

# **Violent asphyxial deaths**

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# HANGING

## INTRODUCTION

The *Oxford English Dictionary* states that hanging in this sense is

"specifically to put to death by suspension by the neck"

# HANGING

## Definition :

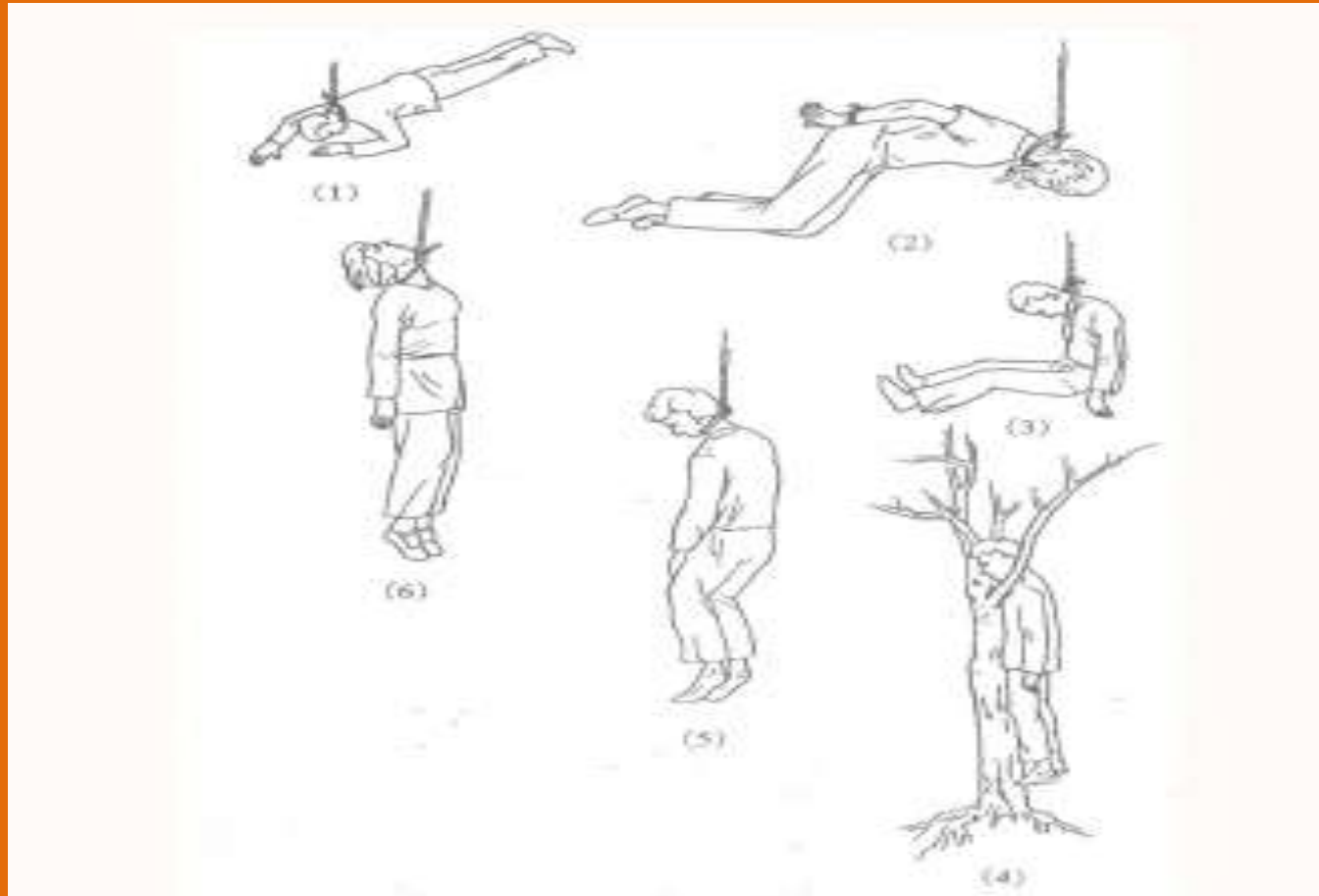
Hanging is a process in which the body is suspended with a ligature around the neck which causes constriction of the air passage preventing exchange of air between the atmosphere and the alveoli of lungs, leading to asphyxia and death.

