



Round : Forensic medicine.....

Group no : A4.....

Done By : Batool ALzubaidi.....

Wounds and Regional injuries



مصدر للمحاضرة:

https://youtu.be/N4TT5WqFVbw?si=gVJlbWJSCLU2F_A4

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Definition

من اهم الاشياء الي لازم نميزها بالجروح هل هو جرح بسيط ولا جديد ولا قاتل هل فترة علاجه طويلة او قصيرة هل سبب اعاقة مستديمة زي فقد عضو او انه العضو شغال بس بطل قادر يقوم بوظيفته او انه قاتل بمنطقة الرقبة او عند القلب

- Medical Definition : A wound or injury can best be defined as **damage to any part of the body due the application of mechanical force** → Resulting in disruption of normal structure of tissues
- Legal Definition :
 - ✓ Wound : is **breach of natural continuity of the skin or mucous membranes.**
(requires the integrity of the body surface to be breached).
 - ✓ Injury : **causing bodily harm.**

Mechanism of wounding

When the intensity of the applied force exceeds the capability of the tissues to adapt or resist then a wound or injury occurs .

- The severity, extent, and appearance of blunt trauma injuries depend on:

1. The amount of force delivered to the body. —→ The greater the force » the injury is more severe

2. The time over which the force is delivered. —→ Sudden high impact force causes more

3. The region struck. —→ Some body parts are more vulnerable than others damage than a prolonged force

4. The extent of body surface over which the force is delivered.

5. The nature of the weapon. L→ Concentrated force (punch) causes more localized damage than distributed force (falling on a flat surface)

- kinetic energy = $\frac{1}{2} \text{ mass} \times \text{velocity}^2$

- All mechanical trauma depends on the transfer of energy from an external moving object to the tissues.

Forensic Anatomy of the Skin

Epidermis :

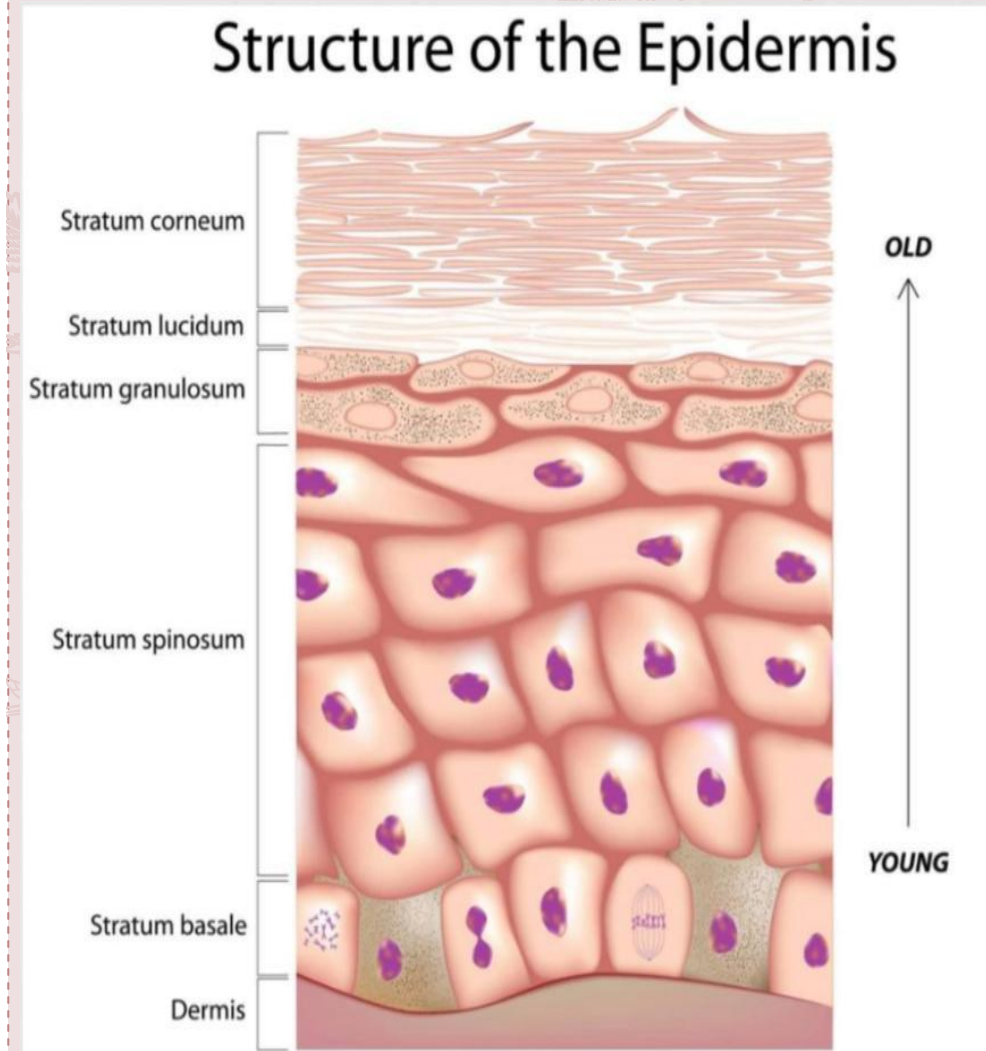
✓ The living layers of the skin combine with the horny layer , it **doesn't contain blood vessels** in its thickness.

✓ The epidermis is generally corrugated, the under

surface by papillae that dip into the dermis.

✓ the thinner skin tending to have a flatter junction

between dermis and epidermis.



Forensic anatomy of skin

Dermis :

✓ mixed connective tissue carrying the skin adnexa, such as hair follicles, sweat glands and sebaceous glands.

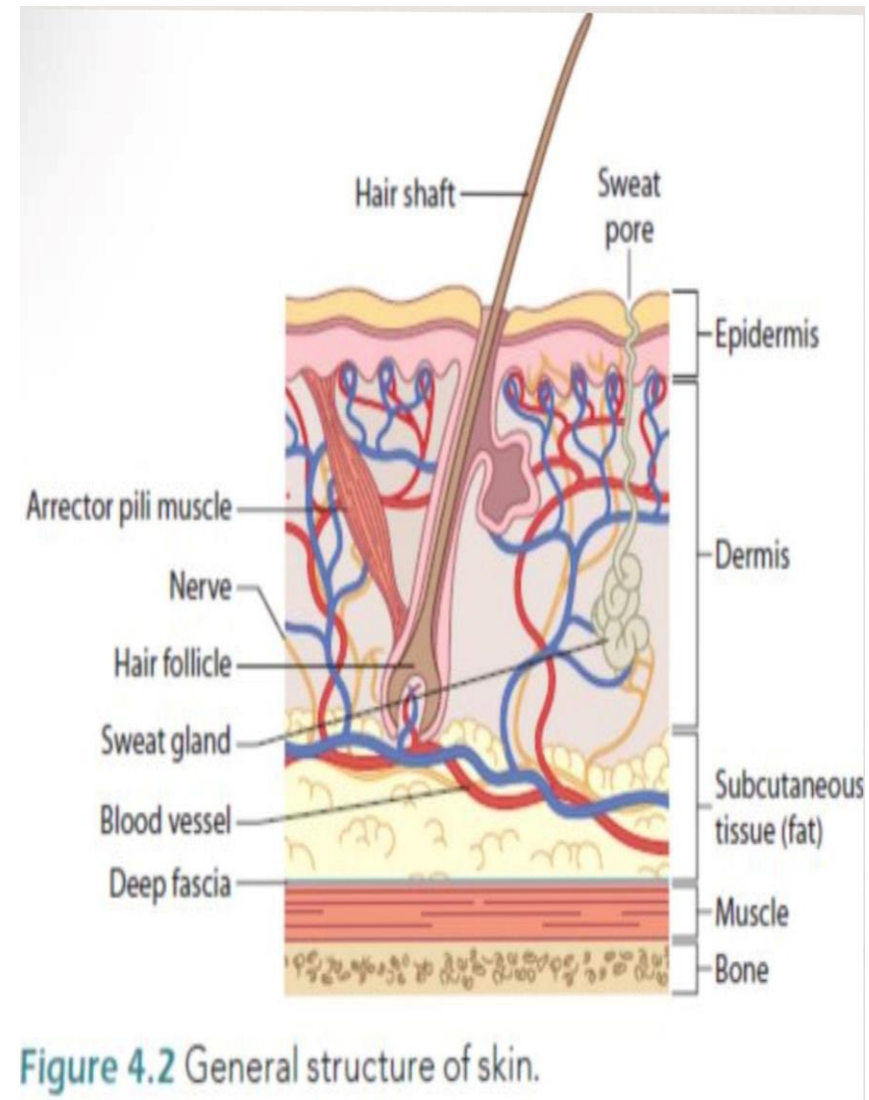
✓ The Dermis has a rich network of blood vessels, nerves and lymphatics.

