Zygomatic Arch Fracture Classification and Epidemiologic Analysis

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“Nothing to Disclose”
Zygomatic Arch Fracture

• Zygoma
  – most prominent portion of face
  – easily injured by trauma.

• Since 1927 “Sir Gillies “
  – importance of malar prominency
  – introduced the closed reduction
Zygomatic Arch Fracture

• Numerous reports about zygomatic arch reduction
• No well organized classification and treatment algorithms
• We made a fracture type classification according to
  – injury vector
  – surgical approach.
Material and Methods

Zygomaticomaxillary Fractures (N=424)

Pure Maxillary Fracture (N=113)

Zygomatic Arch Fracture (N=311)

Target subjects

Study Duration: 2007~2010
Retrospective medial record & CT review
Results

- We classified the zygomatic arch fracture into 4 groups
  - Type I: Isolated Zygomatic Arch Fracture
  - Type II: Rotation Fracture
  - Type III: Rotation + Impaction
  - Type IV: Communitied Fracture
Type I: Isolated Zygomatic Arch Fracture

Blue dotted arrow: trauma force
Red arrow: rotation vector
Green line: inserted K-wire on zygoma segment
Blue device: Dingman elevator
Type II: One Vector Rotation Fracture

Blue dotted arrow: trauma force
Red arrow: rotation vector
Green line: inserted K-wire on zygoma segment
Blue device: Dingman elevator
Type III: Two Vectors
Rotation + Impaction

Blue dotted arrow: trauma force
Red arrow: rotation vector
Green line: inserted K-wire on zygoma segment
Blue device: Dingman elevator
Type IV: Communited Fracture

Usually Open Fractures
Distribution of Fracture Subtypes

Unit: Type, Number of Patients
Incidence of zygomatic arch fracture during recent 5 years
Age distributions

Incidence of zygomatic arch fracture

Age
Cause of Trauma

<table>
<thead>
<tr>
<th>Cause of Trauma</th>
<th>Incidence of Zygomatic Arch Fracture</th>
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<tbody>
<tr>
<td>Traffic accident</td>
<td>60</td>
</tr>
<tr>
<td>Motorcycle accident</td>
<td>40</td>
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<td>Bicycle accident</td>
<td>30</td>
</tr>
<tr>
<td>Cultivator accident</td>
<td>20</td>
</tr>
<tr>
<td>Slip down injury</td>
<td>10</td>
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<tr>
<td>Fall down injury</td>
<td>30</td>
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<td>Assault</td>
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<td>Miscellaneous</td>
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</table>

*Source: Yonsei University, Wonju College of Medicine, Wonju Christian Hospital*
Conclusion

• Most of Zygomatic Arch fractures can be treated with Closed Reduction

• Comprehensive understanding about trauma vector can lead to
  
  -> reduce the extra efforts such as open reduction.