In hanging, the constricting force is either the weight of the whole body or the weight of the head alone.

# HANGING



# HANGING



# Types of Hanging

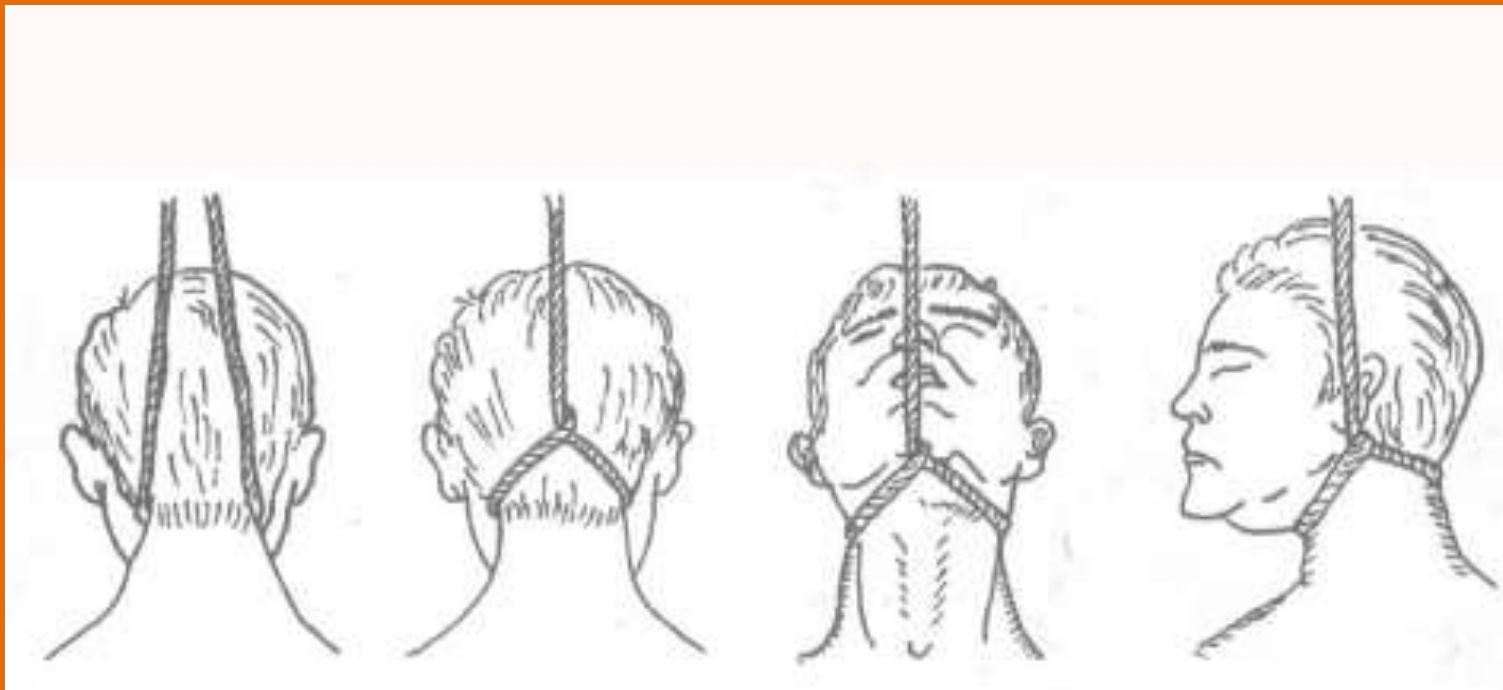
## 1) Typical hanging

- In a typical hanging, the knot of the ligature should be at the nape of the neck on the back.  
Typical hanging is not very common in occurrence. Hence in case of typical hanging maximum pressure is exerted in the front of the neck on the midline i.e. over the wind pipe

## 2) Atypical hanging

- In atypical hanging the knot of the ligature may be at any site other than the nape of the neck.
- In atypical hanging, the commonest site for the knot is near one side mastoid process or near the angle of mandible .Occasionally, it may be below the chin.

