KUHS MBBS - FORENSIC MEDICINE

HANGING

Exam-Oriented, Colorful, Study-Friendly Notes

Core exam scenario

A body found suspended with an oblique, incomplete ligature mark around the neck is suggestive of hanging. Forensic examination must decide whether it is ante-mortem hanging, postmortem suspension, or homicide staged as hanging.

Suspended body with oblique incomplete mark → Look for ante-mortem signs saliva, vital reaction, asphyxia → Bloodless neck dissection neck tissues, vessels, hyoid, cartilage → Rule out staging injuries, struggle, scene, toxicology

Exam-ready contents
Definition and classification
Postmortem findings in ante-mortem hanging
Bloodless dissection of neck
Ante-mortem vs postmortem hanging
Hanging vs strangulation
Homicide staged as hanging
Hyoid bone fracture and medico-legal significance
Medico-legal interpretation

1. Definition of Hanging

Definition

Hanging is a form of violent asphyxial death caused by suspension of the body by a ligature encircling the neck, where the constricting force is at least part of the weight of the body or weight of the head.

2. Classification of Hanging

A. Based on Intent

Suicidal hanging - most common.
Accidental hanging.
Homicidal hanging - lynching.
Autoerotic hanging - sexual asphyxia.
Judicial hanging - execution by law.

B. Based on Position of Knot

Typical hanging: Knot is at the nape of neck / occiput.
Atypical hanging: Knot is present anywhere other than occiput.

C. Based on Degree of Suspension

Complete hanging: Body is fully suspended and no part touches the ground.
Incomplete / partial hanging: Part of body such as feet, toes or knees touches the ground; body may be sitting, kneeling or prone. The constricting force may be only the weight of the head.

3. Postmortem Findings in Ante-mortem Hanging

A. External findings

Ligature mark / furrow

The ligature mark is usually oblique, incomplete / non-continuous with a gap at the site of knot, directed upwards and backwards towards the point of suspension, usually situated above the thyroid cartilage, with a base that is pale, dry, hard and parchment-like. It may show small abrasions or rope burns at the margins.

Surest sign of ante-mortem hanging

Dribbling of saliva from the angle of mouth, usually opposite to the knot, is the surest sign of ante-mortem hanging.

Finding	Exam points
Face and eyes	Face may be swollen, congested and cyanosed. Eyes may be prominent. Subconjunctival haemorrhages may be present.
Le facie sympathique	Eye on the side of knot may remain open with dilated pupil due to compression of cervical sympathetic chain.
Tongue	Tongue may be swollen, dark-coloured, protruded and sometimes bitten by teeth.
Postmortem staining	Characteristic glove and stocking pattern of postmortem staining may be seen due to vertical suspension.
Other external signs	Tardieu’s spots may be present. Hands may be clenched. Involuntary discharge of urine, faeces or semen may occur.

B. Internal findings

Structure / sign	Postmortem finding
Neck tissues	Subcutaneous tissue beneath ligature mark is dry, white, firm and glistening.
Blood vessels	Amussat’s sign: Transverse intimal tear of carotid artery may be seen.
Bones and cartilages	Fracture of hyoid bone may occur. Fracture of superior horn of thyroid cartilage may be seen.

Structure / sign	Postmortem finding
Spine	Simon's sign: Haemorrhages on the ventral surface of intervertebral discs beneath the anterior longitudinal ligament, especially in lumbar spine. Judicial hanging: Fracture of C2 vertebra, called hangman's fracture, may occur.
Lungs and viscera	Lungs may be congested, oedematous and emphysematous. Subpleural petechial haemorrhages / Tardieu's spots may be present. Brain and abdominal viscera may be congested.

4. Bloodless Dissection of Neck

Meaning

Bloodless dissection of neck is a forensic autopsy technique in which the anterior neck structures are dissected at the end of autopsy, after removal of brain, thoracic organs and abdominal viscera. This allows drainage of blood from neck vessels and provides a relatively bloodless field.

Remove brain → Remove thoracic organs → Remove abdominal viscera → Dissect anterior neck last

Importance

- Avoids artifactual haemorrhage in neck tissues.
- Distinguishes true ante-mortem haemorrhage from postmortem artifact.
- Helps careful examination of ligature mark, neck muscles, vessels, hyoid bone and thyroid cartilage.
- A modified Y-shaped incision may be used, extending from mastoid regions to suprasternal notch and then down the midline.

