

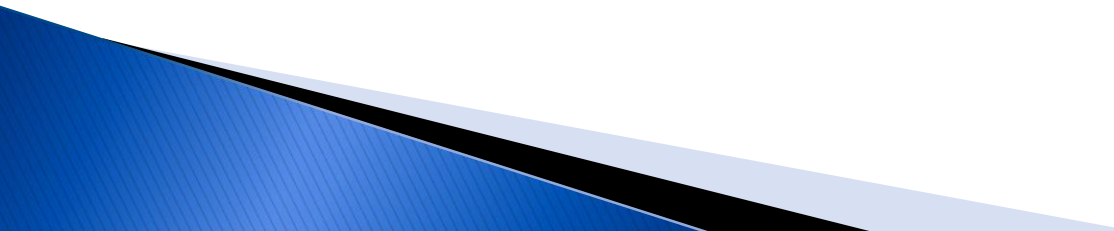
Mechanical trauma 2

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Fractures
incised wounds
stab injuries
Injury description
2019

Objectives

- ▶ Define fracture/incision/stab injury
 - ▶ Identify fracture/incision/stab injury by their features
 - ▶ Describe these injuries for medico legal purposes
 - ▶ Interpret features of causative weapons
 - ▶ Interpret circumstances of causation of above injuries
- 



Fractures

Fractures

- ▶ A destruction to the continuity of the bone
- ▶ Fractures are caused by direct blunt force trauma or indirect transmission of blunt force trauma
- ▶ Fractures are grievous injuries.



Description of fractures

Open/compound fracture

- Fracture exposed to exterior

Simple/closed fracture

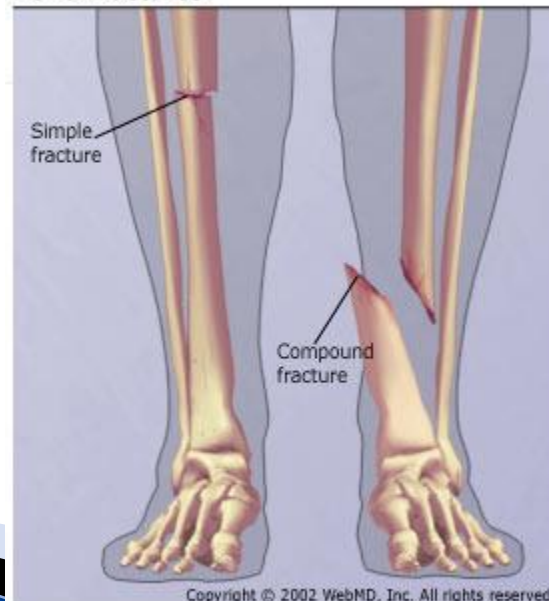
- Overlying skin is intact

Comminuted fracture

- Having several fragments



Bone Fractures



Description of fractures

Displaced fracture

- loss of bone alignment along its long axis.



Non displaced fracture

- Bone alignment remains



Greenstick fracture

- The bone partly fractures on one side



Description of fractures-direction

Transverse fracture

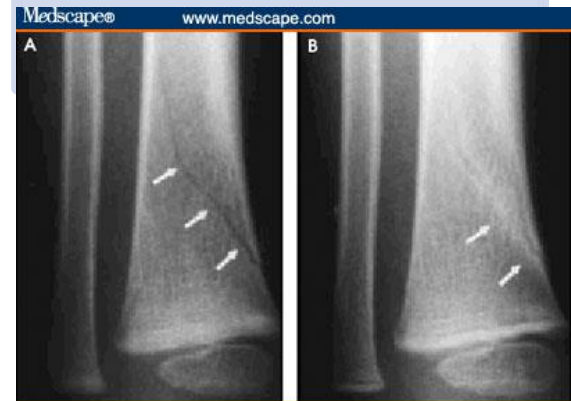
- A fracture that is at a right angle to the bone's long axis.

Oblique fracture

- A fracture that is diagonal to a bone's long axis.

Spiral fracture

- at least one part of the bone has been twisted.