✓ The lower zone of the dermis has adipose tissue.

● Depending on the site in the body:

1. Deep fascia .
2. Fatty tissue .
3. Muscle.

● Will form strata below the skin itself.



Tissue Repair & Wound Healing

There are three main types of tissue according to proliferative capacity:

(1) Labile tissue:

✓ cells are constantly being lost and must be continually replaced.

(e.g. hematopoietic cells, skin epithelium, intestine ... etc.)

(2) Stable tissue:

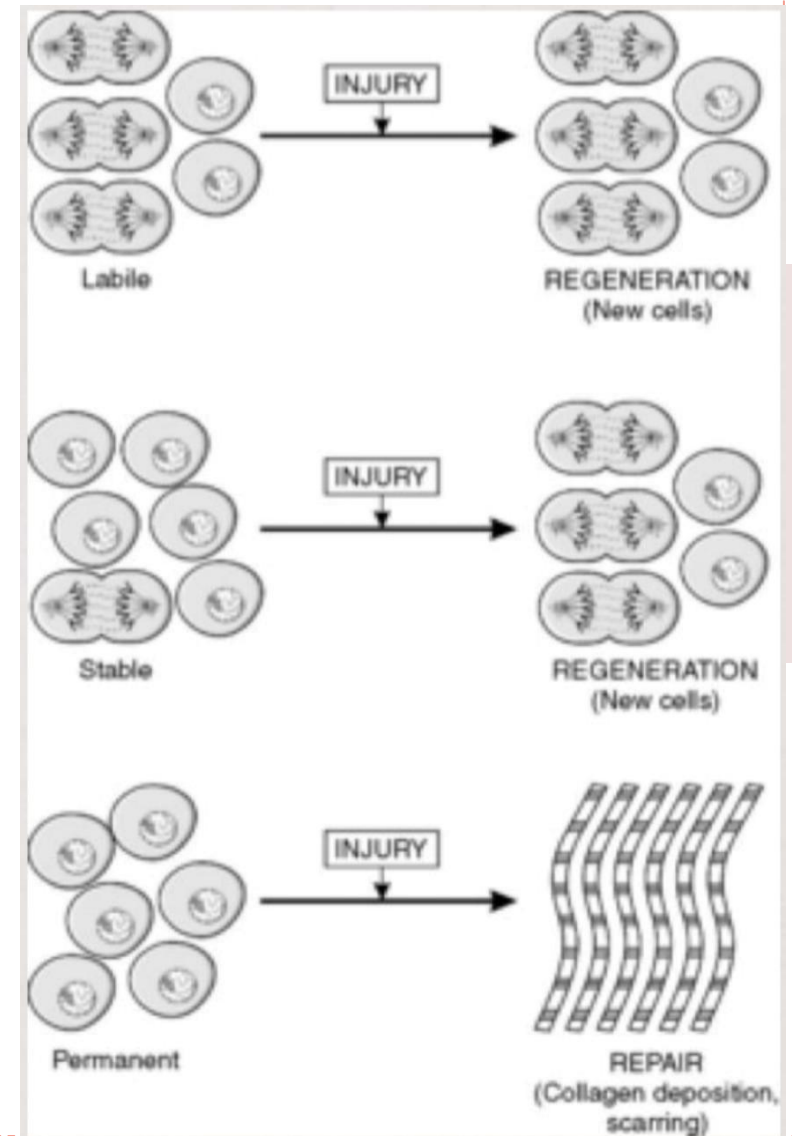
✓ cells are quiescent and capable of dividing in response to injury or loss of tissue mass.

(e.g. liver, kidney, pancreas ... etc) .

(3) Permanent tissue:

✓ terminally differentiated non-proliferative cells.

(e.g. neurons, skeletal muscle cells, myocardium ... etc) .



Tissue Repair & Wound Healing

- Repair of damaged tissues occurs by two types of reactions:

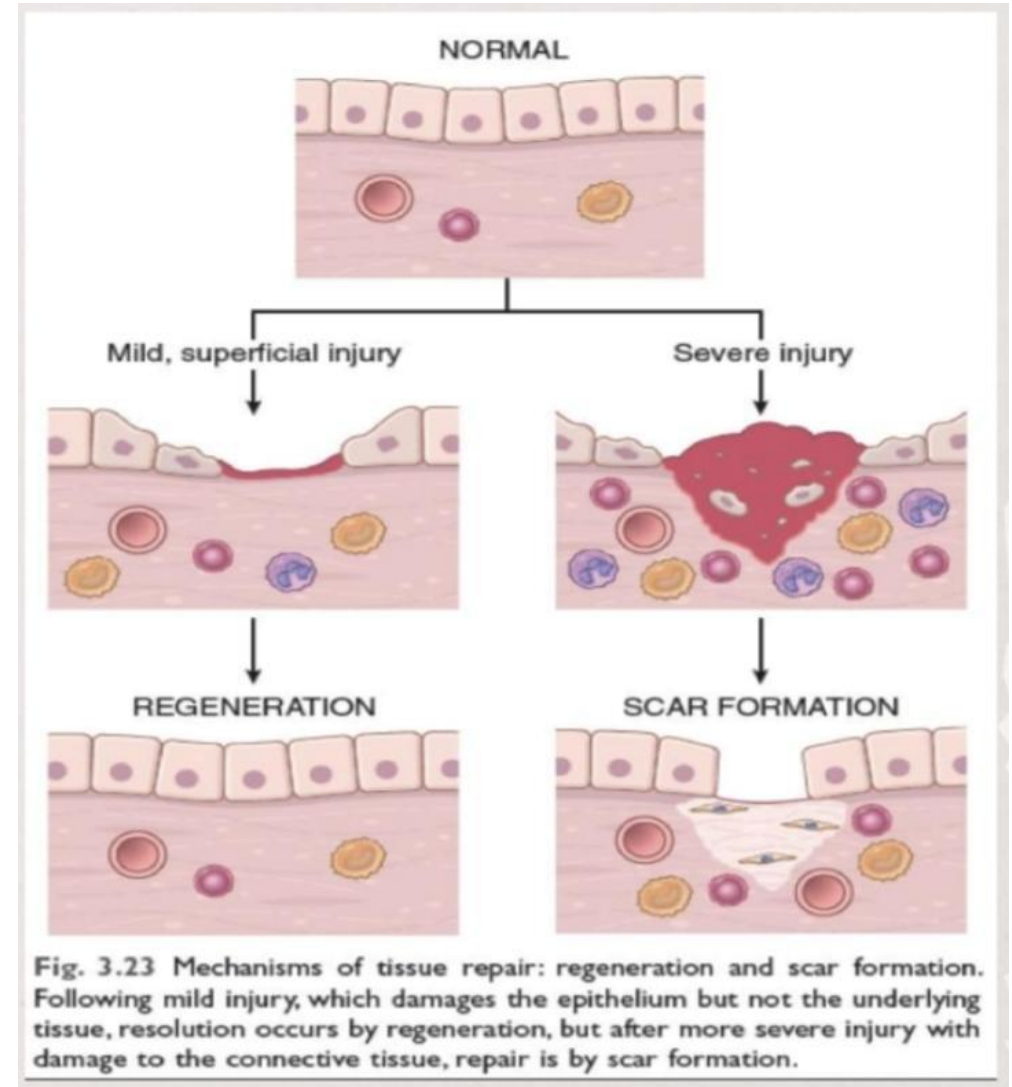
(1) Regeneration : this occurs by;

- A. Proliferation of residual (uninjured) cells.
- B. Maturation of tissue stem cells.

