

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



Learning objectives

Define and classify	Define and classify bruise.
Describe	Describe types of bruise and mechanism of wound production, associated factors, appearance and complications.
Differentiate	Differentiate between ante mortem and post mortem bruise.
Describe	Describe the medical legal aspects of bruise.

Bruise

A bruise signifies haemorrhage into the skin the subcutaneous tissues or deeper tissues.

It is due to an infiltration or extravasation of blood into the tissues, following rupture of small vessels as a result of application of blunt force.

There is no loss of continuity of their skin

Depending upon its location it is classified as

Intradermal

Subcutaneous and

Deep

Intradermal bruise

- ▶ When a bruise is made by impact with a patterned object the haemorrhage may lie in the immediate sub epidermal layer and its pattern may correspond to the form of the object or the weapon causing it, for example whip, cane, bicycle chain motor tyre.

**INTRADERMAL
BRUISE**



Figure 1: Patterned bruising over the left arm and shoulder

Subcutaneous bruise

The usual bruise from a blunt impact is situated in the subcutaneous tissue.

It is somewhat blurred at the edges and raised above the skin surface due to infiltration of Blood in the subcutaneous tissues.

It usually appears soon after injury and may vary in size from a small pinhead bleeding to a large localised collection of blood known as hematoma.

**SUCUTANEOUS
BRUISE**



Deep bruise

- ▶ This signifies bleeding deeper to the subcutaneous tissues and some swelling may be apparent when the opposite limb or part of the body is compared with the injured area.
- ▶ It takes some time to appear on the surface.
- ▶ Therefore, living persons who have been assaulted should be examined again after an interval of one or two days, when they may show bruising which may be initially suspected by the tenderness on pressure or slight swelling.
- ▶ Infrared photography may demonstrate such bruises in early stages and provide useful evidence.



Mechanism of production

- ▶ An impact by a blunt weapon produces a sudden indentation of the skin and underlying tissues, which after recoil becomes swollen, red in colour and painful to touch.

Factors modifying the appearance of a bruise

These are:

- ▶ Site of injury
- ▶ Vascularity of the part
- ▶ Sex
- ▶ Age and health of the individual
- ▶ Diseases
- ▶ Gravitational shifting of blood



Battle's Sign
(Mastoid ecchymosis)

Appearances of bruise

- ▶ After a bruise has appeared it tends to get smaller from the periphery to centre and passes through a series of colour changes.
- ▶ These are due to disintegration of red blood corpuscles by hemolysis and breakdown of haemoglobin into pigments hemosiderin, haematoidin and bilirubin.

Bruise and time since injury

Color changes	Time since injury
bright red	freshly produced
Bluish	Few hrs to three days
bluish black	4th day
Greenish	4th to 5 th day
yellowish	7th to 12th day
Normal	two weeks

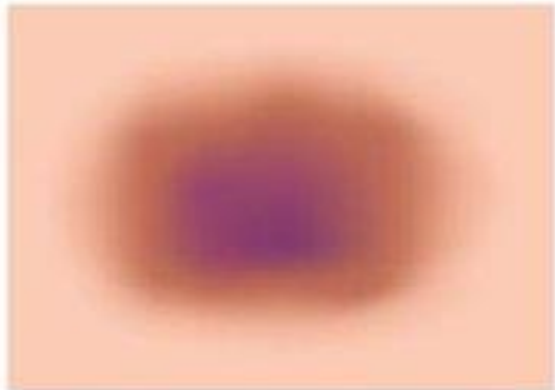
Haematoma / Bruise



Stage 1 - Reddish



Stage 2 - Purple



Stage 3 - blueish



Stage 4 - yellowish

Age of a bruise

- ▶ An approximate age of a bruise may be determined either from the colour changes or occasionally by histology.
- ▶ The colour changes reflect the natural healing process and depends not only on the size and situation of a bruise but also the age and physique of the person and presence or absence of disease.
- ▶ Since these factors are very variable, one often finds the presence of several colours in a bruised area on a number of occasions.
- ▶ For histological examination, a number of sections should be taken so as to have a truly average and representative of tissue.

Complications of bruise

- ▶ Though a bruise is usually a simple injury, it may prove fatal when it involves an important internal organ such as heart or lung even without visible injury to the chest wall.
- ▶ Multiple bruises though individually trivial, may result in death due to shock and internal haemorrhage.
- ▶ Infection of a bruise or hematoma.

Differential diagnosis

- ▶ A true bruise may have to be differentiated from:
- ▶ Artificial bruise
- ▶ Post mortem bruise
- ▶ Post mortem lividity

Differences between artificial and true bruise

Characteristics	Artificial bruise	True Bruise
Cause	Irritant chemical	have drama blunt
Site	accessible parts	Anywhere
Colour	dark brown	typical changes
Shape	Irregular	Irregular
Margins	Regular + Vesicles	-ve
Inflammation	+ve	-ve
itching	+ve	-ve
Vesicles	+ve	-ve
Ecchymosis	-ve	+ve
Contents	Acrid serum	Blood
chemical test	+ve	-ve

Differences between antemortem and Postmortem bruise

Characteristics	Antemortem bruise	Post mortem bruise
Swelling	+ve	-ve
Margins	blurred	regular
extravasation and infiltration of blood in tissues	+ve	-ve

Difference between Bruise and Post mortem lividity

Characteristics	Bruise	Post mortem lividity
Swelling	+ve	-ve
vital reaction	+ve	-ve
incision of lesion	blood is found extravasated into the subcutaneous tissues	blood is found intact within the blood vessels

Medico legal aspects of Bruise

Bruises provides information in regard to:

- ▶ Identification of object causing the injury in some cases
- ▶ Degree of violence
- ▶ Cause of injury
- ▶ Time since injury
- ▶ Possibility of infection

Bruises are of less value than abrasions

- ▶ They may not appear at the site of injury due to gravitational shifting of blood.
- ▶ A deep bruise may take hours or one or two days to appear or may not appear externally at all.
- ▶ Its size may not correspond to the severity of violence due to continued act extra position.
- ▶ They do not indicate the direction of force.

Manner of injury

- ▶ Self-inflicted bruises are rare.
- ▶ To substantiate a false charge of assault, artificial bruises are sometimes caused by the application of irritant substances, like marking nut juice, calotropis and root of plumbago on parts within easy reach.
- ▶ These can be differentiated from true bruises by the presence of vesicles and inflammation.
- ▶ The irritant substance may be discovered on liberatory examination.

- ▶ Homicidal bruising is common. Their shape and size may indicate the object used for violence.
- ▶ Accidental bruises are common. Their position, arrangement and circumstances surrounding the case normally clear up the matter.



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