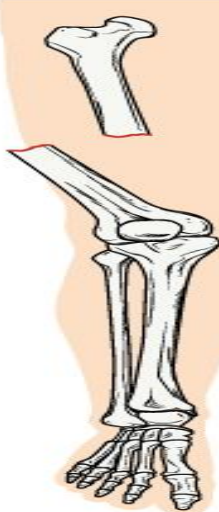
Description of fractures

Closed



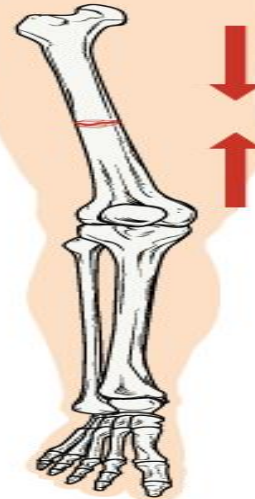
(a)

Open



(b)

Transverse



(c)

Spiral



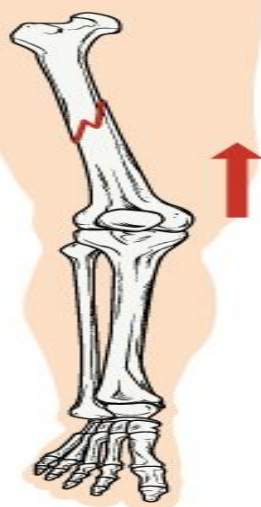
(d)

Comminuted



(e)

Impacted



(f)

Greenstick



(g)

Oblique

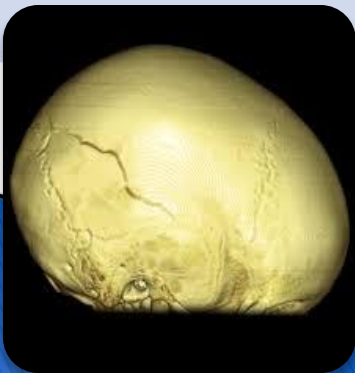


(h)