(2) Connective Tissue Deposition (Scar Formation) :

Occurs when :

- A. Regenerative stem cells are lost (e.g., deep skin cut).
- B. Tissue lacks regenerative capacity (permanent tissue)



Tissue Repair & Wound Healing

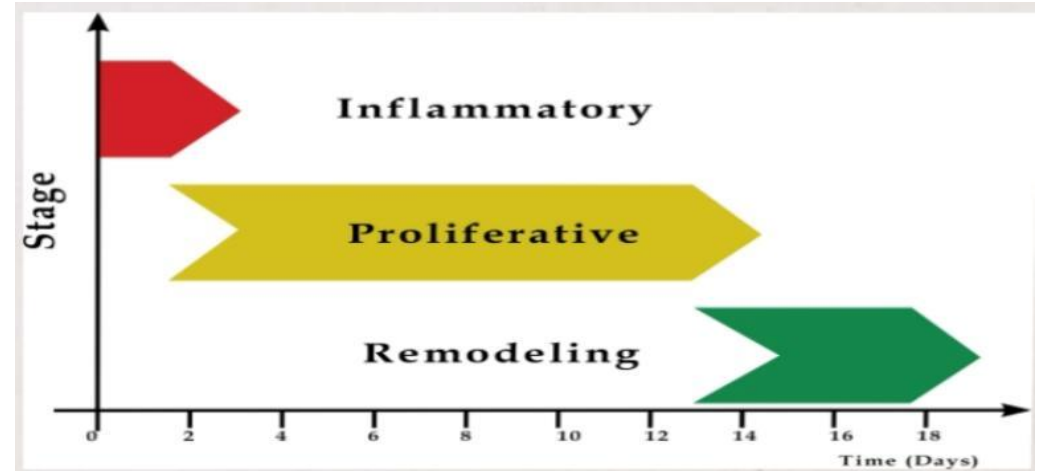
Connective Tissue Deposition (Scar Formation):

(1) Inflammatory phase : hemostatic plug formation and inflammation.

(2) Proliferative phase : granulation tissue formation, which consists of:

- a. Fibroblasts (deposit type III collagen).
- B. Capillaries (provide nutrients).
- C. Myofibroblasts (contract wound).

(3) Remodeling phase: type III collagen is replaced with type I collagen.



Tissue Repair & Wound Healing

Cutaneous healing occurs via primary or secondary intention:

1. Primary intention:

✓ Wound edges are brought together (e.g., suturing of a surgical incision); leads to minimal scar formation.

2. Secondary intention:

✓ Edges are not approximated.

Granulation

tissue fills the defect; myofibroblasts then contract the wound, forming a scar



Classifications of Injuries

- ♦ 1. Causative Factors : (Mechanical (Kinetic) or Non-Mechanical (Non Kinetic)) .
- ♦ 2. Severity of Injury : (Simple or Grievous or Fatal) .
- ♦ 3. Manner of Injury : (Homicidal , Suicidal , Accidental , Defensive or Self inflicted)
- ♦ 4. Time of Infliction : (Ante-mortem or Post-mortem) .

Non-Mechanical/Non-Kinetic Injuries

- ♦ 1. **Thermal** : (Heat or Cold) .
- ♦ 2. **Chemical**: (Irritation or Corrosion)
- ♦ 3. **Radiational** Light Waves or Radioactive Substances) .
- ♦ 4. **Electrical and Lightning**



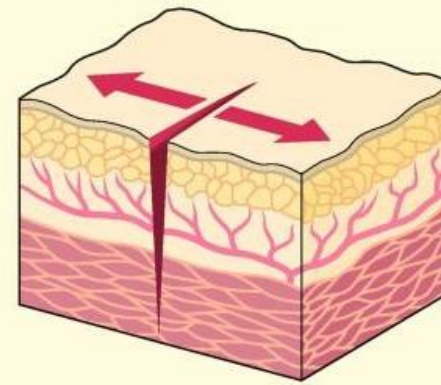
Mechanical/ Kinetic Injuries

- 1. **Sharp-Force** : caused by objects with a **sharp or cutting edge**. E.g. (Incised wounds, Stab wounds, Puncture wounds).
- 2. **Blunt-Force** : caused by **objects or surfaces without a sharp or cutting edge**. E.g. (Abrasions, Contusions, Lacerations, Fractures) . *Rough blunt* → *Smooth blunt* → *Heavy blunt*
- 3. **Firearm** : Rifled or Shotgun

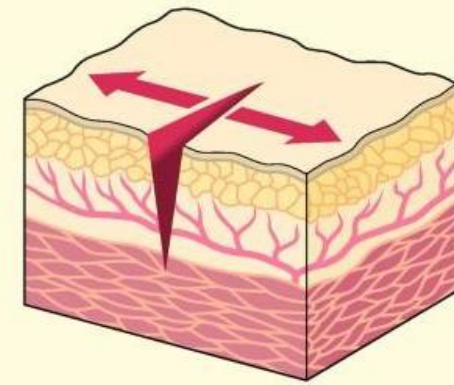


Blunt Force Trauma Injuries

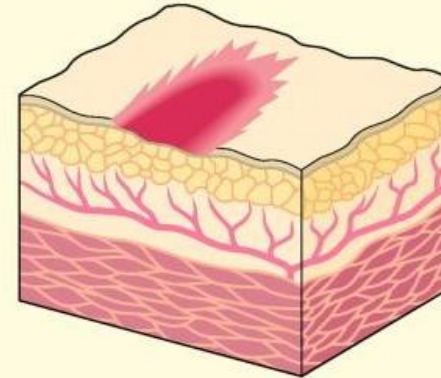
1. Abrasions .
2. Contusions and bruises .
3. Lacerations.



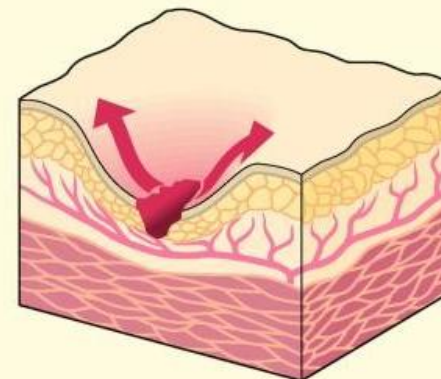
Stab wound



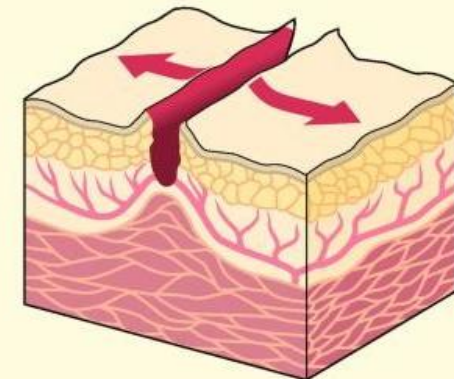
Cut



Abrasion



Contused wound



Laceration

Abrasions

+ Destruction of the superficial layer of the skin due to pressure or friction with a rough blunt object

- It's a superficial injury to the skin.
- Abrasions by definition do not penetrate the full thickness of the epidermis and thus do not bleed, this is known as a (Pure Abrasion).
- But many abrasions reach the papillary dermis thus causing bleeding.
- Abrasions are caused by any contact that rubs across the epidermis and removes the keratinized layer and underlying cells causing that area to become discolored and moistened by exuded tissue fluid.