# Types of Hanging



# Types of Hanging

## Complete hanging

In this variety, the body is fully suspended and no part of the body touches the ground.

The constricting force here is the weight of the whole body.

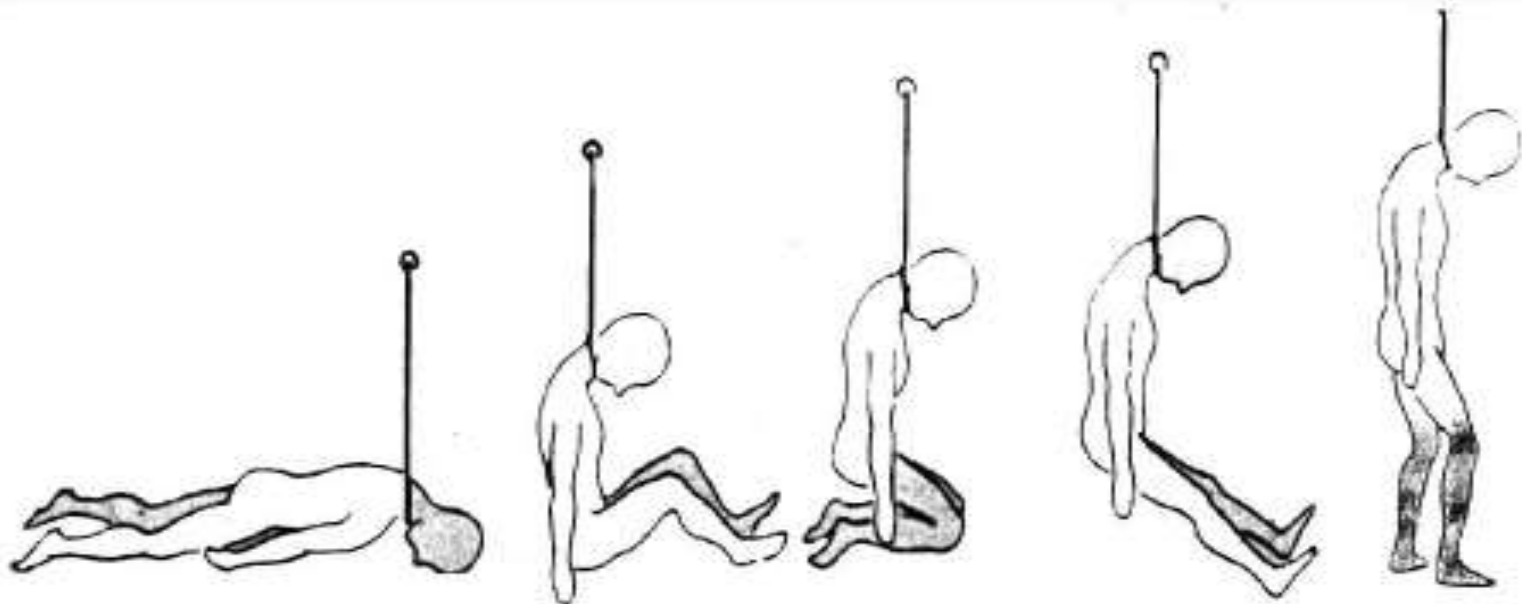
## Incomplete or partial hanging

The lower part of the body is It touch with the ground.