Description of fractures-shape

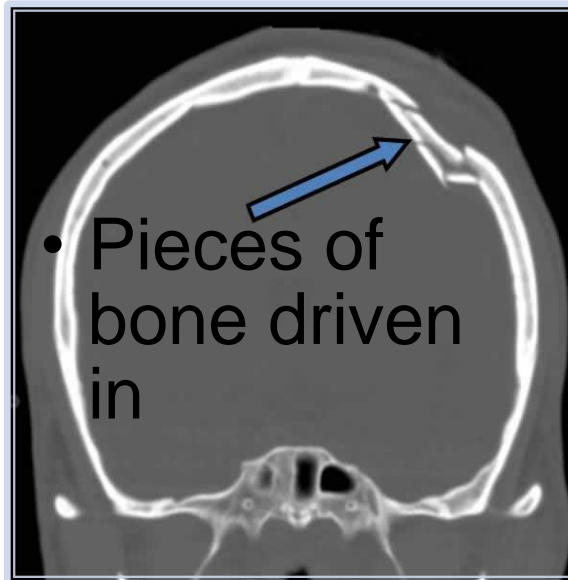
Linear fractures

- Fracture lines that are undisplaced and linear



Depressed fractures

- Pieces of bone driven in



Cob web fracture



Description of fractures-shape

Hinge
fractures



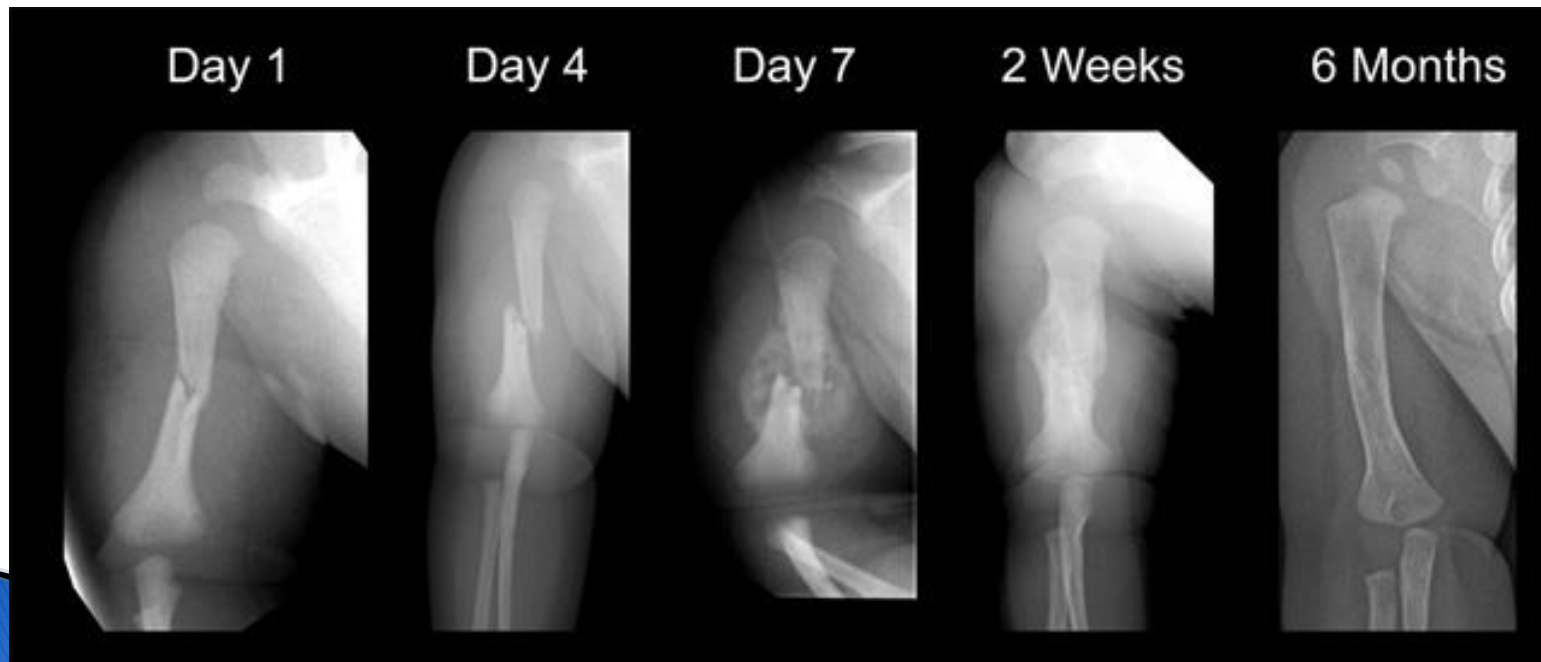
Ring
fractures



Dating of fractures



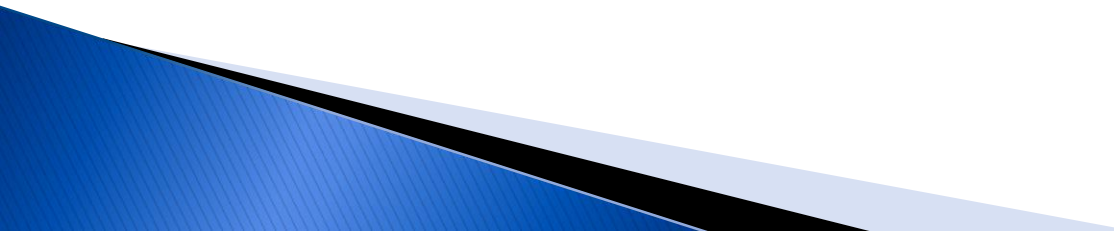
- ▶ Callus formation
- ▶ Remodeling
- ▶ Healed fracture



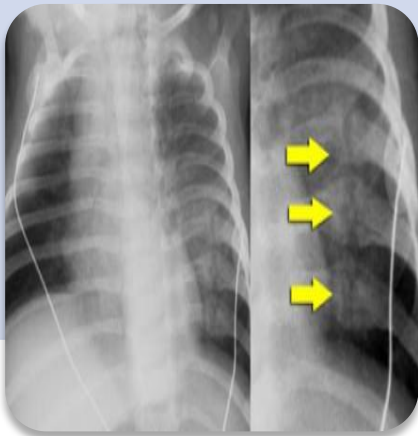
Describe this fracture



Describe this fracture

- ▶ Site –Right femur, upper 1/3
 - ▶ Obliquely placed
 - ▶ Compound
 - ▶ Comminuted
 - ▶ Displaced
 - ▶ Recent fracture
- 