There are two main categories of abrasions:

↗ Also called sliding

A. Tangential Abrasions:

More common .

Caused by horizontal rubbing action .

Include Linear and Brush abrasions.

B. Pressure Abrasions (Compression):

Less common .

Caused by vertical pressure.

Include Patterned and Non-Patterned abrasions.

Tangential abrasions

1 Linear Abrasions (Scratches) :

- finger Nails
- Tip of sharp objects.
- Frequent in: Sexual assault. Child Abuse. Strangulation.
- They are more commonly caused by Females. They are usually : Multiple , Parallel , Few mm in width , 1-2 cm apart .



2- Brush Abrasions (Grazes):

- Particles of glass, gravel or dirt may be embedded.
- Most common type of abrasions.
- Commonly seen in Road Traffic Accidents.



Pressure abrasions (compression or crushing)

- ✓ The impact is **vertical**.
- ✓ **No scraping** or tangential force.
- ✓ The **epidermis is crushed**.
- ✓ The lesion may be slightly **depressed below the surface**.
- ✓ They mostly produce the pattern of the impacting object resulting in an Imprint or **Patterned Abrasion**.



✦ When the injury mirrors the shape or the texture of the object that caused it
Patterned abrasions (imprint) ↗

- ✓ Results from **impact or contact with a patterned object or surface**.
- ✓ follows the **ridges of the object** if it has a profile of varying height.
- ✓ Examples : Tire Marks , Ligature Mark , BiteMark , Muzzle Mark.



Post-mortem abrasions (imprint)

✓ Inflicted after death from a variety of causes.

✓ Examples:

1 Dragging the corpse.

2 Post-mortem handling and autopsy.

3- Buffeting in moving water.

✓ They can be differentiated from Ante-mortem abrasions by many characteristics.



Antemortem Abrasion

- Red to purple
- Wet, "weeping"
- Inflamed



Postmortem Abrasion

- Yellow to brown
- Dry

Differentiation 11.1: Antemortem and postmortem abrasion

S.No.	Feature	<u>Antemortem abrasion</u>	<u>Postmortem abrasion</u>
1.	Site	Anywhere on the body	Usually, over bony prominences
2.	Color	Bright red	Yellowish, translucent and parchment-like
3.	Exudation	More, scab slightly raised	Less, no scab
4.	Vital reaction	Present	Absent → No redness, edema, cellular reaction
5.	Healing process	May be evident	Not seen

ANTE-MORTEM VS. POST-MORTEM

Healing of Abrasions

- ✓ Heals rapidly.
- ✓ Heals by the formation of a scab.
- ✓ Do not leave a permanent scar.
- ✓ Age of abrasions can be estimated by their healing process.

Table 11.1: Age of abrasion	
Duration	Features
Fresh 2-24 h	Bright red, oozing of serum and some blood. Exudation dries to form a reddish scab, comprising blood, lymph and epithelial cells. Polymorphonuclear cells infiltrate (<i>scab formation</i>).
2-3 days	Reddish-brown scab, less tender. ¹⁰
4-5 days	Scab is dark brown in color.
5-7 days	Scab is brownish black and starts falling off from the margins. Epithelium grows and covers defect under the scab (<i>epithelial regeneration</i>).
7-12 days	Scab dries, shrinks and falls off, leaving depigmented area underneath. It gradually gets pigmented in due course of time (<i>subepidermal granulation</i>).
> 12 days	Epithelium becomes thinner and atrophic. New collagen fibers are prominent. Basement membrane is present and vascularity of the dermis decreases (<i>regression</i>).

Medico-legal Aspects of Abrasions

- Reveal the site of impact.
- Reveal the direction of force.
- They are mostly simple in severity except in rare cases they may be grievous.

E.g. (abrasions infected by tetanus /abrasion over the cornea).

- Patterned abrasions may reveal the causative weapon or object.
- The healing process may help with determining the age of the injury or incident.
- Embedded dirt or sand or grass or glass in graze abrasions may be linked to the crime or death scene.

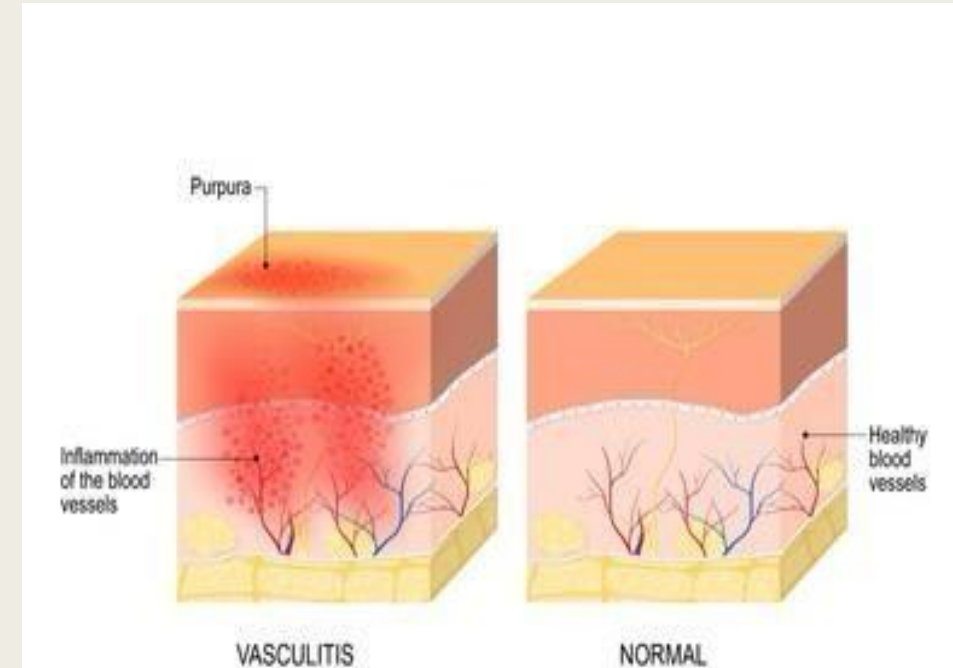
- May reveal the manner of injury :

- ✓ Abrasions on the neck >>throttling
- ✓ Abrasions around the mouth and nose >>smothering.
- ✓ Abrasions on the breasts, genitals on inner thighs >>sexual assault

Contusions and Bruises

- Extravascular collection of blood that lies beneath an intact epidermis.
- Caused by extravasation of blood from damaged small blood vessels (arterioles and venules).
- Bruise : visible through the skin (in the Subcutaneous Tissue) .
- Contusion : anywhere in the body including internal organs (Brain, Lungs, Muscles).

✦ Description: 1. Superficial or deep 2. Color changes 3. May be accompanied by abrasions 4. Force is blunt 5. Ruptured vessels 6. May take the shape of the causative object



✦ بهاي الانواع من الصابات ضلك حاطط ببالك شغلتين اول الوقت يعني ممكن ما تظهر الكدمة بنفس وقت الاصابة و ثانيا الجاذبية يعني ممكن الاصابة تكون بمكان و الكدمة تكون بمكان ثاني زي basal skull fracture تجمع الدم يكون حوالين العيون و بعمل raccoon eyes

Types of Bruises :

(1) Intradermal bruise:

- ✓ Lies in the immediate subepidermal layer.
- ✓ It is made by impact with a patterned object.
- ✓ Hemorrhage is sharply defined.
- ✓ Mostly seen with patterned abrasions

2) Subcutaneous bruise:

- ✓ It is situated in subcutaneous tissue often in the fatty layer.
- ✓ The edges are blurred The Most common type of bruises Caused by a blunt object.
- ✓ Appears soon after injury as dark red swelling.

