

## A CRITICAL REVIEW ON MEDICOLEGAL AUTOPSY

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### ABSTRACT

The term 'postmortem examination' is often used as a simile for Autopsy, but basically it is not. A postmortem examination means only what it says that the body was examined after death. It can mean & often does mean that the physician merely looked at the body, fully clothed or that the viewed the body at a funeral home or in a morgue. The objective of medico-legal post-mortem examination is to establish the identity of a body, when not known; to ascertain the time since death & the course of death; & whether the death was natural or unnatural & if unnatural to know about the cause of death. For which it should be carried out by looking into some of the external and internal examinations and ultimately observing the changes that might have occurred in different systems of the body and finding out the exact cause of death. In case of new born, infants, the question of live birth & viability assume importance & should be determined. This article, thus review thoroughly about the changes that occur in case of homicidal, suicidal or accidental deaths.

**Keywords:** Autopsy, Suicide, Homicide, Cr.P.C., Medico-legal.

### INTRODUCTION

The term Autopsy originates from ancient 'Autopsia' which is derived from 'Autos' i.e. 'One-self' & 'Opsis' i.e. 'to see for oneself'. An autopsy is frequently done in cases of sudden death where a doctor is not able to give a death certificate or where death is believed due to an unnatural cause. Section 174 & 176 of code of criminal procedure (Cr. P.C.) mention the concept of medico-legal autopsy during the investigations of a sudden, suspicious and unnatural death. Medico-legal autopsy is performed in pursuance of law to establish the cause & manner of death & also to establish or rule out foul play. The medico-legal autopsy was first time introduced in

1302 A.D. in Italy. This procedure was carried out by physician (*BARTOLONEO DE VARIGNANA*) & surgeons. Medico-legal autopsy is performed, as a part of the inquest procedure, when ordered by the investigating authority in medico-legal deaths. The requesting authority is usually police/magistrate.

#### **Purpose of Medico-legal autopsy:**

Purpose of post-mortem examination in a particular case of unnatural or suspicious deaths is to find out the following:

1. To know the exact cause of death, the manner of death, whether natural, suicide or homicide.

2. To find out the circumstances of death, postmortem interval
3. In case of the unidentified dead body, to establish the identity of the deceased or to help to do so.
4. The period for which the deceased, survived after sustaining injuries or exposure to the poison.
5. Type of weapon or the poison used.
6. Whether one or more than one person was involved in case of homicide, any natural disease process, any other offence was related with the death e.g. rape.
7. Is the injury, which has caused death, expected to cause death in ordinary course of nature?
8. Whether the dead body has been displaced from the original place of disposal.
9. Whether more than one method/person or weapons were used or involved in the crime.
10. Whether the deceased received any treatment before death.
11. Whether there is anything on or with the dead body which may help identification of the assailant.
12. In case of death due to assault, the relative positions of the victim and the assailant.

**Aims & Objectives of medico-legal autopsy:**

- To determine the exact cause of death, time since death
- To establish identity of the deceased.
- To collect trace evidence and reconstruction of the crime scene.

**Rules of medico-legal P.M. examination:**

1. Permission/ requisition/authorization should be from the investigating officer (Police officer or Magistrate).
  - a. Inquest report (Panchnama): Which provides details about identity of the deceased, place of crime, death, where the body was lying and condition of the body, position of the body, condition of clothes and surroundings & the cause of death as judged by the investigating officer & witnesses.

- b. Dead body Challan (Form filled by the Investigating officer): It provides identity, date & time of death, place from where the dead body is sent, the person accompanying the dead body (police constable), list of articles & articles with dead body & the purpose why the dead body is sent for postmortem examination.

2. Cause: MLPMM can only be done at an authorized centre.
3. Identification: The dead body is identified to the medical officer by the police constable & the relative of the dead.

In case the body is unidentified, a photograph should be taken, clothes should be preserved & all identification make should be described in detail (including length of hair, complexion, height & weight). Fingerprints of all the 10 fingers should be taken.