Sometimes only the toes, sometimes the whole foot or feet, sometimes the knees, sometimes the buttock, may be in touch with the ground.



# Types of Hanging



# Types of Hanging



# LIGATURE

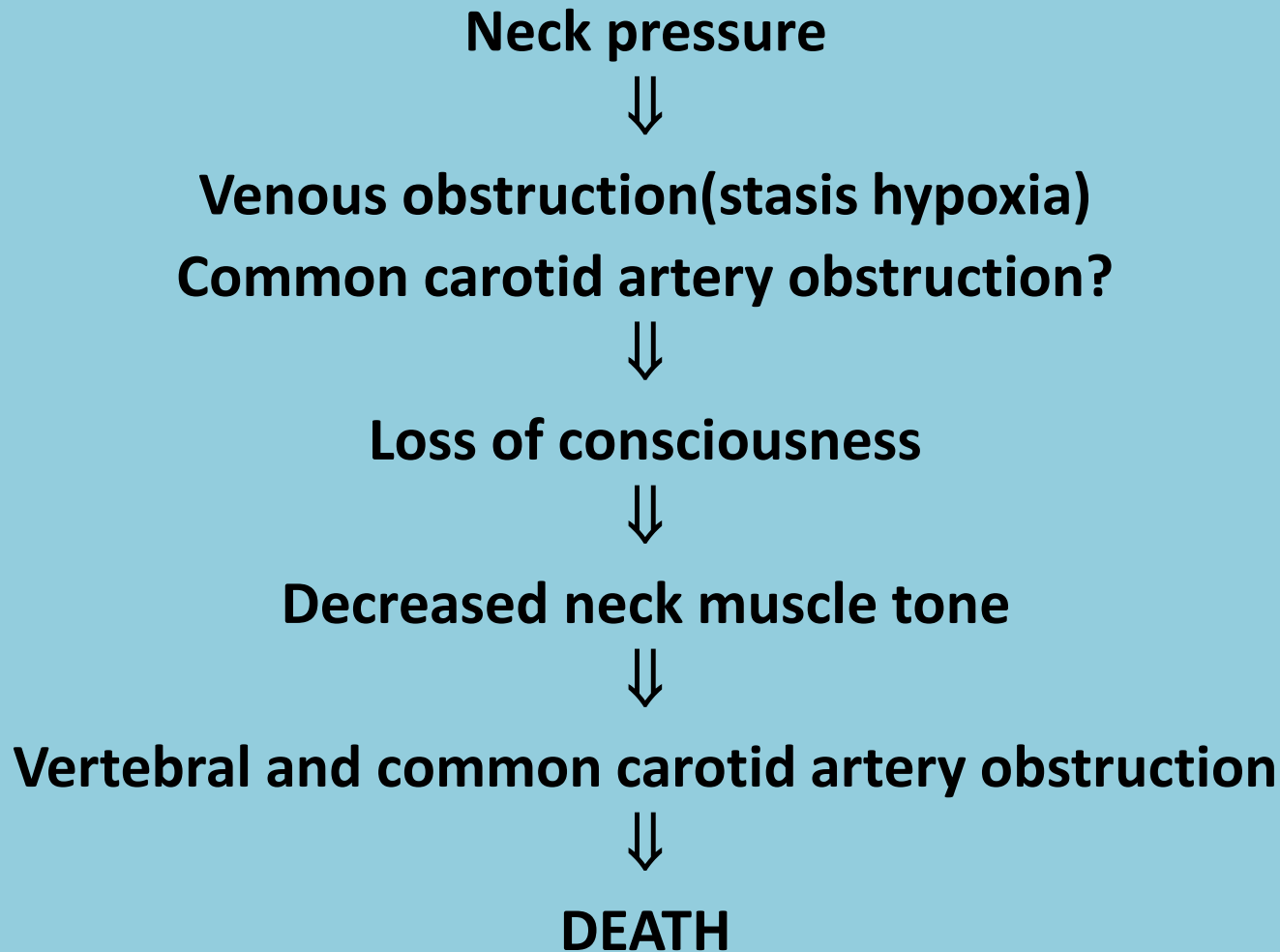
- The ligature materials in cases of hanging.
- The ligature material may be anything which may be tied around the neck with some additional length for fixing it to the point of suspension.
- It can be a rope, electric wire, belt, neck tie, bed sheet, scarf, cycle chain or any such thing.

