Medicolegal autopsy

Defination

Autopsy refers to systemic examination of a dead person for medical, legal and/ or scientific purposes

Synonyms

- *Necropsy*
- *Post mortem examination*

Autopsy *- Auto : Self, Opis : viewing*

Necropsy *- Necro: dead, Opis : viewing*

Post mortem examination *- Post : after , mortem : death*

Types:

It is of three types:

i. ***Academic autopsy:*** *Dissection carried by students of anatomy.*

ii. ***Pathological, hospital or clinical autopsy:*** *Done by pathologists to diagnose the cause of death or to confirm a diagnosis. Consent of family is necessary.*

iii. ***Medico-legal or forensic autopsy:*** *Type of scientific examination of a dead body carried out under the laws of the State for the protection of rights of citizens in cases of sudden, suspicious, obscure, unnatural, litigious or criminal deaths. The basic purpose of this autopsy is to establish the cause and manner of death.*

Objectives of Autopsy

- Who, when, where, why, how and what are the questions that the autopsy assists in answering.

1. To establish identity of deceased when not known
2. To estimate time since death
3. To determine the cause of death - whether natural or unnatural
4. To determine the manner of death - whether accidental, suicidal or homicidal.
5. To collect evidences to identify the object causing death and to identify criminal
6. To document injuries and to deduce how the injuries occurred
7. To retain relevant organs/viscera and tissues as evidence
8. In newborn infants – to determine the issues of live birth and viability

Rules for Medicolegal Autopsy

· Medicolegal autopsy should be conducted by Registered Medical Practitioner only.

· The autopsy should be conducted at the earliest only on receiving official order (requisition) from the competent authority (i.e. police or magistrate)

· Whenever dead body is sent for medicolegal autopsy, it should be accompanied by a **dead body challan** and an **inquest report**.

· The autopsy should be done at authorized center, preferably well-equipped mortuary.

· Autopsy should be done in daylight because colour changes such as jaundice, changes in contusion, post mortem artefacts, changes in postmortem lividity etc. cannot be appreciated in artificial light.

AUTOPSY PROCEDURE

It consists of external examination and internal examination.

External Examination

- Clothing and accessories(stains, soiling material, foreign material, any cut marks, tears, stab marks, loss of buttons etc)
- General description of the body(Like height, weight, nutritional status, built, gross deformities, patterns of hair, colour of hair, any stains, presence of any foreign body, mud, grease, paint etc. should be noted.)
- Natural orifices(disease, discharge, injury, foreign body)
- Eyes and Oral cavity
- Postmortem changes
- Injuries

Internal Examination (Evisceration)

- *All three major cavities of the body, i.e. skull, thorax and abdomen should be opened and examined as a routine.*
- ***In general*** *- the thorax and abdomen are opened first, and then the skull.*
- *In suspected* ***head injury****, the skull is opened first and then the thorax and the abdomen.*
- *In* ***suspected asphyxial deaths*** *due to compression of neck, the skull and abdomen is opened first followed by dissection of the neck.*

Procedure

Body brought for postmortem examination

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Body placed on the examination table

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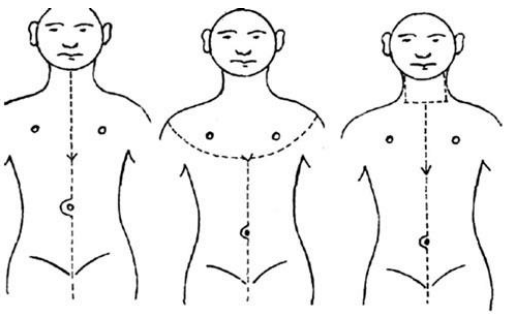
Lividity blanches on pressure (Not fixed)

Internal examination

Skin incisions

- *'I' shaped*
- *'Y' shaped*



- *Modified 'Y' shaped*
- *'T'-shaped*

I-shaped incision

- *Most common method followed.*
- *Extending from the chin straight down to the symphysis pubis and avoiding the umbilicus (because the dense fibrous tissue is difficult to penetrate with a needle, when the body is stitched after autopsy).*

