

LA TROBE UNIVERSITY

POR4ULO Finger and Hand Injuries
 Kerry Fisher
 Lecturer
 National Centre for Prosthetics and Orthotics
 March 2014

latrobe.edu.au CXCOS Provider 00115M

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

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Overview of finger injuries

Common

Diverse

- Small open wounds
- Major damage to skin, bone, etc

Can lead to permanent deformity = loss of function

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Types of finger injuries

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

<http://www.surviveoutdoors.com/emergency/lacerations.asp>



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Types of finger injuries

Avulsion – part of the skin or tissue is pulled off

<http://www.surviveoutdoors.com/emergency/lacerations.asp>



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Types of finger injuries

Amputation – part of the finger is cut or torn away

<http://www.surviveoutdoors.com/emergency/lacerations.asp>



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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/>

Types of finger / hand injuries

Fractures / Dislocations

Fractures and Dislocations



<http://boneandspine.com/orthopaedic-images/xray-of-fractures-of-metacarpals/>

Mechanism of injury – heavy



<http://www.winningiseverything.co.uk/kevin-davies-dislocated-finger-picture-ouch-430.html>

Types of finger / hand injuries

Sprains – ligament injuries

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

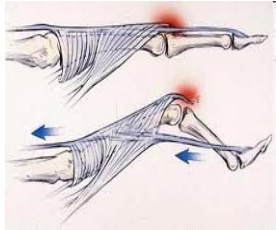
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Boutonniere Deformity

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>



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Types of finger / hand injuries

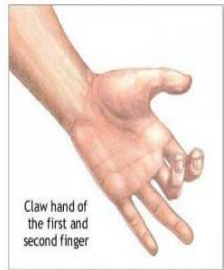
Nerve injuries

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Median Nerve injury

Distal median nerve injury to the hand resulting in claw deformity of the index and middle fingers

<http://stepjourney.wordpress.com/>



Claw hand of the first and second finger

#ADAM

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Types of finger / hand injuries


Penetrating

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Causes of finger / hand injuries

Penetration

- Mild e.g., bites, splinters, etc
- Severe – bites, nail guns, staplers, gunshot
 - <http://lifeinthefastlane.com/2010/06/penetrating-injuries/>



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Types of finger / hand injuries

Grazing

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Causes of finger / hand injuries



Grazing and 'Gravel Rash'

- Mountain bike riding
- Horse riding
- Falls
- MVA / MBA

<http://www.bikeradar.com/forum/viewtopic.php?p=16426924>

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Types of finger / hand injuries

Burns


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Burns


Thermal electrical injury (top)

- Mechanism – accidental contact with high voltage wires



Thermal burn injury (bottom)

- Mechanism – liquid or hot object



<http://medenjoyable.blogspot.com/2008/12/thermal-injury.html>

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Types of finger / hand injuries

Vascular Damage

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Vascular Damage

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

<http://www.trauma.org/index.php/main/images/C4/>

Complications of systemic diseases

- E.g., lupus leading to raynaud's phenomenon



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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

Causes of finger injuries

Jammed finger

- The term **jammed finger** refers to finger joint pain and swelling from an impact injury.
Read more: http://www.righthealth.com/topic/Jammed_finger#ixzz1AJClzgCk
- Depending on the direction of the impact and also the resultant injuries a jammed finger can manifest in several common presentations
- Several common presentations are also related to disease and degenerative conditions of the hand
 - E.g., mallet finger may be from trauma or arthritic changes to the hand

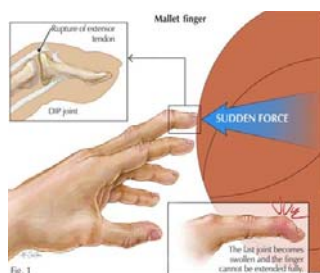
Mallet Finger

Drop finger / Hammer finger

Extensor tendon is torn away from distal phalynx

Finger tip cannot straighten into extension

http://www.hughston.com/hha/a_16_4_2.htm



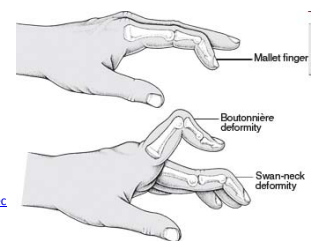
Swan Neck Deformity

Volar ligament is torn between proximal and middle phalynx

Finger bends in healing process in 'swan neck' shape

<http://www.merckmanuals.com/home/section05/ch071/ch071c.html>

Note image from site showing common presentations of finger deformities in clients with arthritis



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

Causes of finger / hand injuries

Arthritis

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

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Causes of finger / hand injuries

Neurological

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

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Causes of finger / hand injuries

Other

- Ganglion cysts
- Tumors
- Joint replacement
- Stiffness
- Systemic diseases
 - Diabetes, Raynauds phenomenon, Buerger’s disease, gout / pseudogout, heart and lung diseases, kidney and liver diseases
 - http://www.assh.org/Public/HandConditions/Documents/Web_Version_PDF/Series%20III/SystemicDiseases.pdf

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Other common presentations

Trigger Finger	First web-space contracture
Dupuytren’s Contracture	Thumb / finger hyperextension
Ulnar drift	Ulnar claw hand
Jersey Finger	<i>NB all links to images will be provided on moodle in week 4</i>
Web-space adhesion / syndactyly	


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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




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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



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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



Webspace 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