Circumstances of causation of fractures



Child
abuse



Accident

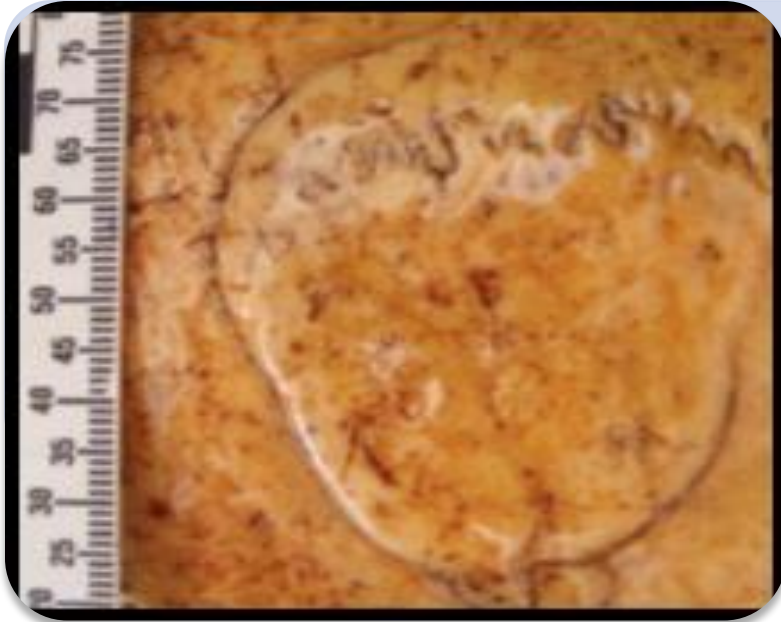


Fall



Assault

Causative weapon of a fracture



Cut injury- heavy,
sharp cutting
weapon

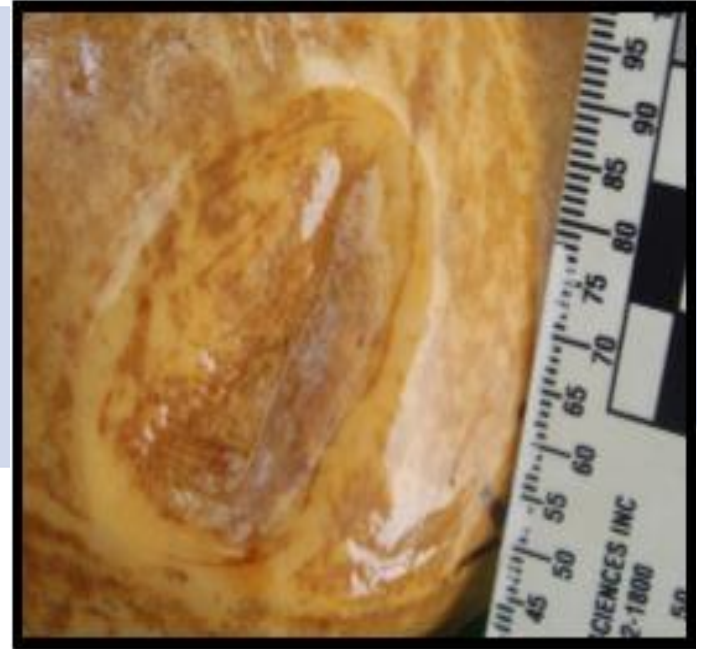


Cut injury-
Triangular striking
surface

Causative weapon of a fracture



Depressed
fracture-
Blunt, heavy
circular striking
surface



Depressed
fracture
Blunt, heavy
elongated
weapon

Causative weapon of a fracture

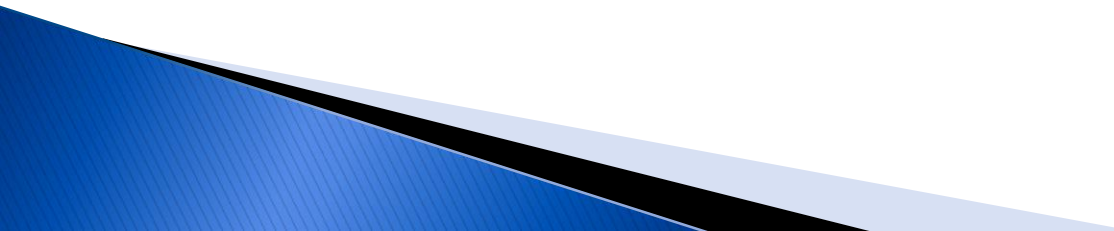


Circular bony
deficiency-
Firearm entry



Outer beveling
–Firearm
exit

Medico legal significance of fractures

- ▶ Identification of causative agent/weapon
 - ▶ Interpretation of possible internal and external injuries (skull fractures)
 - ▶ Category of hurt
 - ▶ Amount of force used to cause this injury
 - ▶ Event reconstruction
 - ▶ Dating of injury
- 

