



# Objectives:

- By the end of this session the learners will be able to:
  - Define injury on medicolegal basis, wound and hurt
  - Classify injury
  - Define and classify mechanical injury
  - Describe mechanism of injury
  - Interpret the nature of injury
  - Identify the factors affecting appearance of wound

# TRAUMATOLOGY

- Wound
- Hurt
- **Injury**
  - Classification
- **Mechanical injury**
  - Classification
  - Medicolegal nature of injury
  - Ability to distinguish between various types of injuries

# TRAUMATOLOGY

- **Mechanism of injury**

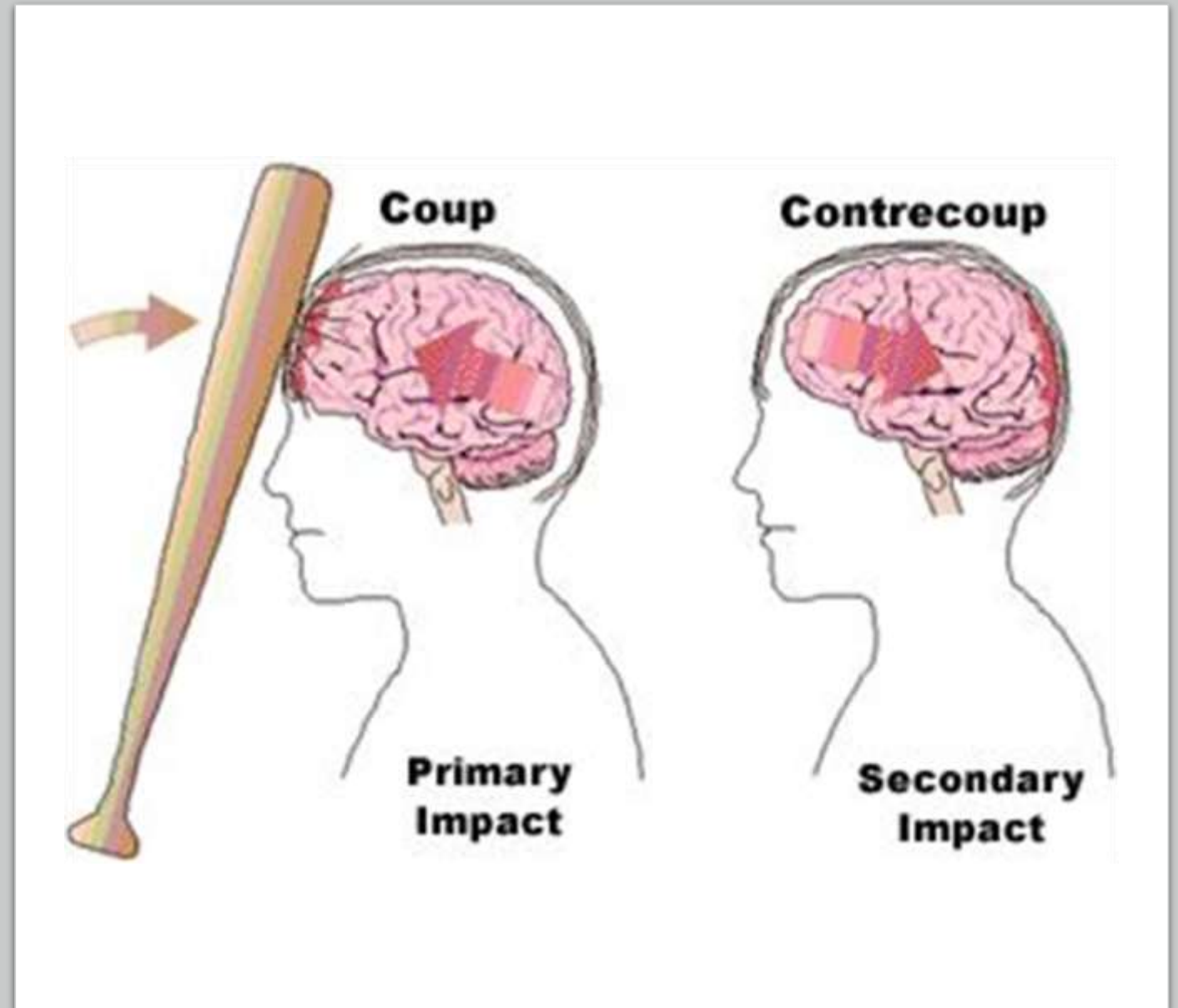
- Force
- Area
- Time taken, kinetic energy  $\propto$
- $\frac{1}{2} mv^2$
- Blast effect
- Blow to chest
- Torsion force
- Firearm injury

# TRAUMATOLOGY

- Factors affecting appearance of wound:

## A. Weapon

- Type
- Weight & velocity
- Execution of mechanical force

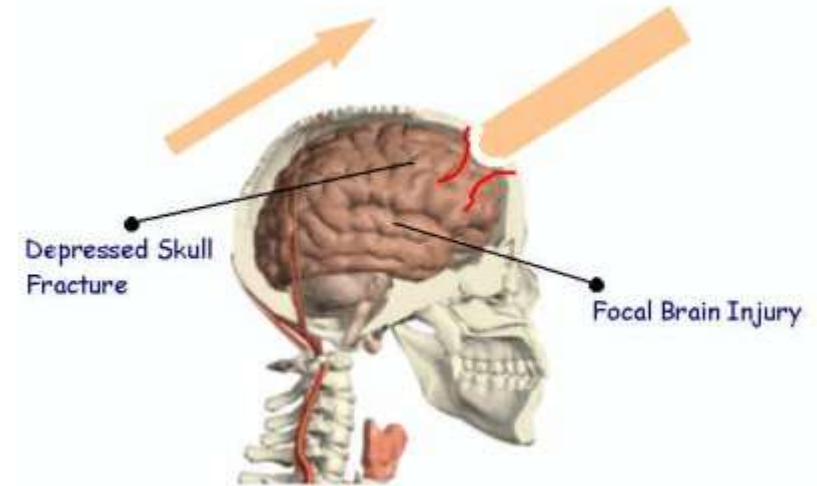


# TRAUMATOLOGY

- Factors affecting appearance of wound:

## B. Part struck

- Architecture of the part
- Soft & elastic
- Rigid and less elastic
- Hard, compact
- Organs structure
- Effect of strike on body parts
- Tissue resistance
- Effect of movement
- Coup-injury
- Counter-coup injury

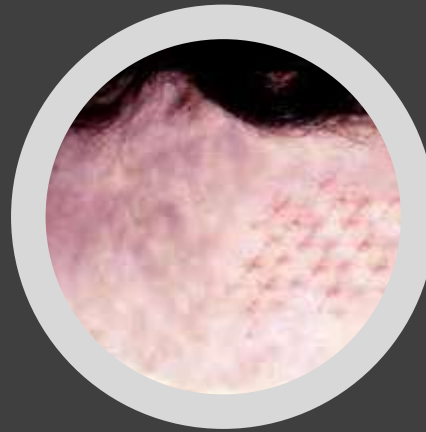




# Mechanical Injuries

- **Abrasion**

- Superficial injury
- Cause
- Characteristics
- **Classification**
  - Scratch/moving abrasion
  - Graze / brush burns
  - Imprint, patterned or contact abrasion
    - eg. beating, biting, RTA, FA injuries
  - Friction abrasion



# Bruise (Contusions)

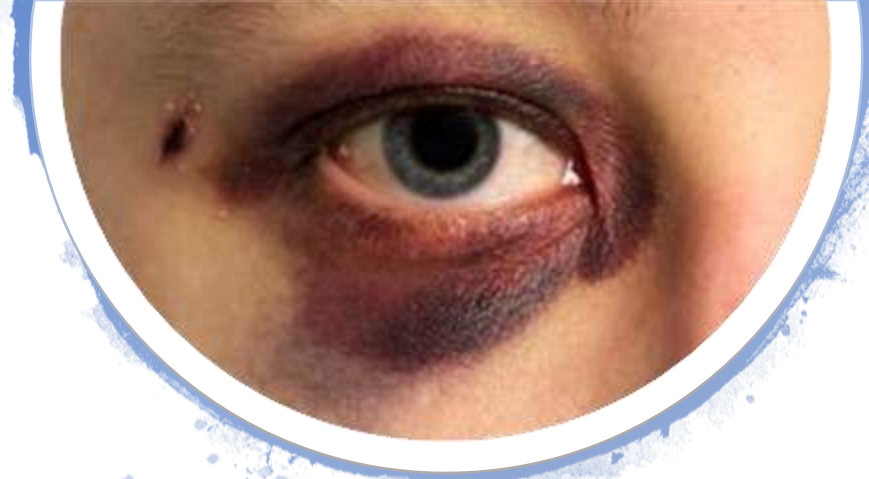
- Closed wound
- What it indicates
- Cause
- **Classification**
  - Intradermal bruise
  - Subcutaneous bruise
    - Edges, appearance
    - Petechiae, Hematoma
  - **Deep bruise**
    - Delayed appearance
    - Contusion

