

Shoulder Injuries in Single-Bicycle Crashes

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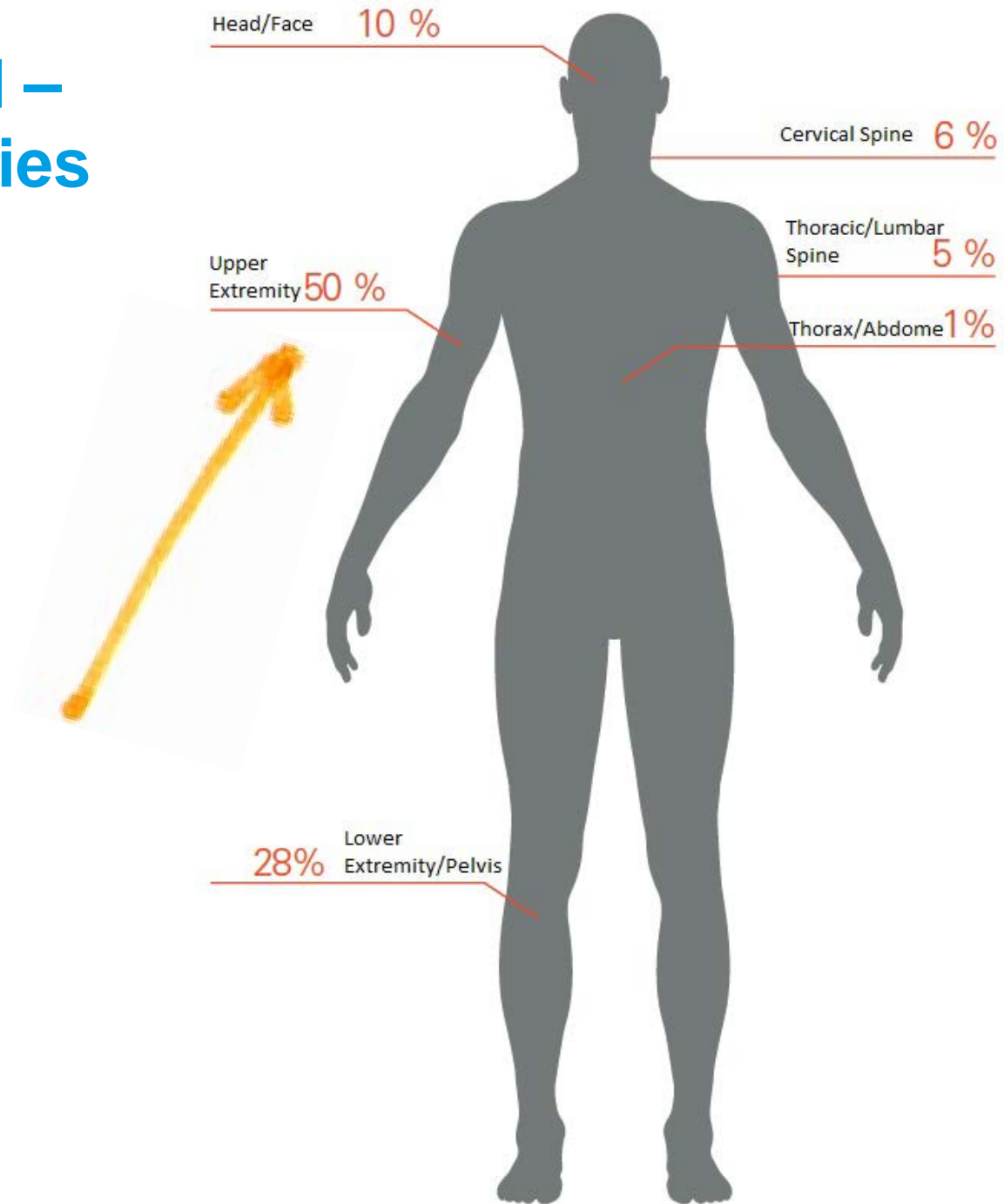
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Objective

- To investigate injury mechanisms leading to shoulder injuries in single-bicycle crashes

Background – Cyclist Injuries Leading to Permanent Medical Impairment



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Methods – Inclusion Criteria

Single-Bicycle Crashes

- Cyclist with shoulder injuries
 - Above age 18
 - Excluded:
 - Cyclists under the influence of alcohol
 - Cyclists who sustained a head injury
- Treated at University Hospital of Northern Sweden during 2010 – 2013