Sharp force trauma



Incised wounds
stab injuries

Incised wounds

- ▶ Discontinuity of skin or tissue caused by sharp cutting weapon. Length of the injury is greater than the depth.



Characteristic features



Length of the injury is greater than the depth.



Margins are cleanly cut.

Characteristic features



- ▶ Ends are sharp, tailing effect is seen.
- ▶ Presence of “tailing” indicate path of the withdrawal of weapon

Characteristic features



Depth is more at the commencement of injury



Underline tissues are evenly cut.

Characteristic features



Gape widely



Bleed profusely

Features of weapon determine the appearance of the injury

▶ sword



Heaviness of the blade

▶ kitchen knife



Sharpness of the blade

Features of weapon determine the appearance of the injury

▶ Axe



▶ Sword



Thickness of the blade

Minimal Length of the blade

Features of weapon determine the appearance of the injury

- ▶ Glass pieces



Irregular injuries

Slash cuts

- ▶ Sharp edged weapon moving in an arc causes slash cuts.



Chop wounds

- ▶ Heavy weapons with cutting edge such as axe causes chop wounds
- ▶ There will be underlying bone injury



How do you differentiate cut injury from a laceration ?



Lacerations vs cut injury

Lacerations	Cut injury
Margins irregular	Margins are sharply cut
Tissue bridging present	No tissue bridging
Floor is uneven	Floor is even
Less bleeding	Bleed profusely
Hair bulbs crushed	Hair bulbs are cut

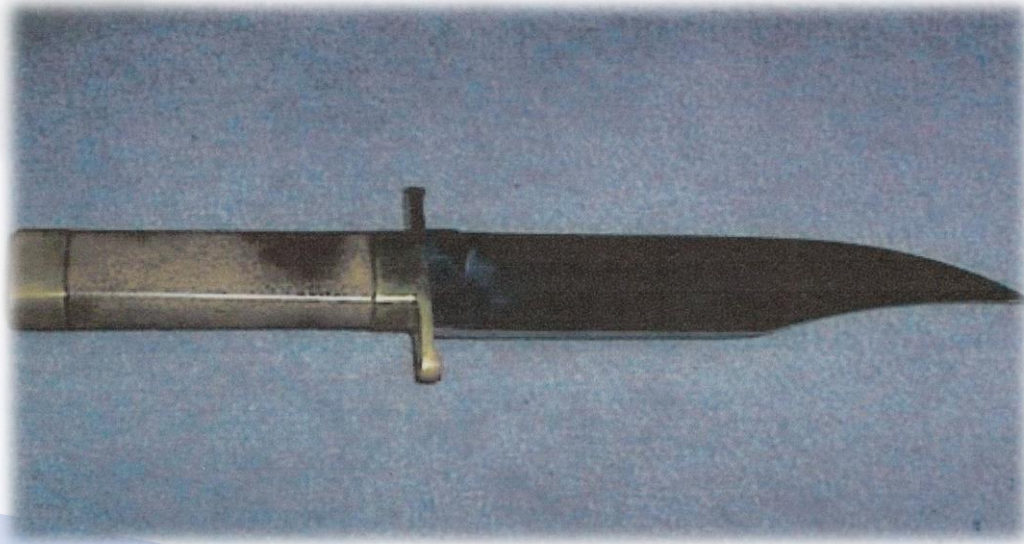
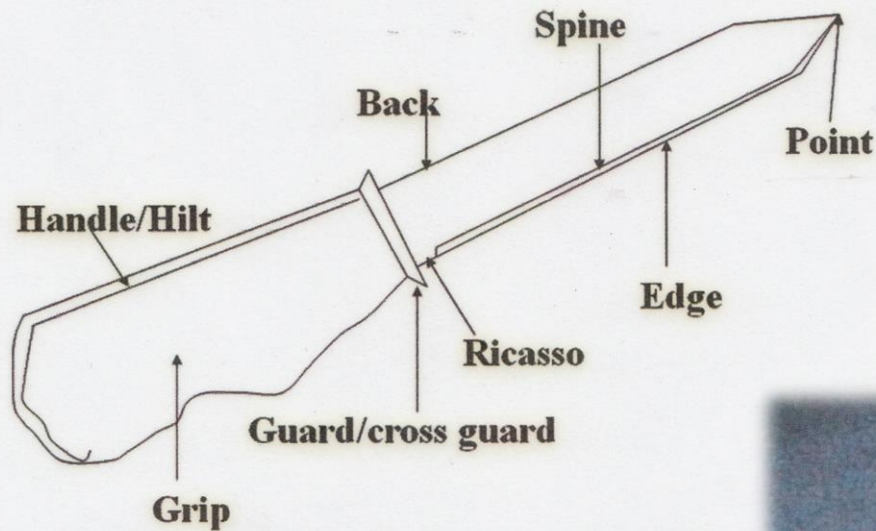
Stab injuries

