

FORENSIC SCIENCE
VI SEMESTER

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CONTUSION

Synonym: Bruise

Definition

A contusion is an extravasation or collection of blood due to rupture of blood vessels caused by application of mechanical force of blunt nature without loss of continuity of tissue. Mechanism Contusion is caused by blunt force impact causing crushing or tearing of subcutaneous tissue or dermis without breaking the overlying skin or mucous membrane. Due to rupture of blood vessels, there is extravasation of blood out of vessels and collected underneath the tissue. Collection of blood is accompanied by swelling and pain. A pure bruise lies beneath the intact epidermis.

Types

- Intradermal bruise
- Subcutaneous bruise
- Patterned contusion
- Deep bruise

Intradermal Bruise

- In this type, the bruise is situated in the sub-epidermal layer of skin.
- Patterned bruises are often associated with intradermal bruise. Due to superficial position of these bruises and translucency of the skin that overlies these bruises, the patterned contusion becomes more prominent
- The bruises are usually occurred at the point of application of force
- The margins in intradermal bruises are quite distinct
- Examples – motor tyre marks, impacts from whip, impact from rubber soles of shoes

Subcutaneous Bruise

- These bruises are the commoner types and are located in the subcutaneous tissue often in the fat layer above the deep fascia and therefore are fairly visible through the skin. Such bruise is called as superficial bruise
- If such bruises are located below the deep fascia, such bruises are called as deep contusions and these bruise take time to appear over surface
- The features of these bruises are that the margins appear blurred especially at the edges.

Patterned Contusion

- In certain cases, the surface may show patterned contusion. These contusions are called as patterned contusions because in such contusions, the imprint or design of the offending weapon or object is imprinted over the skin.
- If such patterned contusions are present, they provide vital information regarding the nature of the offending object or weapon.
- Examples – discoid contusions produced over neck in manual strangulation by fingertips, impression of motor tyre, impression of rubber sole of shoe, tram-line contusion etc.

Factors

- 1. Condition of tissue**
- 2. Body part**
- 3. Situation of bruise**
- 4. Condition of blood vessels**
- 5. Presence of disease**
- 6. Sex**
- 7. Age**
- 8. Colour of skin**
- 9. Optical character of skin**

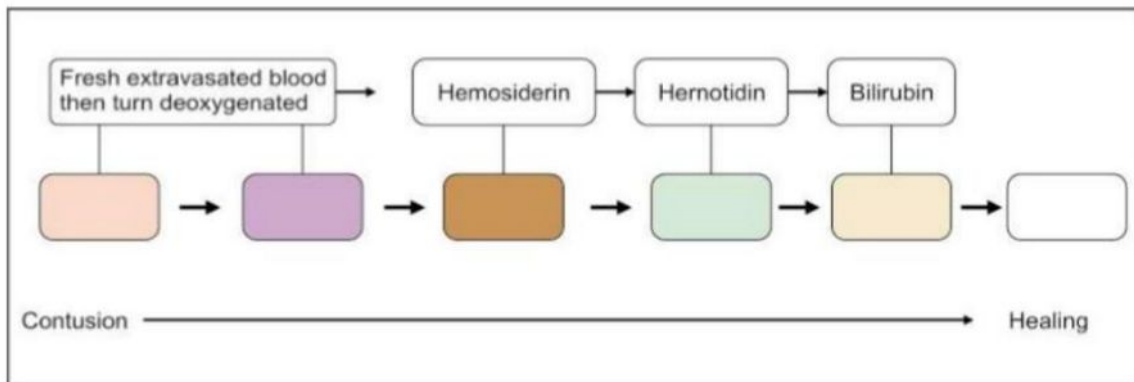


FIG. 9.23: Age of contusion - diagrammatic representation

Table 9.3: Age of contusion		
Age	Changes	Caused by
Fresh	Red	Fresh extravasation of blood
1-3 days	Bluish	Deoxyhemoglobin
4 days	Bluish black to brown	Hemosiderin pigment
5-6 days	Greenish	Hematoidin pigments
7-12 days	Yellow	Bilirubin pigments
2 week	Complete disappearance of contusion	--

Table 9.4: Difference between antemortem and postmortem contusion

<i>Features</i>	<i>Antemortem contusion</i>	<i>Postmortem contusion</i>
Swelling	Present	Absent
Extravasation of blood	Present	Absent
Signs of inflammation	Present	Absent
Hemorrhage	Considerable	Insignificant

Table 9.5: Difference between contusion and postmortem lividity

<i>Features</i>	<i>Contusion</i>	<i>Postmortem lividity</i>
Caused by	Rupture of vessels with extravasation of blood due to application of mechanical force	Due to stasis of blood in the vessels
Site	Any site	Only on dependent part
Surface	Elevated due to swelling	Not elevated
Swelling	Present	Absent
Colour	Variable, depends on the age of contusion	Usually purplish blue
Edges	Ill defined	Well defined
Incision	Show extravasation of blood in the surrounding tissue and cannot be washed off	Shows blood in vessels with oozing of blood from vessel and can be washed off
Microscopy	Signs of inflammation	No signs of inflammation