

**ANATOMIC PATHOLOGY UNIT**

**DEPARTMENT OF HUMAN PATHOLOGY**

**SCHOOL OF MEDICINE**

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**AUTOPSY, STANDARD TECHNIQUES, GROSS PATHOLOGY, HISTOPATHOLOGY SECTIONS (FOCUS, ADULT)**

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**AUTOPSIES PERFORMED BY**

1. ANATOMIC PATHOLOGY CONSULTANTS
2. ANATOMIC PATHOLOGY REGISTRARS

**I. WRITTEN INFORMED CONSENT**

This is obtained from close relatives by the pathologist. Informed consent may also be obtained by the Doctor requesting the autopsy. Informed consent includes permission to retain organs.

**II. IDENTIFICATION**

1. Matching of the identification details on tags appended on the deceased with available documentation.

2. Identification by the next of kin of the deceased in life.

3. In forensic autopsies, guidance using the Interpol Disaster Victim Identification approach is advised.

**III. EXTERNAL EXAMINATION (DOCUMENT FEATURES ON BODY CHARTS/SKIN MARKING DIAGRAMS) – detailed description in the autopsy report template (separate document)**

1. Measurement of anthropometric characteristics (length, weight, head circumference, chest circumference, abdominal circumference, inter-pupillary distance, inner canthal, outer canthal distance, philtrum and any other relevant measurements.
2. Evaluation of external evidence of recent and old pathology. This is by inspection, palpation, percussion.
3. Evaluation of external post mortem changes.
4. Evaluation of evidence of medical intervention.

**IV. INTERNAL EXAMINATION – detailed description of findings is in the autopsy report template (separate document)**

1. Primary incision being an extended midline incision extending from the base of the neck to the symphysis pubis (or other incisions where indicated).
2. Examination of the thoracic cavities, abdominal cavities, measurement and description of effusions, ascites, evaluation of anatomy or variations.
3. En-Block evisceration of the viscera via the Lettule technique, which involves evisceration of the respiratory, digestive, genitor-urinary and cardiovascular systems.
4. Examination of the musculoskeletal system-skeletal muscle, bones, joints, cartilage, and bone marrow exposed following evisceration.
5. Bi-coronal incision of the scalp, excision of the calvarium with evisceration of the brain (or occipital approach in neonatal autopsies, still births).
6. Evisceration of the spinal cord (anterior or posterior techniques).

**V. Dissection of Organs Ex-Vivo**

1. Dissection of the upper respiratory and oral organs – this includes a posterior sagittal dissection of the oesophagus and its dissection from the trachea, sagittal dissection of the trachea and larynx with exposure of the mucosa, serial dissections of the tongue.
2. Dissection of the trachea following blunt tissue planar dissection off the anterior cervical skeletal muscles.
3. Examination of the laryngeal and tracheal mucosa, including vocal cords, thyroid cartilage, hyoid bone.
4. At the thoracic compartment, sagittal dissection and exposure of the intimal surface of the aorta. Dissection of the pulmonary trunk and dissection of the lungs from the thoracic trunk, hilum.
5. Dissection of the pericardium with exposure, evaluation and measurement of pericardial fluid, dissection and separation of the thymus from the anterior pericardium and the heart for later dissection.
6. Dissection of the retroperitoneal organs: adrenals, kidneys, ureters and their separation for later dissection.
7. Dissection and separation of the liver, spleen and pancreas.
8. Dissection of the stomach, duodenum, ileum, jejunum and colon. By dissection along the greater curvature the stomach mucosa and contents are exposed, measured and mucosa examined. Dissection to separate the small and large intestines from the mesentery is undertaken; the intestines are dissected along the anti-mesenteric border with exposure and description of the mucosal contents and the mucosa.