- ▶ Those are caused by the sharp cutting weapon, depth of the injury is greater than the length.



Features of the weapon

FEATURES OF A KNIFE



Shape of the stab injury

- ▶ Pointed, thin bladed,
- ▶ one cutting edge
- ▶ Both side cutting



Linear stab injuries
Acute end and blunt end



Elliptical

Shape of the stab injury

- ▶ One edge thick and blunt
- ▶ Other edge thin and sharp
- ▶ Serrated knife



Fish tail



Irregular shape

Shape of the stab injury

- ▶ overhang of upper edge,
bevel of lower edge



Undermine and shelving

Gaping of injury due to
Langer's lines

Features of the weapon

- ▶ Width of the blade = external length of the injury



External length of injury > rocking, angular stabs

- ▶ Length of the blade = Depth of the wound



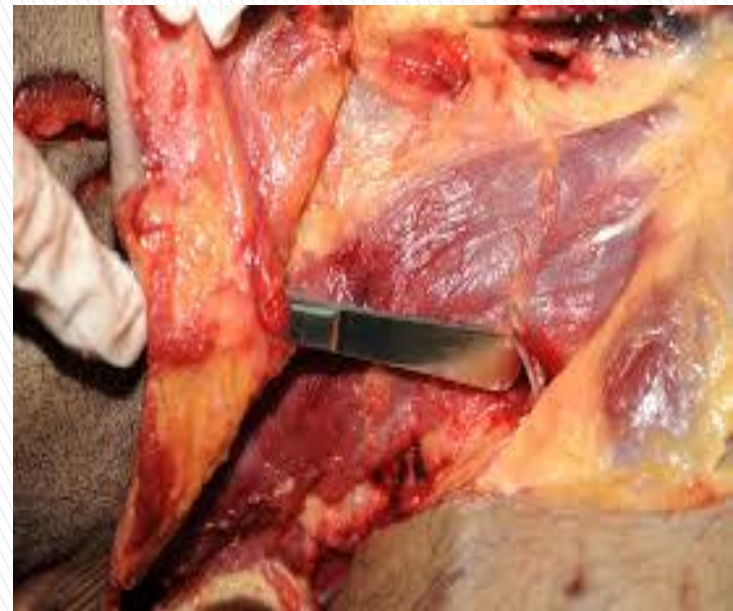
Differ in abdomen and chest

Features of the weapon

- ▶ Shape of the blade



Tapering or not



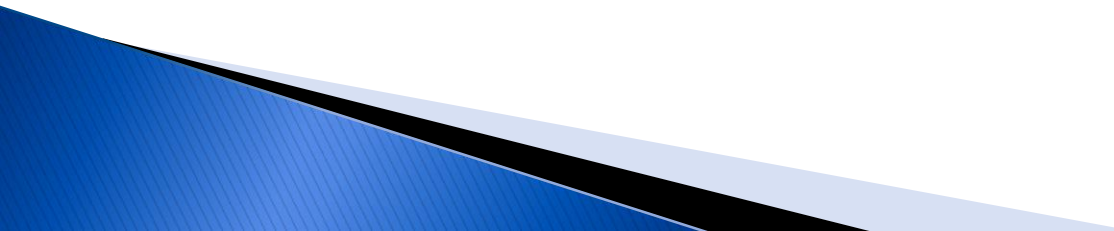
Features of the weapon

- ▶ Presence of hilt mark indicate deeper penetration of knife



Hilt mark

Medico legal significances of stab injuries

- ▶ Interpretation of injury
 - ▶ Identification of weapon
 - ▶ Reconstruction of event
 - ▶ Circumstances of injury
 - ▶ Indication of force used
 - ▶ Presence of trace evidence (piece of weapon)
- 