Y-shaped incision:

- *Straight line of Y corresponding to the xiphisternum to symphysis pubis*
- *forks of Y runs down medially to the chest and extending towards the acromion process.*

Modified Y-shaped incision:

- *An incision is made in midline from suprasternal notch to symphysis pubis.*
- *The incision extends from suprasternal notch over the clavicle to its center on both sides and then passes upwards over the neck behind the ears (1 cm behind external auditory meatus).*
- *It is used when a detailed study of neck organs is required, like in hanging or strangulation.*

T-shaped or 'bucket handle' incision:

- *The neck is opened with a transverse incision which runs from acromion to acromion process (bisacromial) along the line of clavicles.*
- *Then a single midline incision is made down the anterior body wall, avoiding the umbilicus, to pubis.*

Steps for autopsy

- *Reflection of skin over the thorax and abdomen*
- *Cutting the rectus sheath to expose the Abdominal cavity*
- *Ligating the rectum and sigmoid colon*
- *Detaching the peritoneal attachments*
- *Cutting the sterno-clavicular joint and first rib using cartilage knife and bone cutter*
- *Removal of attachments to the sternal plate & Checking for free fluid in the pleural cavity*
- *Detaching diaphragmatic attachments*
- *Detaching the floor of the mouth*
- *Extracting the tongue & Detaching clavicular attachments*
- *En-masse removal of the organs*
- *Enmasse removal of viscerae*
- *Look for thoracic cage injuries*
- *Dissection of lung, kidney, liver and stomach*

For autopsy of scalp

- Scalp incision from one mastoid to the other
- Reflection of the scalp
- Detaching temporalis muscle
- Sawing the skull vault
- Removing the skull vault using chisel and hammer
- Opening the duramater in a floral pattern
- Detaching the falx cerebri
- Detaching tentorium cerebelli and medulla oblongata from spinal cord to remove the brain
- Cranial cavity after brain removal
- Dissection of the brain

Autopsy report:

consists of 3 parts

1. **Introductory part/ preamble:**
    - Age , sex, address of the deceased
    - Place from where the body was brought
    - Date and time of examination
2. **Examination part:**
    - External and internal findings recorded by Doctor.
3. **Opinion or conclusion:**
    - Regarding cause of death

Obscure autopsy:

- *In about 20% of all postmortem examination cases, the cause of death may not be clear at the time of dissection of the body, and there are minimal or indeterminate findings or even no positive findings at all.*
- *In many of these cases, the cause of death can be made out after detailed clinical and laboratory investigations and interview with persons who had observed the deceased before he died.*

These 'obscure autopsies' are more common in the younger age group

Causes of obscure autopsy:

i. ***Natural diseases:*** *Epilepsy, paroxysmal fibrillation.*

ii. ***Concealed trauma:*** *Concussion, blunt injury to the heart, reflex vagal inhibition.*

iii. ***Poisoning:*** *Anaesthetic overdose, narcotic, neurotoxic, cytotoxic or plant poisoning.*

iv. ***Biochemical disturbances:*** *Uremia, diabetes.*

v. ***Miscellaneous:*** *Allergy, drug idiosyncrasy.*

Negative autopsy:

- *In about 2–5% of all postmortem examination cases, the cause of death remains unknown, even after all laboratory examinations including biochemical,*

microbiological, virological, microscopic and toxicological examination.

- *If at the end of the process, no apparent cause of death is found, then the authorities must be informed that the cause of death cannot be determined and no opinion can be offered in the present state of medical and scientific knowledge.*
- *Ex – SIDS (sudden infant death syndrome)*

Digital autopsy/ Virtopsy:

- *It is a blood less minimally invasive procedure to examine a body for cause of death.*
- *It utilizes imaging techniques (MSCT & MRI), photogrammetry and 3- D optical measuring techniques to get a reliable accurate geometric presentation of all findings (the body surface – interior organs)*
- *Followed in Switzerland, US, UK, Malaysia, Japan, Singapore.*
- *Has limitations.*