(3) Deep bruise:

- ✓ Deeper to subcutaneous tissues.
- ✓ It may take hours to 1–2days to appear at the surface (delayed bruising)
 - ✓ Infrared photography may demonstrate such bruises, if suspected initially.

Patterned injuries

- Most patterned injuries are a mixture of patterned abrasions and intradermal bruises.
- They both result from blunt-force trauma.
- The mechanism is similar for both of them and depends on the varying height (ridges and grooves) of the surface of the causative object.



Figure 4.11 Abrasions and intradermal bruising on the forehead of a swimming bath attendant. He was found drowned when there were no witnesses, but the spacing of the marks exactly matched the ridged tiles at the edge of the bath, so it was presumed that he had slipped and struck his head before falling unconscious into the water.

● ***Factors that affect the size and prominence of Bruises.***

Increase

1. Soft Lax Tissue (eyelid and scrotum)
2. Tissue with underlying Bone
3. Superficial Tissue
4. Vascular Tissue
5. Female / Obese < 15 and > 65 years old
6. Decreased Coagulability of Blood
Increased
7. Age of Bruise
8. Fair Skin Color

Decrease

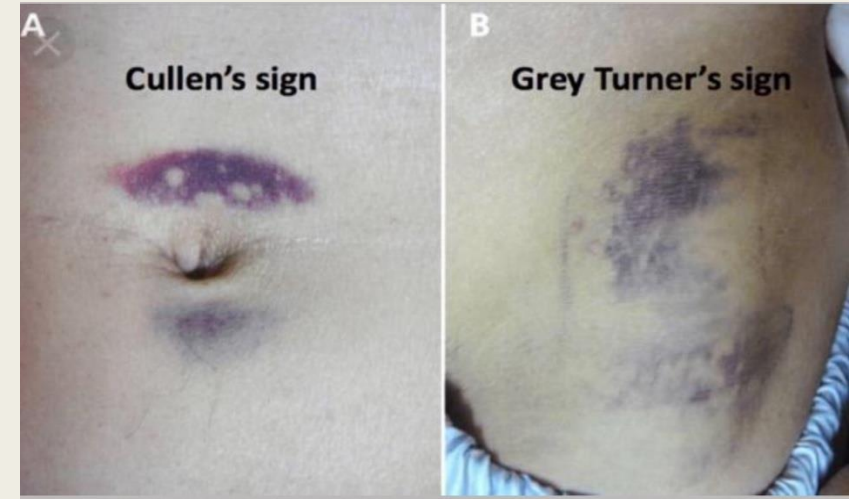
1. Firm Fibrous Tissue (palms and soles)
2. Boneless Tissue
3. Deep Tissue
4. Non-Vascular Tissue
5. Male / Muscular
6. 15- 65 years old
7. Increased Coagulability of Blood
8. Decreased Age of Bruise
9. Dark Skin Color

Movement of Bruises (Shifting)

- A bruise may appear at a different place on the surface from the point of impact.
- There are two main causes:
 1. In deep bruises the extravasated blood moves through fascial plains and anatomical structures and it may be deflected or obstructed.
 2. Bruises may move under gravity as the extravasated blood slides down.

✓ Examples:

- (1) Bruise on the knee after trauma to the thigh .
- (2) Bruise on the elbow after trauma to the upper arm .
- (3) Cullen and Grey Turner signs ➡ Retroperitoneal or intrabdominal hemorrhage
- (4) Black eye.



Healing of Bruises (Aging)

- Color change starts at the periphery and extends inwards to the center.
- If several bruises (of roughly comparable size and site) are present and are of markedly different colors, then they could not have been inflicted at the same time. This is particularly important in suspected child abuse, where intermittent episodes of injury have important diagnostic significance.

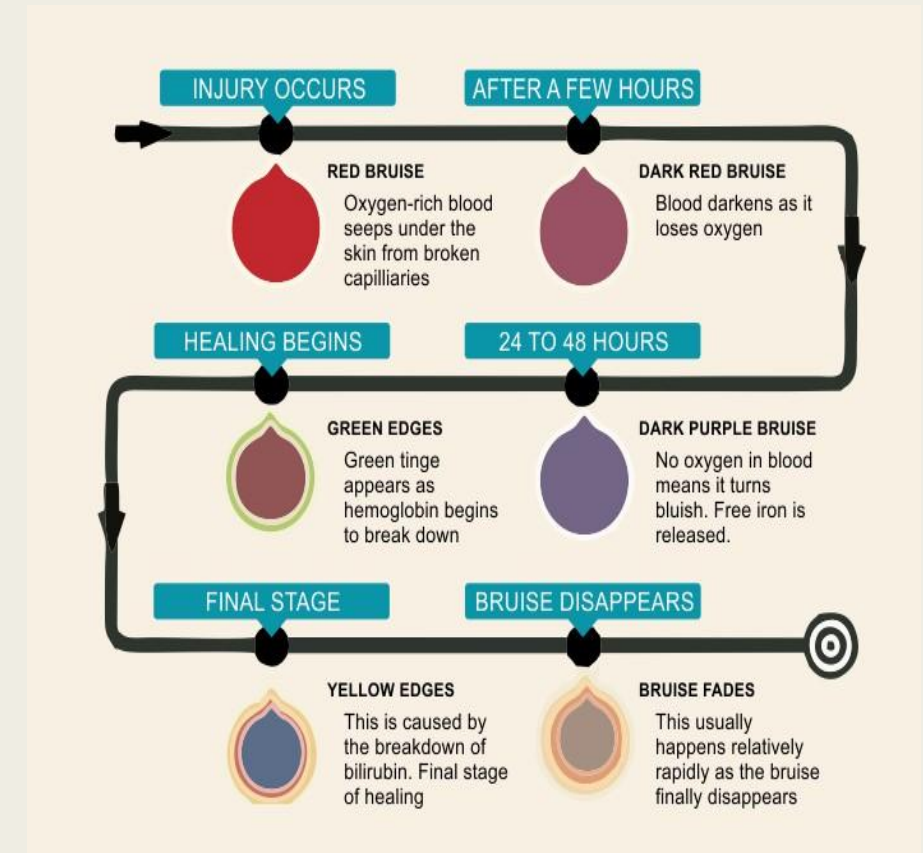
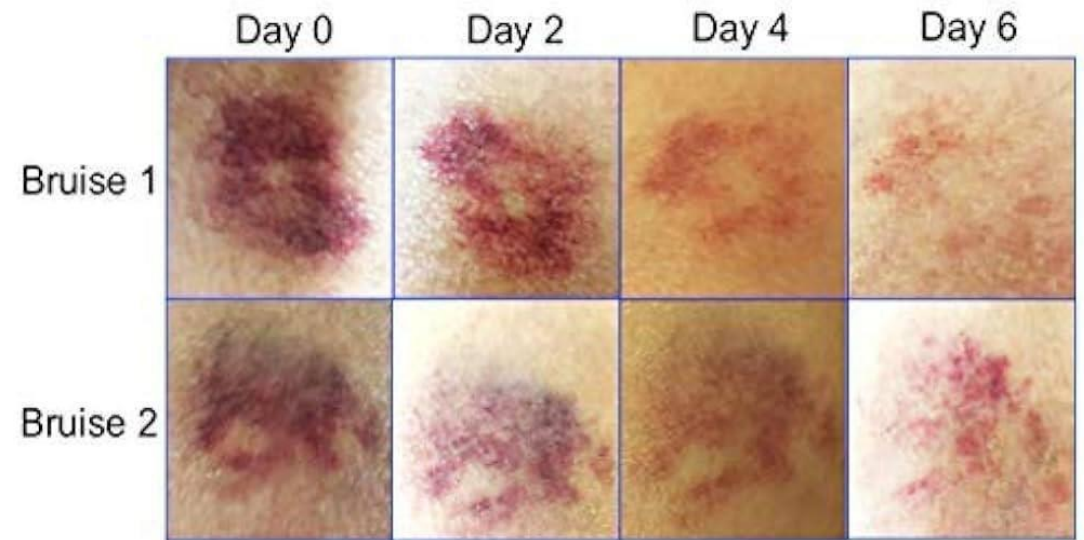