Punctured wounds

- ▶ They are caused by pointed objects
- ▶ Fatal injuries can be caused without leaving external marks.



Shape of the wound is changed with weapon



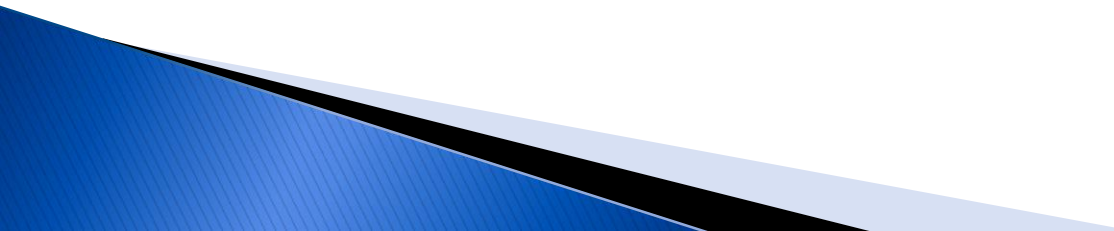
Description of injuries



Description of injuries

- ▶ Purpose of description of injuries
- ▶ To send reports to the courts
- ▶ Describing injuries on the BHT

Nature of the injury

- ▶ Abrasion
 - ▶ Contusion
 - ▶ Laceration
 - ▶ Cut injury
 - ▶ Stab injury
 - ▶ Fracture
- 