4. Visit to the scene of crime: Normally, the dead body is sent to the mortuary but at times the postmortem may be requested at the scene of crime, if the condition of the body & weather hamper its transportation to mortuary. In case the medical officer is suspicious or doubtful about the cause of death, he should request for a visit to the scene of crime. The condition of the body, clothes any foreign articles, weapons & surroundings should be described.

There are many disadvantages of not visiting the scene of crime:

- a. The surroundings of the body & circumstances of death are not known.
- b. Fresh injuries may be caused on the body & clothes during its transport.
- c. Rigor mortis may be broken.
- d. Stains may appear on clothes & body during transit.
5. Starting post mortem:

The postmortem examination should be done as early as possible, after the papers are brought by the investigating officer, on all days of week including Sundays, at all hours including night.

NIGHT: Rule only in Maharashtra and postmortem is done only if there is sufficient light (As per rule

postmortem should be started within 2 hours). The postmortem report should be submitted within 48 hours.

6. History: A detailed history should be obtained of the case i.e. circumstances, cause of death, manner and time of death.

7. Clothes & ornaments:

All the clothes, ornaments & articles on the dead body should be mentioned in postmortem report & handed over to the police constable after receipt. Any tears, stains & smell is noted.

8. Verification of Injuries: The medical officer should verify the injuries noted by the Investigating officer in the inquest report & in cases of gross differences should request for a repeat inquest (The repeat inquest is done by magistrate)

9. Examination: A detailed examination should be done of the clothes external surface of the body & the 3 body cavities i.e. cranial, thoracic and abdominal. That the cause of death is obvious is no excuse for not examining some of the body cavities. Since-

- a. The obvious cause of death may notice not be the real cause of death.
- b. Other co-existing diseases which could have contributed to the causation of death would be missed.

10. Confidentiality: No unauthorized person should be permitted to be present during postmortem examination. The medical officer should neither discuss his findings with anyone nor even give a copy of postmortem report to anyone.

The postmortem report is prepared in triplicate- 1<sup>st</sup> copy for investigating officer/court, 2<sup>nd</sup> copy for civil surgeon of the district & 3<sup>rd</sup> copy as office copy.

11. Preservation of Viscera: Wherever indicated, the necessary viscera should be preserved for chemical analysis/ histo-pathological examination/bacteriological examination.

12. Report: The postmortem report should be prepared immediately after postmortem examination.

13. Video shooting: As per National Human Rights Commission n case of death in police custody or death due to torture, the whole postmortem should be recorded on video film.

#### **External postmortem Examination:**

It includes:

- Preliminary Data.
- Examination of clothes & extranls of body & orifices.

The details to be written in postmortem report are as follows:

1. Name & address of the dead body, postmortem examination done at (Name of the hospital & places)
2. Name of the Autopsy Surgeon
3. a. Body sent by – i.e. Name of the Police station.  
b. Distance & Place from where the body is sent.
4. Body brought by – Name of the police constable, his buckle number & the police station.
5. Body identified by- i.e. name of the police constable & close relatives who identify the body.
6. Date & time of - receiving the dead body, starting the postmortem exam, furnishing the post-mortem exam.
7. The substance of report submitted by the investigating officer i.e. cause & time of death as mentioned in the inquest report.
8. In case the postmortem is not done in the hospital.

Place where done, its distance from the hospital, reason why postmortem not done in hospital.

9. Age, sex, caste & list of clothes ornaments and other articles on the body.
10. Condition of clothes- Mention any smell, stains, tears, foreign body or burns
11. **a.** Marks of identification: In case of unidentified, all the points that help in identification. Photograph and fingerprints should be taken. Clothes should be preserved.  
**b.** In case of New born: Height, weight, details of umbilical cord, placenta and any hair on the head are noted.