Table 11.2: Age of bruise

<i>Duration</i>	<i>Color</i>
<u>Fresh</u>	Red (oxygenated blood)
<u>Few hours to 3 days</u>	Blue (deoxyhemoglobin) ¹⁵
<u>4–5 days</u>	Bluish black to brown (hemosiderin) ^{16,17}
<u>5–6 days</u>	Green (biliverdin) ¹⁸
<u>7–12 days</u>	Yellow (bilirubin)
<u>2 weeks</u>	Normal



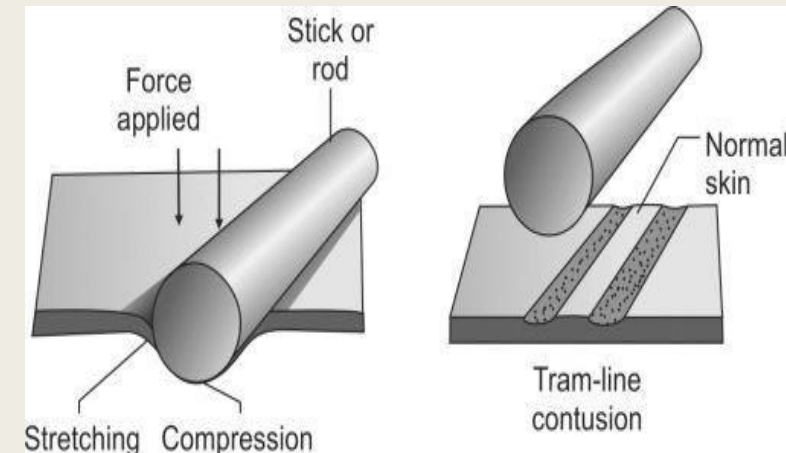
Fingertip Bruises

- Clusters of small discoid bruises of about 1 cm in diameter.
- These groups are often seen in child abuse.
- They are mostly a result of gripping.
- Most commonly seen on:
 1. Upper arms and Forearms.
 2. Wrists and Ankles.
 3. Abdomen.
 4. Neck (in strangulation).



Tram-Line Bruise (Railway Line)

- Caused by a rod or rectangular sectioned object.
- Appears as two parallel lines of bruising with an undamaged zone in the center.
- Mechanism:
 - ✓ The weapon sinks into the skin on impact.
 - ✓ The edges drag the skin downwards and the traction tears the marginal blood vessels.
 - ✓ The center compresses the skin, which, in the absence of underlying bone, causes little or no damage to the vessels.



Black Eye

- Periorbital hematoma.
- It results from:
 1. Direct trauma to the orbit.
 2. Gravitational seepage of extravasated blood from the scalp on or above the eyebrow level (The Forehead).
 3. Draining of blood into the orbit from a fracture of the anterior fossa of the skull (Basilar skull fractures and Raccoon Eyes).



Hypostasis (Livor Mortis) vs. Bruises

Differentiation 11.3: PM staining and bruise²¹

S.No.	Feature	PM staining	Bruise
1.	Cause	Distension of vessels with blood in dermis	Rupture of vessels which may be superficial or deep
2.	Cuticle	Not abraded	May be abraded
3.	Site	Occurs over extensive area of the most dependent parts	Occurs at the site of and surrounding the injury, may appear anywhere on the body
4.	Appearance	No elevation of involved area	Often swollen, because of extravasated blood and edema
5.	Margins	Clearly defined	Merge with the surrounding area
6.	Color	Uniform bluish-purple color	Different colors, depending on the age of bruise
7.	On incision	Blood is seen in blood vessels which can be easily washed away, subcutaneous tissues are pale	Extravasation of blood into the surrounding tissues, cannot be washed by water, subcutaneous tissues are deep reddish-black
8.	Effect of pressure	Absent in areas of the body which are under even slight pressure	Lighter over the area of pressure or support
9.	Superimposed abrasion	Not present	May be present
10.	Microscopically	Blood cells are found within the blood vessels and there is no evidence of inflammation	Blood cells are found outside the blood vessels, evidence of inflammation present

Medico-legal Aspects of Bruises

- They are mostly simple in severity except cases of deep tissue and organ contusions they may be grievous or fatal
- E.g. (Brain contusion / Lung Contusion) .
- **Patterned Bruises** may reveal the **causative weapon or object**
- The **healing process** may help with determining the **age of the injury** or incident.
- May reveal the manner of injury :
 1. Bruising of the **arms restraining**.
 2. Bruising of the **shoulders firm pressure against the ground**.
 3. **Multiple bruises** in various stages of **healing abuse** .

Bruises vs. Abrasions

- Both of Bruises and Abrasions result from blunt force trauma and thus they are usually seen together.
- Bruises are of lesser value than abrasions because:
 - ✓ Their size may not correspond to the size of the weapon.*
 - ✓ They do not indicate the direction in which the force was applied.
 - ✓ They may become visible after few hours or even 1-2 days after injury.
 - ✓ They may appear at a distance away from the actual site of injury.

It may not indicate the point of trauma.

Wounds and injuries

المادة 333

2. ايداء الاشخاص:

كل من [redacted] جرحه او اذائه باي فعل مؤثر من وسائل العنف والاعتداء نجم عنه [redacted] عوقب بالحبس من [redacted]

المادة 334

1. اذا ينجم عن الافعال المبينة في المادة السابقة في ركنين عن العمل او نجم عنها مرض او تلف ركني من الركنين عوقب الفاعل بالنفس المأثمة في ركنين او بفنائه او بغيره من العقوبات او بكلتا هاتين العقوبتين .

2. اذا لم ينجم عن الافعال المبينة في المادة السابقة مرض او تعطيل عن العمل تزيد مدته على عشرة ايام ، فلا يجوز تعقب الدعوى بدون شكوى المتضرر كتابة او شفها وفي هذه الحالة يحق للشاكي ان يتنازل عن شكواه الى ان يكتسب الحكم الدرجة القطعية ، وعندئذ تسقط دعوى الحق العام .

LACERATION + Impaction of the tissue between the blunt instrument and the underlying bone

- It's full thickness tearing of the skin (or other tissue) due to stretching, pinning and crushing of tissues by blunt force trauma (by moving object or fall).
- Typically over bony prominence (scalp, eyebrows, cheek, chin).
- Typically over bony prominence (scalp, eyebrows, cheek, chin).
- Characteristics :
 1. Ragged edges (torn apart).
 2. Associated bruising and abrasions of skin edges and adjacent tissues.
 3. Heals with scarring.
- Medico-legal importance :
 4. Shape and size not usually related to causal agent.
 5. Rarely self-inflicted.
 6. Trace evidenced in wound (dust or dirt).



Incised Wounds

- Definition : Clean division of the full thickness of skin and underlying tissues so that the margins are almost free from any damage, usually caused by a sharp-edged instrument (knives or broken glass). It's longer than deeper due to swipe action.
- Types :
 1. Hesitation cuts: hollow cuts made by people considering a suicide attempt. They are often non-lethal, multiple parallel cuts.
 2. Chop wounds: The presence of an incised wound of the skin, with an underlying comminuted fracture or deep groove in the bone, indicates that one is dealing with a chopping weapon.