# LIGATURE MATERIAL





# Pathophysiology of Hanging



1. Asphyxia along with apoplexy due to simultaneous pressure over larynx and jugular veins. The combined effect of asphyxia and apoplexy is the cause of death in most cases.

2. Asphyxia alone.

3. Apoplexy alone.

4. Cerebral anemia or ischemia due to pressure over carotid and vertebral arteries.

5. Vagal shock. This may occur due to inhibition of the heart due to irritation of the carotid sinus.

6. Fracture dislocation of the second and third cervical vertebrae, which causes injury to the medulla and the upper part of the spinal cord, as in case of judicial hanging

# Cause of Death

## The mechanism of hanging death

- Vascular compression with brain asphyxia
  - Believed to be the main mechanism

### Vessels

- Internal jugular vein(2kg)
- Common carotid artery(5kg)
- Collateral circulation & Trachea (15kg)
- Vertebral artery(30kg)



# Post mortem appearance of hanging

## A. External findings

### 1. The ligature mark.

- In most cases of death due to hanging, the ligature mark around the neck is very much conspicuous.
- The ligature mark in case of hanging is oblique, non-continuous, placed high up around the neck, grooved, parchmented and abraded at places
- The ligature mark is non-continuous because of a gap at the nape of neck due to hair intervening between the ligature material and the skin underneath.
- There may also be some gap near the site of the knot due to the pull on the knot from the point of suspension above

# Post mortem appearance of hanging

## A. External findings

### 1. The ligature mark.

- The upper margin of the ligature mark has a line of postmortem staining, all around above the ligature mark. This is due to settling of blood, from head and neck above the level of constriction, caused by the ligature material.
- When the knot is in contact with the skin, it is usually inverted "V" shaped, due to extension of ligature material downward on both sides from the knot above.
- The point of contact of the skin with the knot may leave a deep parchmented abraded impression.

# Post mortem appearance of hanging

## A. External findings

### 1. The ligature mark.

Factor which influence the appearance of the ligature mark.....

- The ligature material.
- Period of suspension.
- Degree of suspension.
- The weight of the body of the deceased.
- Tightness of the ligature.
- Slipping of the ligature Material.
- When the ligature is applied in multiple turns
- Design of a ligature material

# Post mortem appearance of hanging

## A. External findings

### 2. The dimensions of the neck:

- Due to prolonged suspension, the neck becomes slender and increases in length.
- This will not be seen in suspension for a short period.

### 3. Bending of the neck

The neck gets flexed to the side, opposite the side of the knot.

The state of bending will continue until the onset of decomposition

# Post mortem appearance of hanging

## A. External findings

4. The face may be pale or flushed or congested.
5. Tardieu's spots may be present on the forehead, over the eyelids, under the conjunctiva and sometimes near the temple.
6. Tongue may be partly protruded out in between the lips and during the stage of rigor mortis may also be bitten in between the jaws.

