monitor closely.
- 60°: High risk, likely needs surgery.



What is the typical age and gender distribution of developmental coxa vara?

- Usually presents at 4–5 years of age.
- Affects both sexes equally.
- Around 50% of cases are bilateral.

What are common symptoms of developmental coxa vara?

- Often **painless**.
- **Limp** or **waddling gait** (Trendelenburg gait in bilateral cases).
- Parents may notice **limb length discrepancy**.

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What are the main goals of treating developmental coxa vara?

- Correct the neck-shaft angle
- Restore hip biomechanics (especially abductor function)
- Prevent further deformity or recurrence
- Manage leg length discrepancy and retroversion
- Correct acetabular dysplasia, if present

When is surgery indicated in developmental coxa vara?

- HEA > 60°
- Progressive deformity
- Trendelenburg gait or limp
- Significant limb length discrepancy
- Failure of spontaneous improvement

What is the primary surgical procedure for developmental coxa vara?

Valgus-producing proximal femoral osteotomy