**Medicolegal Autopsy**

**Definition:**

Autopsy/ necropsy means post-mortem examination of a body. In every case, the autopsy should be complete, all of the body cavities must be opened and every organ must be examined.

**Objectives of Medicolegal autopsy:**

1. To find out the cause of death (whether natural or unnatural),
2. To find out the time since death,
3. To find out the manner of death (whether accidental/ suicidal/ homicidal),
4. To establish identity when it is not known,
5. To identify the physical object causing death,
6. To identify the criminal, if possible,
7. To determine the question of livebirth and viability.

**Rules for Medicolegal autopsy:**

1. The autopsy should be conducted in a mortuary and never in a private room.
2. It may be possible to do autopsy at the associated site especially when putrefaction is started and transportation becomes difficult.
3. The autopsy should be conducted only when there is an official order from the police or magistrate to conduct it.
4. It should be conducted as early as possible after receiving of the order, without any undue delay.
5. The medical officer should must read the inquest report carefully and find out all the case details and the apparent cause of death.
6. The examination should be carried out in presence of daylight, because the colour changes in many cases (jaundice, colour
changes in a bruise, post-mortem staining etc) can’t be detected easily in artificial light.

7. The body must be identified by the police constable who brought it.

8. No unauthorized person should be present at the time of autopsy.

9. During an examination, all the details obtained should be noted exactly by an assistant.

10. Sketches of the important injuries should be made, if possible.

11. Nothing should be erased from the report, if there is an alteration, it should also be noted separately.

12. **In every case of autopsy, it must be complete and every organ must be examined.**

13. Even in cases of putrefaction, autopsy should be done completely because some important findings still may be present.

14. After completion of autopsy, the body should be handed over to the police constable.

15. PM report should not be issued to the party.

**General structure of a post-mortem report:**

1. **The preamble:** This should mention:
   a. The authority ordering the examination,
   b. Time of arrival of the body at the mortuary,
   c. The date and place of examination,
   d. The name, age and sex of the deceased.

2. **The body of the report:** This consists of a complete description of internal and external examination of the body.

3. **The conclusions:** The conclusion as to the cause of death must be given. This is followed by the signature and qualifications of the medical officer.
EXTERNAL EXAMINATION

Before starting the external examination, following steps have to be taken:

- **Height** and **weight** of the body should be taken.
- Observation regarding nutrition, **physique** should be made.
- In case of unknown bodies, **fingerprints** along with photographs should be taken.
- **Marks of identification** like mole have to be identified.

Procedure for external examination:

- The body must be identified by police constables who brought the body and it should be cross-checked with relatives of the deceased.
- *This is necessary especially in burn cases and when the body is highly decomposed*, since facial features of the person may have been obliterated due to burns or decomposition.
- The **clothes on the body** should be examined carefully for stains and tears as these may indicate struggle before death.
- The **pockets of the clothes** should be checked and any item found should be noted in the post-mortem report.
- If **ligature material** is seen around the neck, its position, manner and application of the knot should be recorded accurately.
- A **rough estimate of age** should be made from general body, teeth examination or other physical appearances.
- **All the natural orifices** like mouth, nose, ears, anus, urethra and vagina should be inspected for injuries, discharges, or foreign bodies.
- Swabs should be taken in suspected cases of sexual assaults.
- The **signs of decomposition** and post-mortem changes should be carefully noted.
DESCRIPTING INJURIES:

- After cleaning the body, all the injuries present on the body should be noted.
- All the injuries should be described in detail.
- The length, breadth and depth should be exactly noted.
- If the injuries are deep, the distance of each injury from two fixed points on the body should be noted.
- Fixed points of the body include bony prominence, median plane, etc.
- The description of the injury should be made in such a manner that the doctor is able to reconstruct the same in a court of law, if requested.