# Post mortem appearance of hanging

## External examination



<https://www.semanticscholar.org/paper/Resuscitation-and-conjunctival-petechial-Maxeiner-Jekat/d9d45fe65404dabe4c6e6fe88347537568b424d4>

[https://link.springer.com/referenceworkentry/10.1007%2F978-1-61779-058-4\\_15](https://link.springer.com/referenceworkentry/10.1007%2F978-1-61779-058-4_15)

# Post mortem appearance of hanging

## External findings

### 7. Dribbling of saliva :

- ✓ Surest sign of antemortem hanging.
- ✓ Due to irritation of the submandibular salivary glands during life, due to the pressure and friction caused by the ligature materials.
- ✓ When the knot is on the nape of the neck it occurs across the middle of the lower lip.
- ✓ When the knot is under the chin, then it occurs through either or both angles of the mouth.
- ✓ Dribbling of saliva occurs from the angle of the mouth which is at a lower level i.e., from the angle opposite the side of the knot

# Post mortem appearance of hanging

## A. External findings

### 8. Peculiar distribution of the postmortem Staining

- As the body remains suspended in the upright position after death, the postmortem staining will be present over the lower limbs, lower parts of the upper limbs and the upper margin of the ligature mark.
- Occasionally, in the lower limbs, there may be multiple hemorrhagic spots due to rupture of the capillaries, due to being over-distended by blood.
- This distribution of the postmortem staining is however not confirmatory of the death being due to hanging. It only speaks that the body was in a state of suspension in upright position for a considerable period after death.
- Thus, if a dead body is placed after death, in upright position in a state of suspension with a ligature around the neck, then similar distribution of postmortem staining will be there, provided that sufficient time has been allowed to pass, in that position of the body.



# Post mortem appearance of hanging

## A. External findings

9. **The hands** are usually clenched. Sometimes the hands may show presence of fibers, like that of jute when a jute rope has been used.
10. Fingertips, nail beds, and lips **show sign of cyanosis**.
11. **In males** there may be involuntary discharge of semen.
12. In both sexes there may be involuntary discharge of fecal matter and urine.

# Post mortem appearance of hanging

## A. External findings

13. In addition, there may be some abrasions at places like lateral aspects of shoulder, due to friction with a wall or a post or a pillar, which occurs during suspension, particularly during the last phase of life when there is convulsion.
14. In some cases, the right side eye remains open with more dilatation of the rt. pupil, whereas the left eye remains closed and left pupil less dilated. This is known as “Le facie Sympathique”

# Post mortem appearance of hanging

## B. Internal findings

1. In some cases ,the tongue is slightly protruded out and in others the tongue is pushed back.
2. Larynx and trachea are congested.  
There may be Tardieu's spots under the mucus membrane of the trachea and larynx.
3. Lungs are congested. There will be presence of Tardieu's spots on the undersurface of the pleura which are particularly abundant at the interfaces of the lobes.
4. Brain is congested, edematous with presence of hemorrhagic spots. Similar findings are present in the layers of meninges.
5. All the organs are congested

# Post mortem appearance of hanging

## B. Internal findings

### 6. Maximum findings are available in the TISSUE OF NECK

- The subcutaneous tissue underneath the ligature mark is **dry, white, firm and glistening**.  
The platysma and the stern mastoid muscle may show hemorrhages and are even occasionally ruptured.
- The hyoid bone may be fractured in persons, more commonly above the age of 40 years. Fracture of thyroid in hanging cases seems to be a rarity.
- There may be transverse tear of the intima of the carotid arteries.

# Post mortem appearance of hanging

## B. Internal findings

### 6. Maximum findings are available in the TISSUE OF NECK

- Larynx are congested.
- There may be Tardieu's spots under the mucus membrane of the larynx.
- In case of JUDICIAL HANGING or where there is a drop from a reasonable height, the ligature around the neck causes a forceful jerky impact on the neck at the end of the fall. In such cases there will be fracture dislocation of the C2 and C3 or C3 and C4 vertebrae.

# Post mortem appearance of hanging

## B. Internal findings

### 6. Maximum findings are available in the TISSUE OF NECK

- In case of JUDICIAL HANGING or where there is a drop from a reasonable height, the ligature around the neck causes a forceful jerky impact on the neck at the end of the fall.
- In such cases there will be fracture dislocation of the C2 and C3 or C3 and C4 vertebrae. In case of fracture of C2 and C3 the fractured piece of the odontoid process of the C2 vertebra causes damage to the medulla. In other cases there is corresponding injury to the meninges and the spinal cord.
- In a few cases, posterior wall of the esophagus may show congestion due to compression against the cervical vertebrae.