Methods – Number of Crashes

- 37 cyclists
 - 8 females and 29 males
- Injury data collected from hospital records
- All initial diagnoses classified according to AIS 2005
- Interviewed by telephone

Methods

– Questions Asked to Participants

Patient Characteristics

- Age, Gender, Height, Weight

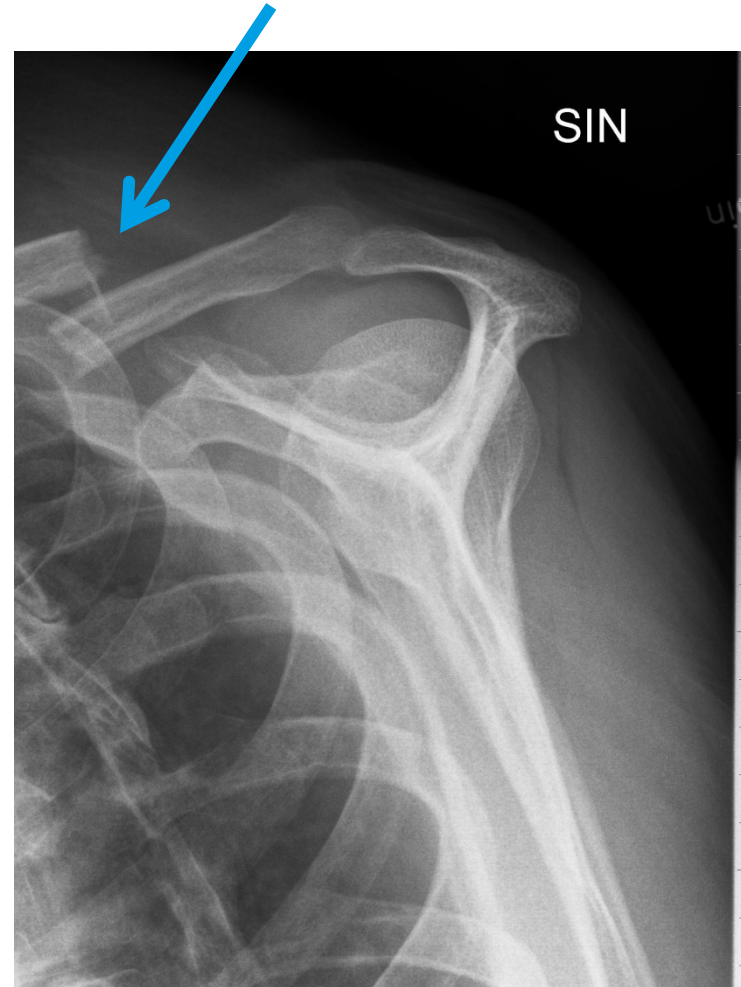
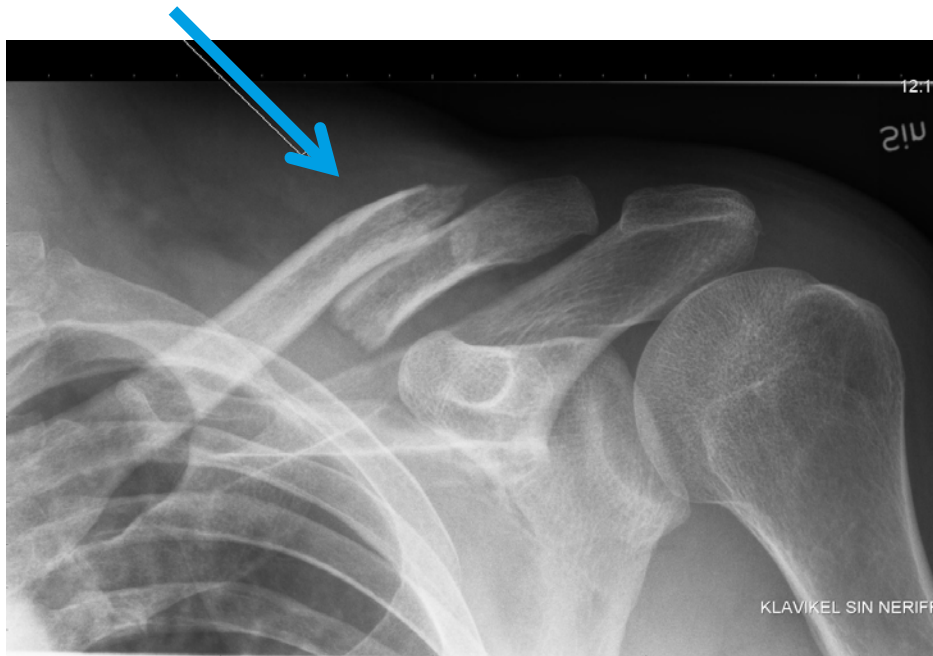
General Description of the Crash