Specific nature of injuries

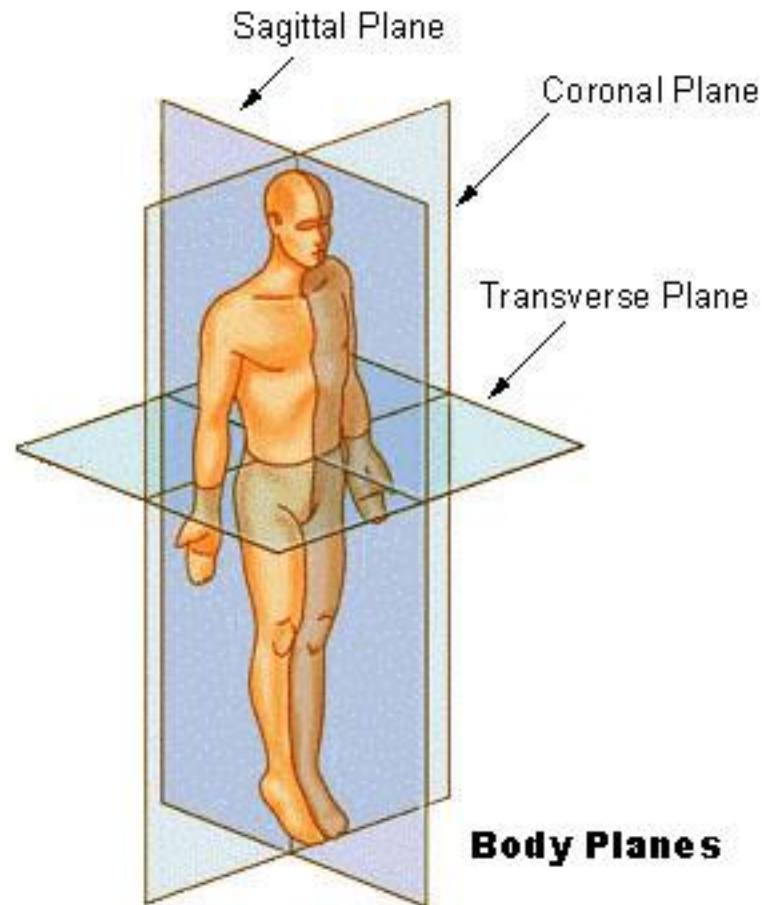


Abrasion

Scratch
Imprint
Grazed

Description of injuries

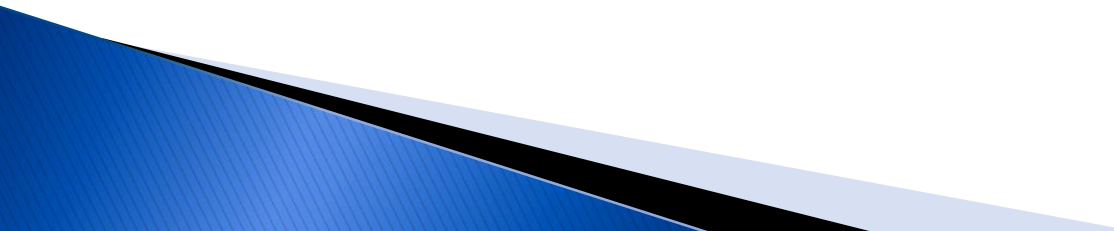
- ▶ Site
 - General site
 - Anatomical site
- ▶ Size of injury
 - Length and width
- ▶ Height from heel



Description of injuries

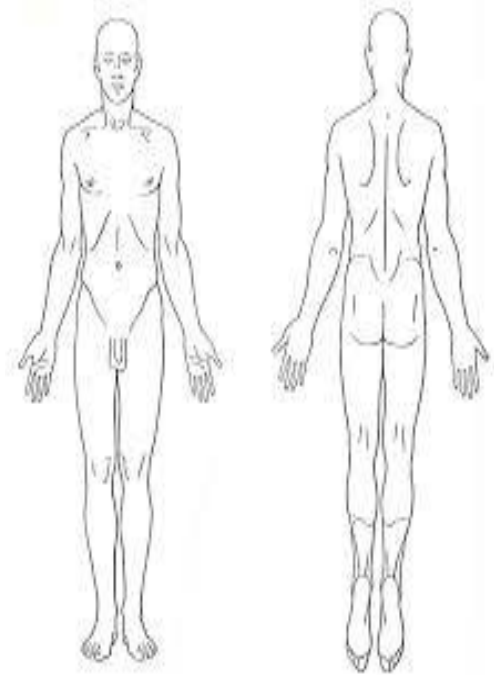
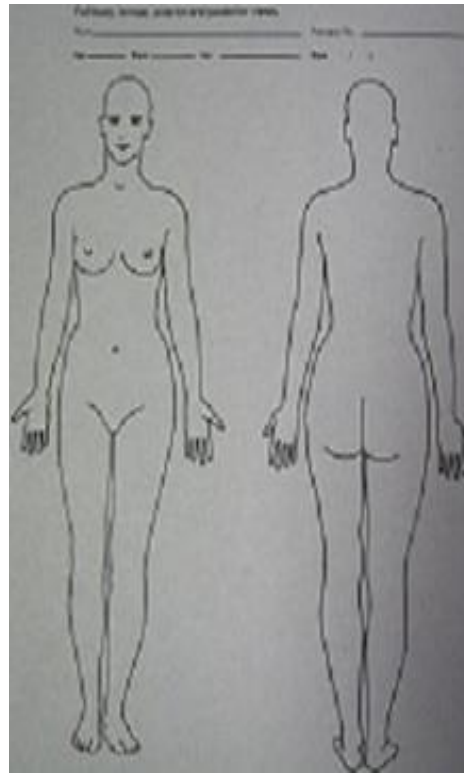
Descriptive features	
Stab injury	Margins, edges
Abrasion	Scab formation
Laceration	Margins
Contusion	Colour

Description of injuries

- ▶ Shape – linear, circular, irregular
 - ▶ Depth- according to tissue planes
 - ▶ Base of the injury
 - ▶ Disposition/direction
 - ▶ Underline internal injuries
 - ▶ Presence of foreign material
 - ▶ Surgical intervention
 - ▶ Evidence of complications
- 

Description of injuries

- ▶ Draw in a diagram



Summery

- ▶ Fractures
- ▶ Incised wound
- ▶ Stab injury
- ▶ Description of injuries

Thank you