# Post mortem appearance of hanging

## B. Internal findings



# MEDICOLEGAL ASPECTS OF HANGING

## A. Suicide hanging :

- Hanging in its face value goes in favor of being suicidal in nature.
- The place of occurrence is secluded.
- The point of suspension remains approachable to the suicide.
- Partial hangings are almost always suicidal in nature
- There may be a suicidal note left behind.
- There should be a motive for committing suicide. Often a suicide failing in other methods to end life. May lastly adapt this method successfully.
- In these cases evidence of some other adapted methods may be present on the body.



# MEDICOLEGAL ASPECTS OF HANGING

## B. Homicide hanging :

1. Homicidal hanging is rare. It is not ordinarily possible with an adult victim, if he is not intoxicated or not made unconscious by some other means, like head injury. Alternatively, the victim is either a child or a very debilitated person.
2. Usually the rope is first fastened around the neck and then it is pulled over a high point of suspension. Hence, there will be presence of evidence of pulling or dragging of the victim on the ground as also presence of evidence of friction at the point of suspension , with the ligature material.
3. The hand of the victim may show presence of foreign material like foreign hair or button. The hands, feet and the mouth of the victim may be tied. Signs of struggle may be present on the body of the victim and at the place.

# MEDICOLEGAL ASPECTS OF HANGING



# MEDICOLEGAL ASPECTS OF HANGING

## Lynching :

**Lynching** is an extrajudicial execution carried out by a mob, often by hanging, but also by burning at the stake or shooting, in order to punish an alleged transgressor, or to intimidate, control, or otherwise manipulate a population of people

# MEDICOLEGAL ASPECTS OF HANGING

## C. ACCIDENTAL HANGING

The following circumstances of accidental hanging may be encountered:-

1. In factories, a worker working at a height if falls accidentally, may get hanged on a sling or rope.  
Similarly, if during such a fall the necktie gets fixed at some point, then the victim may die due to the effect of Hanging.
2. When a person on the top of a ladder suddenly misses a step, in course of falling down, his head may get fixed in-between two steps and he may die due to constriction of the neck in suspension
3. Children while playfully acting judicial hanging, may actually be hanged to death

# MEDICOLEGAL ASPECTS OF HANGING

## C. ACCIDENTAL HANGING

4. Infants while accidentally slipping down in between the side grills of the crib, may die due to constriction of the neck with the body being in a suspended position.
5. In course of masochistic practice the victim may accidentally die due to hanging. Such person gets sexual gratification by partial asphyxiation.

# MEDICOLEGAL ASPECTS OF HANGING

## C. Auto - Erotic HANGING

- He arranges the situation by placing a noose around his neck and creates a state of partial asphyxiation in himself by pulling the other end of the rope, across a pulley type arrangement.
- After getting sexual orgasm he releases the pull on the rope. In course off such practices the victim may fail to release the pull and die due to hanging.
- Males are the exclusive victims.
- The circumstance in such a case is sufficient to indicate the actual nature and mode of death. The victim is found naked at the place of occurrence. Often, some soft cloth is placed around, in between the rope and the neck

# MEDICOLEGAL ASPECTS OF HANGING

## Postmortem Hanging :

- Often a victim is killed by some other means and then hanged to simulate a suicidal death.
- As in case of homicidal hanging, there will be evidence of dragging of the body on the ground and friction at the point of suspension of the ligature material, as the ligature is first tied around the neck of the dead body and then the body is hanged.
- The un approachability of the point of suspension by the victim, the signs of disturbance and the evidence of the actual cause of death, present on the dead body, are the other features which make the fact (post mortem hanging) clear