- Where did the crash occur?
 - Place type, Road surface, Road conditions
- What speed range did you have right before the impact?
- Were you braking before the crash?
- What do you think caused the crash?

Fall

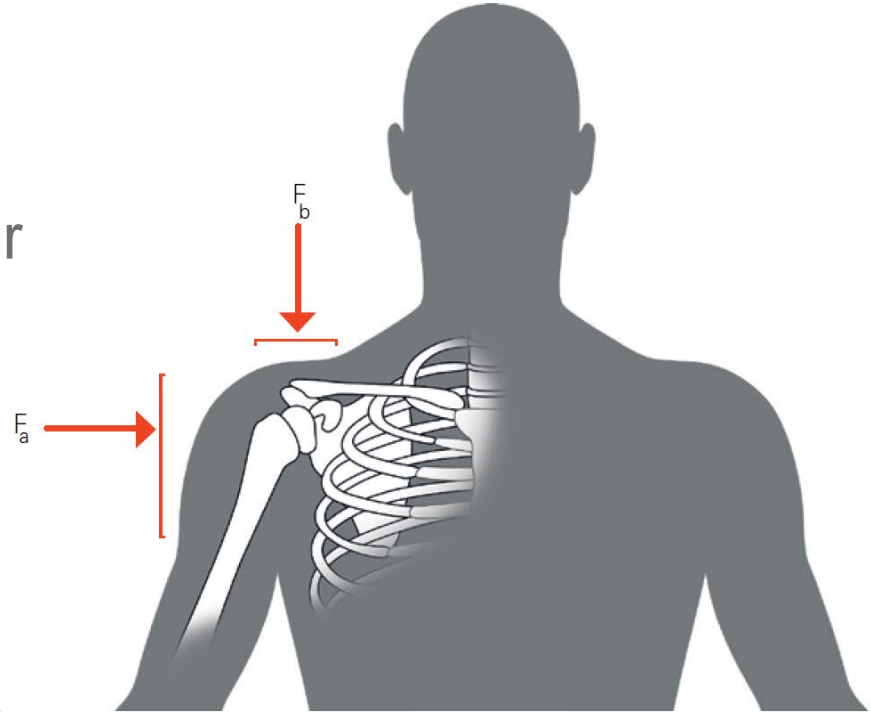
- Describe the direction of force during the impact to the shoulder
- What body region did you initially hit the ground with?

Results – Most Frequent Injury Clavicle Fracture



Results – Injury Mechanisms?

- 90% was result from a fall onto the shoulder or direct hit of the clavicle
- 8 out of 10 reported falling sideways
- Falling onto an outstretched hand only occurred in one case



Results – Injury Mechanisms?

- 46% occurred on surfaces with low friction (ice or gravel)
- 80% reported not braking prior to the crash



Discussion

- Studies concentrating on clavicle fracture regardless activity: 94% injuries caused by direct impact
- 46% still had problems ten years after
- 60% of the single-bicycle crashes are related to shortcomings or defects in the road infrastructure
 - Most of these occurred due to low friction

Discussion – Strategies to Prevent Injuries to Upper Extremities



Discussion

– Limitations

- Only based 37 single-bicycle crashes
- One hospital in Northern Sweden
- Interviewed by telephone up to three years after the accident
 - Acceptable reliability in self-reports of specific injury details, such as the body part injured
 - Self-reported diagnoses have been found to not correspond sufficiently to medical records
 - All data concerning diagnoses were therefore taken from medical records

Conclusions

- In 90% injury to the shoulder caused by direct impact
 - Falling onto an outstretched hand only one case
- Most frequent scenario:
 - Falling sideways resulting in a straight hit to the shoulder
- Most of the crashes occurred on surfaces with low friction
- The findings indicate a need for strategies to prevent injuries to the upper extremities – both infrastructure and body protection

Thank You!

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