Objectives

- Review common injuries / pathologies that affect the hand and fingers
- Prepare for Enquiry 1 Assessment
  - Each student must submit their best two (2) LTT hand orthoses fabricated over the next weeks with an accompanying 150 word outline of the application and selection of each orthosis
  - Critique sheets available on LMS

Overview of finger injuries

Common
Diverse
- Small open wounds
- Major damage to skin, bone, etc
Can lead to permanent deformity = loss of function

Types of finger injuries

Laceration – cut to the finger may only be skin deep or may sever underlying tendons, nerves or blood vessels


Avulsion – part of the skin or tissue is pulled off


Amputation – part of the finger is cut or torn away

Types of finger / hand injuries

Fingernail injuries

Fingernail Injuries

Subungual hematoma
Damage to the nail bed is common in jamming injuries
Can lead to bruising and excessive fluid collection under the nail – may require drainage
http://lifeinthefastlane.com/2010/03/minor-injuries-001/

Fractures and Dislocations

Mechanism of injury - heavy

Fractures

Skier’s / Gamekeepers Thumb

Torn ulnar collateral ligament
Thumb squashed between two surfaces (ski pole and ground) plus distractive force
http://skillbuilders.patientsites.com/Arthritis/Arthritis-Overview/preview_a~291/article.html
Types of finger/hand injuries

Tendon injuries

Boutonniere Deformity

Stabilizing portion of the extensor tendon is torn between the proximal and middle phalynx. Joint will not achieve full extension. http://www.davidnelson.md/Boutonniere.htm

Types of finger/hand injuries

Nerve injuries

Median Nerve injury

Distal median nerve injury to the hand resulting in claw deformity of the index and middle fingers. http://stepjourney.wordpress.com/

Types of finger/hand injuries

Penetrating

Causes of finger/hand injuries

Penetration

- Mild e.g., bites, splinters, etc.
- Severe – bites, nail guns, staplers, gunshot
**Types of finger / hand injuries**

- **Grazing**

**Causes of finger / hand injuries**

- Grazing and ‘Gravel Rash’
  - Mountain bike riding
  - Horse riding
  - Falls
  - MVA / MBA


**Types of finger / hand injuries**

- **Burns**

  **Thermal electrical injury** (top)
  - Mechanism – accidental contact with high voltage wires

  **Thermal burn injury** (bottom)
  - Mechanism – liquid or hot object

  [Link](http://medenjoyable.blogspot.com/2008/12/thermal‐injury.html)

**Types of finger / hand injuries**

- **Vascular Damage**

  Often combined with severe trauma affecting multiple tissues, e.g., bone, skin, etc

  [Link](http://www.trauma.org/index.php/main/images/C4)

  **Complications of systemic diseases**
  - E.g., lupus leading to Raynaud’s phenomenon

  [Link](http://www.trauma.org/index.php/main/images/C4)
Causes of finger injuries

Jammed finger
- Many causes and mechanisms
  - E.g., closing door, between hard / sharp surfaces, blunt force trauma
- Can cause tendon or ligament damage
  - Dorsal / palmar (volar), lateral
- Can cause fractures or dislocations

Jammed finger
- The term jammed finger refers to finger joint pain and swelling from an impact injury.

Mallet Finger
- Drop finger / Hammer finger
- Extensor tendon is torn away from distal phalynx
- Finger tip cannot straighten into extension

Swan Neck Deformity
- Volar ligament is torn between
- Proximal and middle phalynx
- Finger bends in healing process in ‘swan neck’ shape

Causes of finger injuries

Bites
- Animal
  - animal bites human – dog, cat, horse, quoll
- Human
  - human bites human
  - Human hits human in mouth
  - Often undertreated and underestimated – but very contaminated!
- Location of bite and injuries sustained vary greatly and can result in some of the mentioned common presentations

Complications of finger / hand injuries

Infection
- From bite, from other trauma as already discussed
- From other fingernail related conditions
  - E.g., hangnail, ingrown nail or nail biting
- Long term deformity / malalignment

Note image from site showing common presentations of finger deformities in clients with arthritis
Causes of finger / hand injuries

Arthritis
- Base of the thumb
- MP joint
- Osteoarthritis
- Rheumatoid Arthritis
- Psoriatic Arthritis

Causes of finger / hand injuries

Neurological
- Brachial Plexus
- Complex regional pain syndrome
- Cumulative trauma disorder
  - Repetitive strain injury
  - Carpal tunnel syndrome
  - Cubital tunnel syndrome

Causes of finger / hand injuries

Other
- Ganglion cysts
- Tumors
- Joint replacement
- Stiffness
- Systemic diseases
  - Diabetes, Raynaud's phenomenon, Buerger's disease, gout / pseudogout, heart and lung diseases, kidney and liver diseases

Other common presentations

Trigger Finger
- First web-space contracture

Dupuytren's Contracture
- Thumb / finger hyperextension
- Ulnar claw hand
- Web-space adhesion / syndactyly
- NB all links to images will be provided on moodle in week 4

Trigger Finger

Identify the underlying biomechanical reason for this presentation
Identify two common causes of this condition
Indicate one orthotic management suitable for this condition

Dupuytren's Contracture

Identify the underlying biomechanical reason for this presentation
Identify two common causes of this condition
Indicate one orthotic management suitable for this condition
Ulnar Drift

Identify the underlying biomechanical reason for this presentation
Identify two common causes of this condition
Indicate one orthotic management suitable for this condition

Jersey Finger

Identify the underlying biomechanical reason for this presentation
Identify two common causes of this condition
Indicate one orthotic management suitable for this condition

Web space adhesion / syndactyly

Identify the underlying biomechanical reason for this presentation
Identify two common causes of this condition
Indicate one orthotic management suitable for this condition

First webspace contracture

Identify the underlying biomechanical reason for this presentation
Identify two common causes of this condition
Indicate one orthotic management suitable for this condition

Thumb / finger hyperextension

Identify the underlying biomechanical reason for this presentation
Identify two common causes of this condition
Indicate one orthotic management suitable for this condition

Ulnar Claw Hand

Identify the underlying biomechanical reason for this presentation
Identify two common causes of this condition
Indicate one orthotic management suitable for this condition