DESCRIPTING INJECTION MARKS/ WOUNDS:

- Injection marks present on the body should be carefully noted.
- If required for testing purposes, a portion of skin (2.5 cm × 2.0 cm) containing injection mark with subcutaneous tissue and muscles should be preserved.
- A similar piece from the opposite side should also be taken as control specimen.
- The length, breadth, direction and colour of bruises and abrasions should be noted.
- All bruises should be incised to confirm infiltration of blood beneath the skin so as to confirm their status as ante-mortem or not.
- No probe should be introduced in deep or penetrating wound till the body is opened up.
- In case of fire-arm injuries, blackening around the entire wound should be carefully noted.
- In case of burns, exact size, portion and extent should be noted.
- In case of an infant, the condition of the umbilical cord should be inspected: whether it is tied, torn or cut.
INTERNAL EXAMINATION

1. OPENING OF BODY CAVITY:

- All the three cavities, head, thorax and abdomen should always be opened.
- There is no fixed sequence of opening these cavities.
- But in case of alleged infanticide, the head should be opened first so that the contents of the skull can be examined before blood is drained out by opening other cavities.
- In normal cases, thorax and abdomen are opened first and head later on.
- The spinal cord is normally not opened up. Only in cases of suspected spinal injury or poison it is opened up. In all other cases it is opened last.

2. EXAMINATION OF HEAD:

- The head is opened by giving first a transverse incision across the vertex from ear to ear and flaps are reflected anteriorly up to orbits and posteriorly below the occipital protuberance.
<table>
<thead>
<tr>
<th>Part of skull which has to be examined:</th>
<th>What is revealed by examination?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner surface of the scalp</td>
<td>1. Extravasation of blood, 2. Petechial haemorrhages or 3. Injuries.</td>
</tr>
<tr>
<td>Skull bones</td>
<td>Any fracture or separation of sutures.</td>
</tr>
<tr>
<td>Inner surface of the skull cap</td>
<td>1. Fracture of inner plate and, 2. Haematoma.</td>
</tr>
</tbody>
</table>

**Examination of brain:**
- The brain is removed by raising the anterior lobes with fingers of left hand and *cutting the nerves at its base* and the medulla as low as possible.
- The brain should be examined for any injuries, embolism, or petechial haemorrhages.
- Different sections of the brain should be cut to inspect carefully.
- The dura mater should be removed from the base of the skull at last, and *fractures should be examined if present on the base of the skull or around*.

**Order of examination of thorax and abdomen:**
- The thorax is opened by giving longitudinal incision from above the middle of the sternum to the pubic bone, avoiding any wounds present in the line.
- *The abdominal cavity should be examined first, before the thorax is opened.*
- The position of the diaphragm, any presence of blood, pus, or foreign body in the abdomen should be noted.
Examination of thorax:

- **The thorax is opened by dividing the ribs at their cartilages** and the **sternum at the sternoclavicular junction** with a cutter and lifting up the sternum in such a way that it does not injure the underlying parts.

- The **pleural cavities** should be examined for the presence of any blood, pus, or injury.
- The lungs should be examined for injury, collapse, diseases, etc.
- **To examine bronchioles and air passages, dissection of lungs should be done through hilum.**
- All the bronchioles can be opened by following their directions as they go inside the lung.
- The trachea and bronchioles should be examined for the presence of water, blood, foreign body, pus, etc.
- Any extravasation of blood or injury to **blood vessels, muscles, thyroid, cricoid cartilage, hyoid bone** should be noted.
- The trachea and oesophagus should also be inspected.
Examination of heart:

- **The heart is examined by opening the pericardium.**
- The heart should be removed and examined.
- The condition of the heart should be seen for enlargement or any injury present.
- **All the chambers of the heart** should be examined for any thrombus, embolus, etc.
- **All coronary arteries** should be examined by giving a small incision for any blockage or atherosclerosis.
- **The dissection of the heart is done in the direction of flow of blood for better appreciation.**

Examination of abdominal cavity:

- The **peritoneal cavity** should be examined for adhesion or injury.
- The abdominal organs should be removed and inspected as follows:

<table>
<thead>
<tr>
<th>Organ</th>
<th>Removal</th>
<th>Inspection</th>
</tr>
</thead>
</table>
| Stomach     | • The stomach should be removed by tying a ligature 3–5 cm above the cardiac end and another at the pyloric end.  
  • **It is opened along the greater curvature** and its contents examined. | • The **mucosal surface** of the stomach should be carefully inspected for congestion.  
  • The **contents** of the stomach should be weighed and their degree of digestibility should be noted.  
  • Any particular smell of contents should always be noted.  
  • In case of suspected poisoning, the entire stomach along with its contents is preserved. |
| Intestine   | Both small and large intestines should be inspected by cutting the mesentery. | • It is examined for congestion, ulcer & perforation.  
  • In cases of suspected poisoning a small part of the upper intestine is preserved. |
Liver

- The surfaces of the liver should be inspected.
- The gall bladder, pancreas and spleen should also be inspected for any disease or injury.

Kidney

- They should be cut and opened.
- They are examined for any disease or injury.

Urinary bladder

- In case of suspected poisoning, urine can be collected by a catheter before opening the bladder.

Uterus

- Uterus should be cut longitudinally and its inner surface should be examined for any changes.
- In a female body the examination of uterus is very essential.
- In nulliparous women, it is of very small size, around 7.5 cm × 5 cm × 2.5 cm.
- Its weight depends on whether the woman is pregnant or not.

Examination of spinal cord:

- In normal circumstances, it is not opened up.
- But if some injury or disease is suspected, it is opened up.
- The body is turned over on the face and a block is kept below the thorax; and an incision is made along the entire length of the vertebral column from the occiput to the lower end of the sacrum.
- After reflecting muscles and skin, the lamina are cut by a saw and the spinal cord is inspected.
- The vertebral column should be inspected for any fracture, disease, etc.

After the post mortem examination:

After the post-mortem examination is over, all the organs are replaced in the body, and the body is stitched up and covered with cloth; and then handed over to police who then forwards it to relatives for disposal.
Preservation of viscera and other articles:

The following viscera are preserved commonly:

<table>
<thead>
<tr>
<th>Viscera</th>
<th>Details of preservation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stomach</td>
<td>With all its contents.</td>
</tr>
<tr>
<td>Small intestine</td>
<td>Along with contents. About 1.0 m in adult, 1.5 m in children and whole in infants.</td>
</tr>
<tr>
<td>Liver</td>
<td>About 400–500 gm; whole in infants.</td>
</tr>
<tr>
<td>Spleen</td>
<td>Half in adults and whole in infants and children.</td>
</tr>
<tr>
<td>Kidney</td>
<td>Half each of both kidneys in adults, but both in children and infants.</td>
</tr>
<tr>
<td>Sample of blood</td>
<td>A gauze piece is soaked in blood, and then dried before handing over.</td>
</tr>
<tr>
<td>Sample of preservative</td>
<td>Commonly, the above viscera are preserved in a saturated solution of common salt. A sample of preservative is also given along with viscera as a control.</td>
</tr>
</tbody>
</table>

Following items are also preserved in special situations:

<table>
<thead>
<tr>
<th>Viscera</th>
<th>Suspected poisoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portion of the brain and the heart</td>
<td>Nux vomica or strychnine</td>
</tr>
<tr>
<td>Lungs and blood from the cavity of the heart</td>
<td>Carbon monoxide, alcohol, chloroform or hydrocyanic acid.</td>
</tr>
<tr>
<td>Cerebrospinal fluid</td>
<td>Suspected alcohol poisoning.</td>
</tr>
<tr>
<td>A portion of the skin, subcutaneous and muscle tissue</td>
<td>Poisoning by injection.</td>
</tr>
<tr>
<td>A few pieces of long bones about 15 cm long in suspected poisoning</td>
<td>Arsenic or antimony.</td>
</tr>
<tr>
<td>The uterus along with its contents</td>
<td>Criminal abortion.</td>
</tr>
</tbody>
</table>