5. Differences Between Ante-mortem Hanging and Postmortem Hanging

Feature	Ante-mortem Hanging	Postmortem Hanging
Salivary dribbling	Present; surest sign	Absent
Ligature mark direction	Oblique	Circular / horizontal
Ligature mark continuity	Incomplete / non-continuous	Continuous
Level of mark	Usually above thyroid cartilage	At or below thyroid cartilage
Base of mark	Dry, hard, parchment-like	No vital reaction; soft / pale
Vital reaction	Present	Absent
Le facie sympathique	May be present	Absent
Signs of asphyxia	Present	Absent or minimal
Involuntary discharge	May be present	Usually absent
Postmortem staining	Glove and stocking pattern may be seen	Non-specific distribution
Associated injuries	Usually absent in suicide	May show fatal injuries or signs of struggle

6. Differences Between Hanging and Strangulation

Feature	Hanging	Strangulation
Common manner of death	Mostly suicidal	Mostly homicidal
Ligature mark direction	Oblique	Transverse / horizontal

Feature	Hanging	Strangulation
Ligature mark continuity	Incomplete, gap at knot	Continuous, completely encircles neck
Level of mark	Usually above thyroid cartilage	At or below thyroid cartilage
Base of mark	Pale, dry, hard, parchment-like	Soft, reddish, ecchymosed
Dribbling of saliva	Common	Rare
Face	Signs of asphyxia less marked	Face congested, livid, petechiae common
Bleeding from nose/ears	Rare	More common
Tongue protrusion	Less marked	More marked
Neck tissues	White, dry, hard and glistening	Ecchymosed and haemorrhagic
Abrasions/bruises around neck	Less common	Common
Signs of struggle	Usually absent	Usually present
Hyoid bone fracture	May occur, especially in elderly	More common, especially in throttling
Thyroid cartilage fracture	Less common	More common

7. Features Suggesting Homicide Staged as Hanging

Concept

Sometimes a person may be murdered first and the body may be suspended later to simulate suicidal hanging.

- Absence of salivary dribbling.
- Absence of vital reaction in ligature mark.
- Ligature mark may be circular, continuous and not typically oblique.
- Absence of typical ante-mortem asphyxial signs.
- Presence of fatal injuries, deep wounds or signs of poisoning explaining death.
- Presence of defence wounds or injuries suggesting struggle.
- Dragging marks from place of murder to place of suspension.
- Disarranged clothes, disturbed furniture or signs of violence at scene.
- Rope mark on beam/branch showing rope moved from below upwards while pulling body up.
- In true suicidal hanging, rope usually bears weight from above downwards.

8. Hyoid Bone Fracture and Medico-legal Significance

Importance

Fracture of the hyoid bone is important in deaths due to neck compression. It is more common in persons above 40 years because the hyoid bone becomes ossified and brittle.

Type of fracture	Typical setting / mechanism	Direction / periosteal tear
Abduction fracture / Anteroposterior compression fracture	Seen typically in hanging. Ligature forces the hyoid bone backwards.	Greater cornua are displaced outwards. Periosteum is torn on the inner side.
Adduction fracture / Inward compression fracture	Seen typically in throttling / manual strangulation. Fingers compress the throat from outside.	Greater cornua are displaced inwards. Periosteum is torn on the outer side.
Avulsion / Traction fracture	Due to traction or violent pull on hyoid attachments.	Traction-related fracture.
Side-to-side compression fracture	Due to side-to-side compression.	One side may be displaced inwards and the other outwards.

Medico-legal significance

- Helps in differentiating hanging from manual strangulation / throttling.
- Abduction fracture supports hanging.
- Adduction fracture supports throttling.
- Presence of recent haemorrhage at fracture site indicates ante-mortem fracture.
- Careful in-situ examination and bloodless dissection of neck are necessary to avoid mistaking postmortem artifact or anatomical non-union for true fracture.

9. Medico-legal Interpretation

Final exam opinion

In the given case, the presence of an oblique, incomplete ligature mark around the neck is suggestive of hanging, most commonly suicidal hanging. However, final opinion should be given only after confirming ante-mortem signs such as salivary dribbling, parchment-like ligature mark, vital reaction in neck tissues, asphyxial signs, and internal neck findings. The possibility of postmortem suspension or homicide staged as hanging must be ruled out by scene examination, bloodless dissection of neck, injury analysis and toxicological investigation.

One-line recall: Oblique + incomplete + above thyroid cartilage + salivary dribbling + parchment-like mark + vital neck reaction = supports ante-mortem hanging.