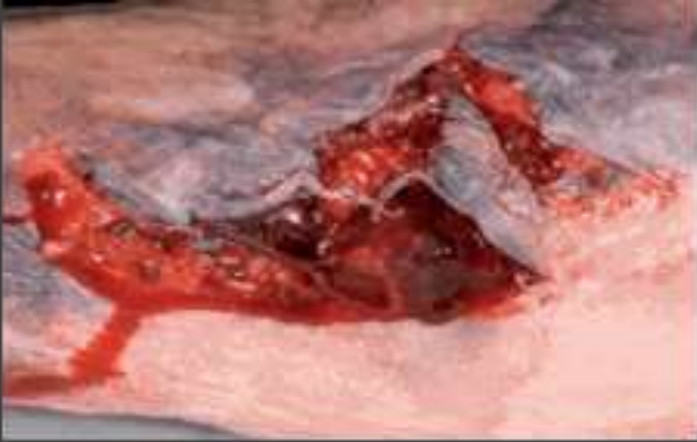




# Bruise (Contusions)

- **Migratory bruise**
  - Black eye
  - Battle's sign
  - In lower limbs
- **Factors modifying the appearance of bruise**
  - Site of impact
  - Vascularity of part
  - Age
  - Sex
  - Colour of the skin
  - Natural disease





# Lacerations

- An open wound
- Cause
- **Types**
  - **Split laceration**
    - Site, resemblance, features.
  - **Stretch laceration**
    - Site, cause, features, flapping.
  - **Avulsion**
    - Site, cause, features, complications.
  - **Tears**
  - **Internal laceration**



# Lacerations

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- **Characteristics**

- Edges
- Margins
- Deeper tissues
- Hair follicles
- Blood vessels
- Evidence



# Incised Wounds

- Cause & characteristics
- Hesitation cuts
- Chop wounds
  - Cause
  - Features
  - On exposed parts of body
  - Medicolegal significance
  - On bodies recovered from waters



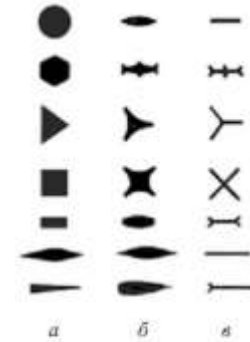
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# Stab Wounds

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- Definition
- Penetrating wound
- Perforating wound
- How to describe a stab wound
  - **Wound of entry**
    - Shape, size
    - Scrimmage enlargement
    - Character of weapon
    - Margins
    - Evidence
    - Concealed puncture wounds



Зависимость формы раны от формы поперечного сечения клинчатого и колюще-режущего оружия травмы (по [Н.В.Тополу](#) 1938):  
а — поперечное сечение;  
форма раны: б — до сведения краев; в — после сведения





# Stab Wounds

- How to describe a stab wound
  - **Depth and direction**
    - Gaping
  - Wound of exit
- **Stab wound description**
  - Character
  - Shape
  - Location
  - Dimensions
  - Orientation
  - Margins
  - Track
  - Direction
  - Exit wound



# Defence Wounds

- Definition
- Nature
- Parts of body involved
- **Medicolegal aspects**
  - Manner
  - Awareness



# Thermal Injuries

- **Classification**

- Dupuytren's classification

- Heba classification

- **Epidermal burns**

- Erythema, Blister

- Hair singeing, Repair

- Viability

- **Dermo-epidermal burns**

- Coagulation necrosis

- Appearance

- Disfigurement

- **Deep burns**

- Rule of nine

- Lund and Browder charts

- Curling's ulcers









# Thermal Injuries

- Definition
- Causes
- **Characteristics**
  - Hot substance
  - **Scalds**
    - Limited to the skin
    - Hot oils, severity
    - Appearance, vesication
    - Burn difference, Scars
    - Classification
    - Medicolegal aspects





# Thermal Injuries

- **Characteristics**

- Corrosives
- X-rays
- Sun burns
- Microwaves



# Thermal Injuries

- **Cause of death**
  - Renal failure
  - Glottis and pulmonary oedema
  - Asphyxia
  - Injuries
  - Fat embolism
  - Inflammation





# Thermal Injuries

- **Postmortem appearance**
- External findings
  - Clothes examination
  - Skin
    - Naked eye
    - Microscopically
    - Splits
  - Pugilistic attitude
  - Heat fractures

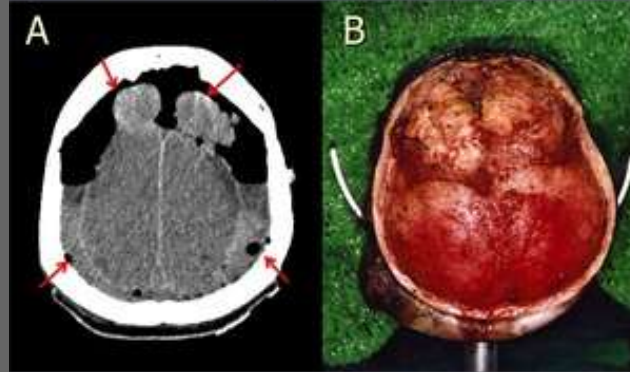


# Thermal Injuries

- Postmortem appearance
- Internal appearance
  - Asphyxial deaths
    - Soot particles in air passages
    - Swallowed soot
    - Froth or inhalation of hot air
    - Lungs
  - Heart
  - Blood
  - Flaked fractures
  - Heat hematoma



Case 3  
67/F: Thermal epidural hematoma?







