COXA VARA
Should it be corrected?
&
How?

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Coxa Vara

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Introduction

• Coxa vara is a deformity of the proximal femur that results in a reduction of the normal neck-shaft angle (<110 deg).

• It includes a wide spectrum of types with varying pathologies and differing sites of deformity.

• Determining the site and type of coxa vara, is important to plan the treatment.
# Types

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<th>Type of coxa vara</th>
<th>Pathology</th>
<th>Site of deformity</th>
<th>Natural history</th>
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<td>Dysgenesis</td>
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<td>Growth abnormality</td>
<td>physis</td>
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<td>Dysplastic</td>
<td>Metabolic: rickets</td>
<td>physis</td>
<td>May progress</td>
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<tr>
<td></td>
<td>Dysplasia: fibrous dysplasia</td>
<td>metaphysis</td>
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<tr>
<td>Acquired</td>
<td>AVN: Perthes or infection</td>
<td>Physis and epiphysis</td>
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<td></td>
<td>Trauma, malunion of fracture</td>
<td>Physis:: SCFE Metaphysis: # NF Subtrichanteric : #</td>
<td>May partially resolve</td>
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Benjamin Joseph, Selvadurai Nayagam, randall Ioder, Ian Torode. 2009, Pediatric Orthopaedics: a system of decision-making, Hodder Arnold, UK
Congenital coxa vara

• Part of congenital short femur or PFFD.

• Usually unilateral.

• The deformity is subtrochanteric and related to sclerotic segment or true pseudosrthrosis.

• Associated with significant LLD, retroversion, and later genovalgum.

• Fibular hemimelia is associated in some cases.
Developmental Coxa Vara

• Usually present after the child starts to walk, and it is progressive in nature.

• Bilateral in 1/3 of cases.

• The pathognomic radiological feature is the metaphyseal triangular defect.

• Natural history is strongly correlated to HE angle.
Dysplastic Coxa Vara

- Coxa vara is secondary to a primary bony disease such as fibrous dysplasia, rickets, or skeletal dysplasia.

- Usually bilateral.

- Progression is disease related.

- Skeletal dysplasias are associated with significant hip deformities. (FFD and retroversion).
Acquired Coxa Vara

• The deformity is secondary to traumatic or vascular insult to the hip joint.

• Mal-united fracture NOF, overcorrected varus osteotomies, Perthes disease, SCFE, iatrogenic AVN in DDH, or AVN secondary to septic arthritis.

• If the deformity is originated in the metaphysis, remodeling is a possibility, but if it is generated in the physis it is usually progressive.
Should coxa vara be corrected?

• Affects the normal biomechanics of the hip.

• Center of hip rotation is lower than the level greater trochanter.

• Association with :
  – Femoral retroversion (future hip OA).
  – LLD.
  – Genoalgum.
  – Acetabular underdevelopment.


How Coxa Vara can be corrected?

- Objectives of surgical correction of coxa vara:
  - Restoration of hip biomechanics.
  - Correction of associated deformities.
  - Prevent recurrence (HE angle < 38 deg, and GT epiphysiodesis)

How Coxa Vara can be corrected?

- The surgical planning depends mainly on:
  - Type of deformity.
  - Site and severity of the deformity.
  - Associated deformities.
  - Age of the child.
How Coxa Vara can be corrected?

- Different types of osteotomies were described, selection is based on:
  - Age of the child.
  - Site and severity of deformity.
  - Surgeon experience.
Surgical Correction Of Developmental Coxa Vara

• Intertrochanteric valgus producing osteotomy is commonly used procedure for developmental coxa vara.

• Angled blade plate is a trusted device of fixation.
Surgical Correction Of Developmental Coxa Vara: planning and technique

- Pre-operatively, the following should be determined to assure availability:
  - Blade length.
  - Blade plate angle.
  - Blade plate offset (for valgus osteotomy no offset).
Surgical Correction Of Developmental Coxa Vara: planning and technique
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Surgical Correction Of Developmental Coxa Vara

• Positioning:
  – Supine with a gel pad under the ipsilateral hemipelvis on radiolucent table.
  – Fracture table with access to the leg rotation key.
  – Assess for adductors contracture, and consider the release accordingly.
Surgical Correction Of Developmental Coxa Vara

• Approach:
  - Lateral approach to the proximal femur.
  - Make sure that the medial periosteum is elevated at the desired level of the osteotomy.
Surgical Correction Of Developmental Coxa Vara

• Post operative care:
  – Spica cast can be considered if fixation is not optimum.
  – Patient can be mobilized NWB for 6 weeks.
  – Healing is expected 2-3- months.
Surgical Correction Of Developmental Coxa Vara

• Outcomes:
  – If the deformity is corrected, the metaphyseal defect will heal within 3-6 months.
  – 50-89% of cases the proximal femoral physis will close 1-2 yrs after surgery.
  – Recurrence of deformity reported in 30-70 %, but if HE angle is less than 38 deg, success is 95 %.
  – Recurrence of deformity and LLD discrepancy should be monitored.

Discussion