Incised Wounds

Characteristics :

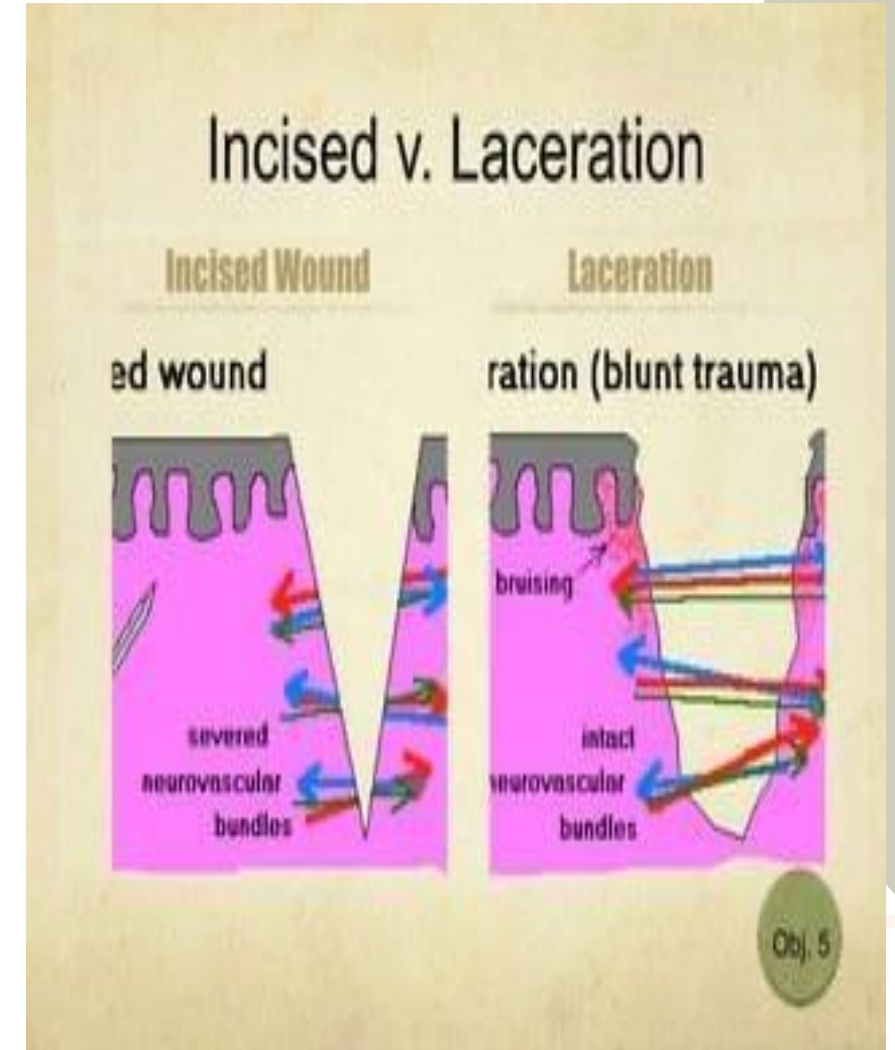
- They are caused by sharp edged weapons.
- Shape of injury is linear shaped.
- Margins are slightly everted, clear-cut, smooth & clean.
- Surrounding skin is clear.
- Blood vessels are cut hence bleeding is profuse.
- Hair, hair bulb, muscles, bones are cut.
- Nerves are cut hence paralysis may result.



Liability to sepsis is minimal (any contamination will be washed by the profuse bleeding).

- Healing is usually by scarring.

	Incised	Lacerated
<i>Instrument</i>	Sharp	Blunt
<i>Shape</i>	Shape is according to cause	Associated bruising and abrasions of skin edges and adjacent tissues.
<i>Associated other types of wounds</i>	Clear	Associated bruising and abrasions of skin edges and adjacent tissues.
<i>Edge</i>	Everted edge	Ragged edge
<i>Self-inflicted</i>	May be self-inflicted	Rarely self-inflicted
<i>Bleeding</i>	Larger amount	Lesser amount
<i>Bridge fibers</i>	Absent	Present



Homicidal incised neck wounds from behind

- Present two different pictures, depending on whether they are produced from the back or the front.
- Most commonly, a person's throat is cut from behind . Often, the victim is face down on the floor or ground at the time the wound is inflicted.
- The knife is drawn across the neck, from left to right by a right-handed assailant and from right to left by a left-handed individual.
- shallow>>> deep centrally>>> shallow.
- The wound generally starts below the ear; runs downward and medially at an angle, then straight across the midline of the neck, and then upward, ending on the opposite side of the neck, lower than its point of initiation.

Homicidal incised neck wounds from front

Homicidal incised wounds of the neck inflicted from the •

front tend to be short and angled. ■

A right-handed individual typically inflicts incised wounds on the left side • of the victim's neck, with the slashes running downward and medially at an oblique angle.

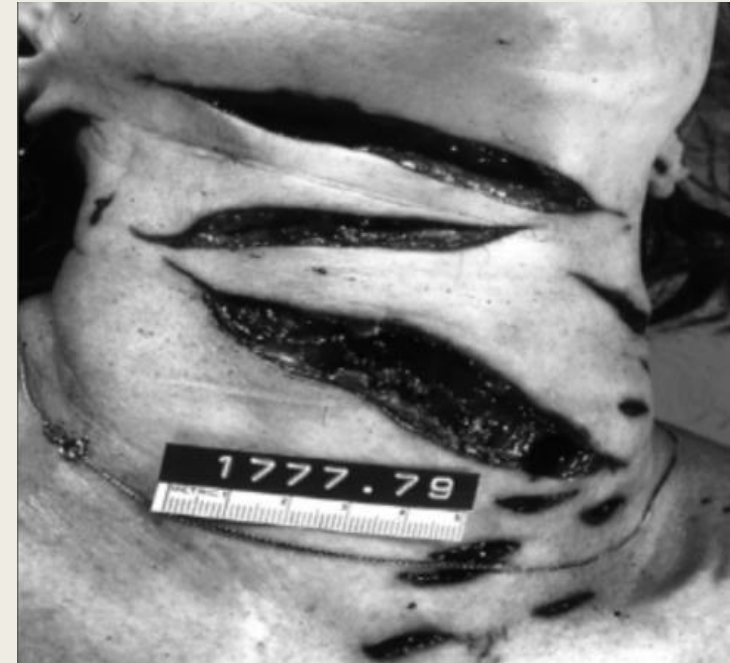
If the wounds are inflicted on the right side, they tend to be •

fewer in number. ■

Horizontally incised wounds inflicted from the front of the •

neck are the least common. ■

Instead of the neck's being cut with one long, continuous motion, • these wounds are inflicted by "swipes" or slashes made while facing the individual.



Selfinflicted

- Suicidal cut Throat:

- ✓ In self-inflicted wounds of the neck, the same general pattern holds as for a homicidal assault from the behind.
- ✓ The wound usually begins higher on the neck on the side opposite to where it terminates.
- ✓ Suicidal incised wounds of the neck are usually, but not always, accompanied by hesitation marks.
- ✓ Incision is usually through level of thyrohyoid ligament and may be down to spine!
- ✓ In rare instances, it may be accompanied by cadaveric spasm with the knife found firmly clenched in the victim's hand — unequivocal proof of suicide.

- Medico-legal aspect :

1. Reflect sharp edge, not weapon type.
2. No trace evidence.
3. Profuse external haemorrhage and air embolism.
4. Danger to life depends on site and depth.
5. Incised wounds are usually homicidal or suicidal & rarely accidental in nature.
6. Post mortem incised wounds may be caused by criminal to hide crime & identity.