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# Thermal Injuries



- **Differences between antemortem and postmortem burns**
  - Line of redness
  - Blisters
  - Base
  - Vital reaction
  - Reparative process
  - Infection
  - Enzyme histochemistry
  - CoHb
  - Respiratory passages



# Electric Burns

- Electrical Lesions

- Contact burns

- Blister

- Exit

- Spark burns

- Cause

- Features

- Flash burns

- Arcing

- Crocodile skin effect

- Common feature

- Internal heat source



# Electric Burns

- Electroconvulsive therapy
  - Heart
- 
- Respiratory centre
  - Hold-on effect
  - Throw-off effect
  - Arcing effect
  - **Joule burn or endogenous burn**
    - Features
    - Current pearls
    - Gangrene
    - Zenker's degeneration
    - Renel failure





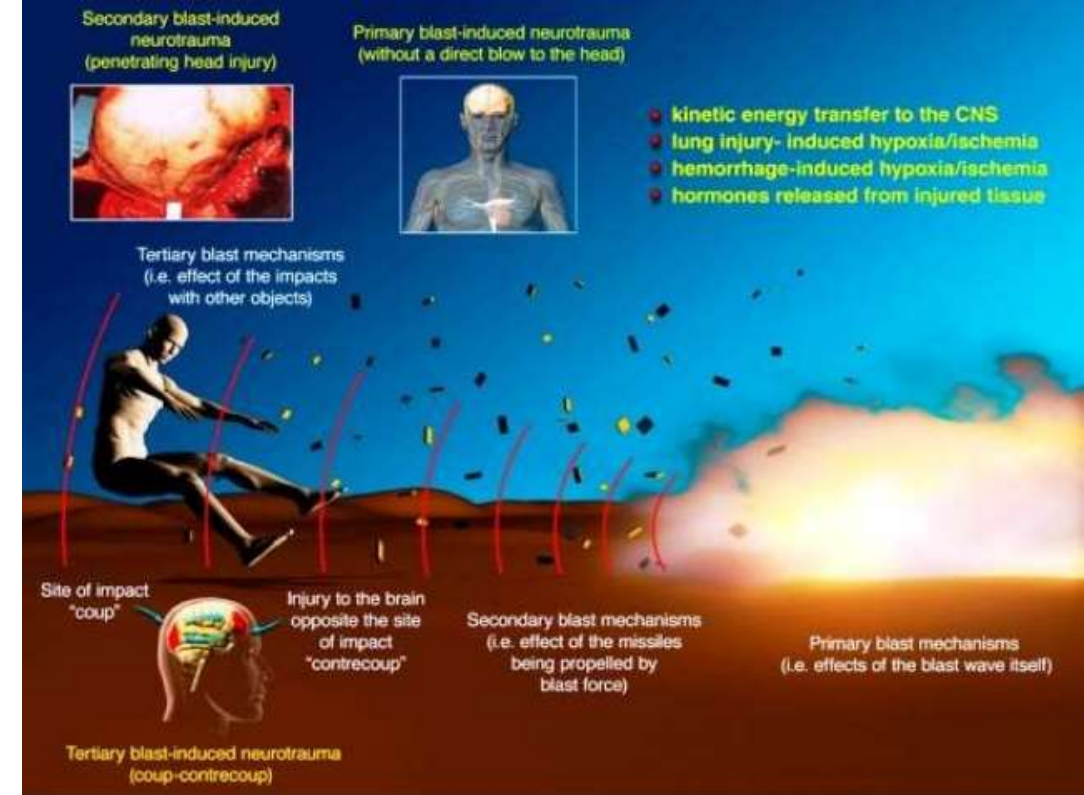
# Lightning

- Natural electrical discharge in atmosphere
- **Effects/symptoms & signs**
  - Heat burns, Physical damage
  - Arborescent marks, Cardiac failure
  - Fusing of metallic articles, Skin oedema
- **Cause of death**
- **Medicolegal aspects**



# Explosions

- Explosives
- Injuries due to explosions
  - Blast wave
    - Immediate vicinity
    - Greater distance
    - Blast lesions
  - Flame
  - Flying missiles
    - Primary & secondary
    - Dirt tattooing
  - Anoxia







# Summary