12. Built of the body i.e. whether well built moderately built or poorly built and the body is warm/cold.
13. Rigor mortis: Whether well marked or slight & its extent.
14. **a.** signs of decompression  
**b.** Postmortem lividity- its site, colour & whether fixed.  
**c.** Condition of the cuticle.
15. **a.** Whether the features are natural.  
**b.** Eyes- softening, opacity, pupil and hemorrhages.  
**c.** Tongue- Condition, injuries & position.  
**d.** Natural orifices- condition, injury foreign body/discharge.
16. Condition of the skin- colour, whether oedema any injection marks.
17. External genitals: Any injury, foreign body/discharge, hymen in females, evidence of injury to testes.
18. Condition of position of limbs; mention any article held in hand/present under the nails.
19. Surface injuries: All the injuries on the body are mentioned serially and the details are given as type of injury, size, shape, age & the probable weapon responsible for causing the injury. Blood stains are noted, injuries should be photographed.  
In case of burns: Degree of burns, percentage of burns, colour and smell of kerosene, evidence of infection & whether soot & carbon particles are present.  
In case of Injury or ligature mark around the neck: Length, width, position, colour, condition of the epithelium & condition of the surrounding tissue around the ligature mark. Also material of ligature & manner of application of knot is noted.
20. Any fracture of the bones as examined by palpation of the body:  
From the external examination we come to know: Identity, time of death, condition & injury to the clothes, surface injuries on the

body and an idea about which internal organs may be injured/involved.

#### **Internal Examination:**

In all cases all the three body cavities i.e. cranial, abdominal & thoracic are examined in detail. If there is a foetal wound in one of the cavities, that cavity should be opened first; routinely the head is examined first then abdomen and finally thorax. Spine and Spinal cord are not examined routinely. However the indications for the examination of the spine & spinal cord are the following-

- When requested by the investigating officer
- H/o death due to injury but no injury seen.
- Death due to convulsions.
- Death due to spinal poisons.
- Any local injury.

#### **Examination of Cranial Cavity:**

A wooden block is kept under the shoulders to extend the neck & a head rest is also used.

- After parting the hair, a semicircular transverse incision is given on the top of the head, behind the mastoid, from left to right.
- The scalp is reflected anteriorly upto the supra-ciliary ridges & posteriorly beyond the occipital protuberance. Injuries or haematoma under the scalp are noted.
- The vault of the skull bone is examined for any fractures. The skull cap is removed by chisel and hammer or electric saw or driving holes and cutting with chisel & hammer.
- The durameter exposed is examined for extradural haemorrhage and also for evidence of antemortem thrombus in the sagittal sinus. The dura is removed & the examination is done for subdural & subarchanoid haemorrhage gets washed off with water while sub archanoid haemorrhage remains.
- The brain is examined by multiple serial sections for any tumour, pus, meningitis, encephalitis, haemorrhage in the intercerebral

space/interventricular space/ cerebellum and pons.

- The base of the skull is exposed after stripping the duramater and is examined for fracture in the anterior, middle and posterior cranial fossae.

After examination, brain is replaced in the cavity, skull cap is replaced and the scalp is sutured.

**Spine and Spinal Cord:** Spine and spinal cord is to be examined last.

- The body is kept prone and linear incision is given in the centre of the body from occipital protuberance to the lower part of the sacrum. The skin is reflected sideways & the muscles are dissected to expose the vertebrae.
- The vertebrae are examined and then the laminae are sawed on either side of the spinous processes to explore the duramater. The dura is cut and examined for any fluid, pus or tumours.
- The spinal cord is examined and is separated by cutting the nerves from below upwards and finally severing the spinal cord at foramen magnum. The cord is re-examined. The internal surfaces of vertebrae are examined for any fractures.

**Neck, Abdomen and thorax:**

To examine these parts, the incision may be given in either of the following manners-

- A linear incision starting from symphysis menti to pubic symphysis, avoiding umbilicus and any injuries to the body.
- Two incisions, starting from angles of the mandible meeting at xiphisternum and then continuing as a straight line upto pubic symphysis. (this is useful when a detailed dissection of the neck is required)
- Two incisions starting from anterior axillary folds curving under the breasts, meeting at xiphisternum and then continuing as a straight line upto pubic symphysis. This incision is useful when the dressed dead body is to be kept for public viewing.