Incised Wounds

- IN HOMICIDAL INCISED WOUND, DEFENSE INCISIONS ARE PRESENT ON DORSUM OF HAND, ULNAR ASPECT, FOREARM OR ON PALM.

✓ Typical defense injuries in a victim of a knife attack . In grasping the blade to deflect it, there have been cuts across the palmar surfaces of the finger joints and a slash between the thumb and forefinger, together with cut at the base of the thumb.



- ✓ Defense wound on the back of the hand trying to ward off the knife. 9

Stab wound



Done by: Rama Aljolani

- A stab wound is an injury caused by a sharp object, being pushed into the skin, can cause serious damage to internal organs or blood vessels.
- The causative force passes in vertical direction within the tissue.
- A stab wound is often deeper inside the body than the length of the cut on the surface. The deeper the wound, the more likely it is to damage important organs or blood vessels, which can make it fatal. Stab wounds are of great interest in forensic science, as they provide important clues in criminal investigations.
- Stabbing is the commonest method of homicide in Britain and accounts for over 50 per cent of all murders, many of which are domestic in type.
- A stab wound might look small or simple on the outside (a short cut), but it can cause serious internal damage and bleeding.

Penetrating: The wound goes into the organ but doesn't go all the way through.

Perforating: or Transfixing: The wound goes all the way through the organ.

- The shape of the wound can tell us:

1. Shape of the knife blade

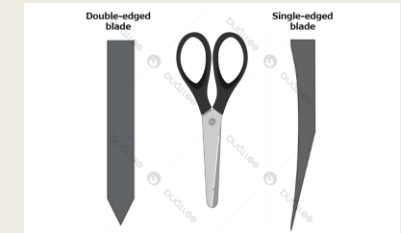
- Double-edged blade: The wound is a slit with two sharp ends.
- Single-edged blade: The wound has one sharp angle and one rounded angle.
- Closed scissors: The wound has a rhomboid (diamond) shape with rounded edges.

2. Direction of insertion

- The direction the wound goes through the body is checked after death when the body is lying flat. The position of internal organs changes when a person is standing, sitting, or breathing.

3. Movement of the instrument while pulling out:

- If the angle changes slightly, it can create a notch in the wound.
- If the instrument twists while being pulled out, it can create a crescent-shaped wound.



Stab and Puncture Wounds

- **Degree of Force:**
- The depth of the wound is not a reliable indicator of the force applied.
- Damage to bones can help indicate the depth of the wound and suggests significant force was used.
- Clothes and skin provide the most resistance when the wound is made.
- Once the skin is pierced, the blade easily moves through the underlying muscles, internal organs, and uncalcified cartilage without needing extra force.
- **A detailed description of the wound can provide important information about:**
 1. The type of weapon used, usually a knife.
 2. The size of the weapon.
 3. The shape of the blade (taper).
 4. The movement of the knife while in the wound.
 5. The direction of the stab.
 6. The depth of the stab.
 7. The amount of force used in the attack.
 8. The likely effect the wound would have had on the victim.

● Descriptors of Penetrating Wounds:

- a. **Damage to clothing** (slashes, stabs through folds, blood flow & drip patterns, trace evidence).
- b. **Site** in relation to anatomical landmarks.
- c. **Shape.**
- d. **Alignment** (horizontal, vertical, oblique).
- e. **Size:** length & width with edges opposed.
- f. **Direction:** in 3 planes.
- g. **Depth.**
- h. **Damage to tissues along the track.**
- i. **Effects:** external & internal haemorrhage, pneumothorax, air.



Medico-Legal Aspects

- Stab wounds are usually homicidal, sometimes suicidal, and rarely accidental.

Classification from a medico-legal perspective:

1. Suicidal Injuries:

- Suicide typically occurs in a calm, quiet, and lonely place.
- The surroundings are undisturbed.
- No signs of struggle and no defense wounds are present.
- Hesitation wounds may sometimes be observed.
- The weapon is usually found on or near the body.
- The injury is typically single.
- Common types of injuries include incised wounds and firearm wounds.
- The site and direction of the injury are usually consistent with the individual's handedness and self-infliction.
- There may be evidence of other methods attempted for suicide.

2. Homicidal Injuries

- May occur at any place.
- The surroundings are usually disturbed.
- Signs of struggle are often present on the clothes and body.
- Defense wounds may be present.
- In female victims, there may be evidence of sexual assault.
- The weapon is usually missing.
- Injuries are often multiple and can occur on any body part.
- Common types of injuries include lacerated wounds, stab wounds, and firearm injuries.

3. Accidental Injuries

- Injuries from the impact of a vehicle depend on the part of the vehicle that strikes the victim (primary impact injuries).
- The victim may be thrown forward, on top of the vehicle, or even impact the vehicle again, leading to secondary impact injuries.
- As a result of the vehicle's impact, the victim may fall, and the injuries sustained will depend on the surface they fall onto (secondary injuries).
- Common types of injuries include lacerated wounds, stab wounds, and firearm injuries.

4. Self-Inflicted Injuries

- Cuts are typically superficial, multiple, and parallel.
- In right-handed individuals, most injuries are on the left side.

Features:

1. Common sites: throat, wrists, and the front of the chest.
2. Injuries are often multiple.
3. Suicidal injuries to the chest are almost always stab wounds.
4. Stab wounds to the neck are uncommon in suicide.



5. Defense Wounds

- Defense wounds occur when a victim tries to protect themselves during an attack.
- Features:
 1. Outer side of the forearm, back of the hand, and fingers may show:
 - Abrasions
 - Bruises
 - Lacerations
 2. Fingers may be broken in severe cases, especially during a struggle involving punching, kicking, or attack with a blunt instrument.

Complications of Wounds :

1. Neurogenic shock (Primary shock).
2. Traumatic shock (Secondary shock).
3. Hemorrhage.
4. Embolism (air, thrombus, fat).
5. Injury to internal organs.
6. Scar formation.
7. Infection.

Crush Syndrome

Severe muscle crushing → release of myoglobin → blockage of renal tubules → acute renal failure.

Causes of Death:

1. Primary (Immediate) Causes

- Neurogenic shock.
- Injury to vital organs.
- Hemorrhage.

2. Secondary (Remote) Causes:

- Infection.
- Thromboembolism.
- Acceleration of pre-existing disease.
- Medical negligence.
- Renal failure due to crush syndrome.



Management of Acute Wounds

1. Prehospital Care:

- Apply direct pressure and elevate the wound to control bleeding.
- Call for emergency medical services for prompt assistance.

2. Initial Hospital Management:

- Follow the ABCDE approach for primary assessment and stabilization.
- Obtain a detailed history of the injury.

3. Wound Care:

- Perform inspection, exploration, debridement, and irrigation to clean the wound.
- Protect vessels, nerves, and tendons during debridement as much as possible.
- Use skin grafts to cover exposed areas when necessary.

Doctor's Duties in Wounding Cases:

1. Treat the injuries and care for the patient.
2. Examine and document all wounds with written notes and photographs (including measurements).
3. Check the whole body for any other injuries.
4. Collect and label any foreign objects found in the wound.
5. Take X-rays if needed.
6. Preserve the victim's clothing for investigation.
7. Take blood samples for blood type, DNA, and drug or alcohol testing.

المادة 334 مكررة :

كل من أقدم قصداً على :

1. ضرب شخص على وجهه أو عنقه باستخدام الشفرات أو المشارط أو الأمواس أو ما شابهها من أدوات حادة يعاقب بالأشغال المؤقتة مدة لا تزيد على سبع سنوات مهما كانت مدة التعطيل .

2. القاء مواد حارقة أو كاوية أو مشوهة على وجه شخص أو عنقه يعاقب بالأشغال المؤقتة مدة لا

تقل عن سبع سنوات.