Seminar on Management of Hip Fracture

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PYNEH
Classification

- Simple and easily applicable
- Guide treatment
- Provide prognosis
- Predict complication
- Facilitate communication
- Enable systematic documentation and research
Factors

- Anatomy
  - Blood supply
  - Muscle attachment
  - Capsular attachment
- Pathological anatomy
  - Bone quality
  - Mechanism of injury
- Pathological physiology
  - Bone healing
Factors

- Biomechanics
  - Fracture stability
  - Deforming forces
  - Implant strength and configuration

- Follow up

- Systematic data collection

- Validation and modification of the classification system
Proximal Femoral Fracture

- Fracture neck of femur
- Intertrochanteric fracture
- Subtrochanteric fracture
- Paediatric proximal femoral fracture
Fracture Neck of Femur

- Age group
- Mechanism of Injury
- Associated injuries
- Anatomical location
- Fracture angle
- Fracture displacement
Anatomical location

- Intra-capsular
  - Subcapital
  - Transcervical
- Extra-capsular
  - Basal
Fracture angle (Pauwels)

- Amount of shearing force
- Risk of non union
- Risk of avascular necrosis
- Valgus osteotomy
Fracture displacement (Garden)
- Grade I incomplete or valgus impacted
- Grade II complete undisplaced
- Grade III complete partially displaced
- Grade IV complete displaced

Eliasson modification
- Undisplaced (I & II)
- Displaced (III & IV)
Other Considerations

- Risk of AVN
- Surgical complications
- Age
- Associated injuries
- General medical condition
- Preservation or replacement of the femoral head
Intertrochanteric Fracture

- Stable and anatomical reduction
- Secondary loss of the reduction after internal fixation
- Boyd and Griffin
- Evans
- Kyle’s
- Anatomical
Subtrochanteric Fracture

- Risk of malunion, malrotation, delayed union and non union
  - Cortical bone healing
  - Mechanical stress
  - Fielding and Magliato
  - Seinsheimer
Paediatric Proximal Femoral Fracture

- Presence of growth centers
- Vascular anatomy
- Very high risk of avascular necrosis
The AO classification

Adults

- Localization
- Morphology

<table>
<thead>
<tr>
<th>Bone</th>
<th>Segment</th>
<th>Type</th>
<th>Group</th>
<th>Subgroup</th>
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</thead>
<tbody>
<tr>
<td>1 2 3 4</td>
<td>1 2 3 (4)</td>
<td>A B C</td>
<td>1 2 3</td>
<td>.1 .2 .3</td>
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</tbody>
</table>

4 long bones 3 or 4 segments 3 types 3 groups 3 subgroups

Children

- Localization
- Morphology

<table>
<thead>
<tr>
<th>Bone</th>
<th>Segment</th>
<th>Type</th>
<th>Child</th>
<th>Severity</th>
<th>Exceptions</th>
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</thead>
<tbody>
<tr>
<td>1 2 3 4</td>
<td>1 2</td>
<td>E M D</td>
<td>1-9</td>
<td>.1 .2</td>
<td>1-IV</td>
</tr>
</tbody>
</table>

4 long bones 3 segments 3 types 4-9 patterns 2 groups
### Bone and Segment

#### A. Extraarticular
- With or without metaphyseal involvement
- Tuberosity or nonunion of bony structure
- Displaced, impacted or included

#### B. Partial articular
- Pelvic bone: simple articular, simple metaphyseal
- Pelvic bone: complex articular, complex metaphyseal

#### C. Complex articular, complex metaphyseal

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### Type

<table>
<thead>
<tr>
<th>Type</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
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</thead>
<tbody>
<tr>
<td>Extraarticular</td>
<td>Simple</td>
<td>Wedge</td>
<td>Complex</td>
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<tr>
<td>Partial articular</td>
<td>Split</td>
<td>Depression</td>
<td>Split-depression</td>
</tr>
<tr>
<td>Articular</td>
<td>Simple articular, simple metaphyseal</td>
<td>Simple articular, complex metaphyseal</td>
<td>Complex articular, complex metaphyseal</td>
</tr>
</tbody>
</table>

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### Diagram

- **A. Simple**
  - Spiral
  - Oblique
  - Transverse

- **B. Wedge**
  - Spiral
  - Bending
  - Multifragmentary

- **C. Complex**
  - Spiral
  - Segmental
  - Irregular
Classification

- Simple and easily applicable
- Guide treatment
- Provide prognosis
- Predict complication
- Facilitate communication
- Enable systematic documentation and research
Thank you