**Neck:** Neck is examined for injury to muscles, blood vessels, lymph nodes, trachea, larynx, thyroid & hyoid bone. In case of ligature on the neck, the under-surface is examined in detail.

**Abdomen:** Normally, the abdominal cavity is examined before the thoracic cavity to avoid trickling down of the fluids due to gravity through the cavity mainly affected should be examined first.

- The stomach is removed after tying ligatures at both the ends. The stomach is opened along greater curvature & the examination is done for the contents, mucous membrane for the injury, perforation, smell, colour, foreign body, extent of digestion etc.
- The small and large intestines are removed after serving at the mesenteric attachment while the large intestine is opened along anterior taenia. The contents and mucous membrane are examined.
- The other abdominal viscera are initially examined in sites and then they are removed out and re-examined.
- The uterus is examined for pregnancy, foreign body, injuries or poisoning.
- The testes are examined for any evidence of trauma.

**Thorax:** The ribs are cut on both sides of the sternum at the costo-chondral junction & the sternoclavicular joints are disarticulated, to expose the thoracic cavity. All the viscera are examined in the body and later on after removing from the body. For examination of thoracic & abdominal viscera either each organ can be separately removed & examined or all the viscera can be removed in bulk and examined. Heart is opened along the direction of the blood flow- right atrium, right ventricle, pulmonary arteries, pulmonary veins, left atrium, left ventricle and aorta.

**Examination for Fat embolism:**

Under water, the pulmonary artery should be cut before opening the heart, when fat droplets will be seen.

**Examination for Air embolism:**

The pericardium is cut anteriorly, both the ends are held with hemostats, the cavity is filled with water; the ventricle is punctured, when air bubbles would be seen.

**Size of Viscera:**

- 1. Liver : 12 x 7 x 3.5 inch
- 2. Spleen : 4 x 2 x 1.5 inch
- 3. Kidney : 4 x 2 1.5 inch
- 4. Uterus : 3 x 2 x 1 inch
- 5. Testes : 2 x 1.5 x 1 inch

**Table 1:** Weight of Viscera:

ORGAN	WEIGHT IN MALES(in grams)	WEIGHT IN FEMALES(in grams)
Brain	1400	1300
Heart	230	210
Liver	1500	1300
Spleen	150	140
Rt. Kidney	150	140
Lt. Kidney	140	130
Uterus	-	40-50
Testes	13-14	-

**Cause of Death:**

- Based upon the examination done the cause of death is given. Time since death should always be given.
- In case of unidentified, the important identification marks should be re-written here. If possible it should be stated whether the death is natural/unnatural, if unnatural whether suicidal or homicidal or accidental.
- In cases of poisoning, an opinion about the nature of the poison should only be given after receiving the report from chemical analysis. If necessary, the histo-pathological & bacteriological examination should be done.

The postmortem report is prepared in triplicate. The 1<sup>st</sup> copy for investigating officer & court, the 2<sup>nd</sup> copy for civil surgeon & the 3<sup>rd</sup> copy as office copy. After all examination & preparation of post mortem report, the viscera are replaced into the body is stitched, washed & handed over to the relatives for disposal. The body is handed through police constable & after taking receipt.

Second Autopsy: may be required when the 1<sup>st</sup> autopsy is being challenged or is in conclusive. It is done by a panel of doctors.

**Disposal of the Dead body:**

- 1. By burial: Among mohammedians & Christians (Exhumiliation is possible).
- 2. Cremation: Among Hindus
- 3. Electric crematorium: Temperature: 1100°c, no smoke nuisance.
- 4. Tower of Silence: Among parses.

**CONCLUSION**

The postmortem examination carried out in all deaths from suspicious & unnatural causes, to accurately establish the cause & so correctly capture the death statistics. This is to protect the innocent from prosecution & hold the preparatory accountable.

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