**VI: EXAMINATION OF INDIVIDUAL ORGANS**

1. Respiratory system: lungs are weighed, examination of the pleura done, dissection of the segmental arteries and evaluation for thrombi, bisection of each lung along a single plane with exposure of the parenchyma.
2. Cardiovascular system: the large arteries are dissected, and intimal surfaces dissected. The heart surface is examined, coronary arteries dissected by 5 mm sections along their entire length and examined for intimal lesions, the heart is then dissected along the lines of blood flow and later weighed.
3. Gastrointestinal system: Liver surface is examined, weighed, coronal sections made, each 5 mm thick. The mesentery is examined for pathology; Serosa of the stomach, intestines as well as esophageal adventitia is examined. The mucosa is exposed and examined.
4. Genitourinary System: the kidneys are weighed, capsule stripped and bisected to reveal the cortex, medulla and the pelvic-calyceal system. The urinary bladder mucosa is exposed, urine quantity measured and described. Testes are extracted through the inguinal canal, weighed, partial dissection and evaluation of tubular stringing performed. The prostate is measured and dissected. The ovaries are weighed, bisected. The uterus is examined, bisected by a single coronal plane.
5. Reticulo-endothelial System: the lymph nodes are examined, spleen is weighed and dissected in 5 mm coronal sections, and bone marrow is examined, if necessary, femoral bone marrow is exposed.
6. Endocrine System: The adrenal glands are weighed and dissected, thyroid gland is weighed and dissected, parathyroid glands if found inspected, pituitary gland is examined.
7. Musculoskeletal System: skeletal muscles, bones and joints are examined.
8. Central Nervous System: Eviscerated brain is weighed, vessels that constitute the circle of Willis, examined, and then fixed for further evaluation after 10-14 days. The spinal cord, if eviscerated, is fixed for two weeks. After this period, dissection is performed. The cerebrum is dissected in 5 mm coronal sections following an initial section along the Rolandic fissure and the Mammilary bodies. The cerebellum, 5 mm saggital sections of the hemispheres are made, the brain stem, medulla and spinal cord: 5 mm saggital sections are made.

**SECTIONS FOR HISTOLOGY**

**TISSUES EXCLUDING BRAIN AND SPINAL CORD: 17 CASSETTES (MOTHER)**

1. Heart, 1 section including left atrium, left circumflex coronary artery, mitral valve and left ventricle.
2. Heart, 1 section including right atrium, right coronary artery, tricuspid valve, right ventricle.
3. Left lung: hilus, and periphery.
4. Right Lung: hilus and Periphery.
5. Gastro-esophageal junction and stomach.
6. Small intestine, large intestine and appendix.
7. Liver and head of pancreas
8. Thyroid gland, tail of pancreas
9. Parathyroid glands and Pituitary gland
10. Left Adrenal Gland and Kidney
11. Right Adrenal Gland and Kidney
12. gonad, urinary bladder
13. Right breast, gonad
14. Uterus – cervix, corpus or Prostate gland/seminal vesicle
15. Muscle (cross and longitudinal sections), skin, nerve.
16. Spleen, lymph nodes
17. Vertebrae including bone marrow (decalcified)
18. Any other sections as required.

**TISSUES, CHILD**

**BRAIN AND SPINAL CORD, HISTOLOGY SECTIONS 8 CASSETTES (LABELLING PREFIX: CN)**

Brain and spinal cord dissection is performed after fixation for a period of 2 weeks (in 15% Neutral Buffered Formal Saline). See Appendix 4 below.

1. Parasagital frontal lobe from anterior horn of lateral ventricle to midline apex (sampling corpus callosum, lateral ventricular wall, cingulated gyrus, indusium griseum, Parasagital neocortex and Centrum semiovale)
2. Temporal lobe including hippocampus at level of the lateral geniculate body (samples hippocampus, transitional allocortex, temporal neocortex, lateral geniculate body, temporal horn wall, choroid plexus and tail of the caudate nucleus)
3. Midline mammilary bodies through the insular cortex (samples hypothalamus, anterior thalamus, third ventricular wall, internal capsule, optic tract, globus pallidum, putamen, claustrum, insular cortex and both external and extreme capsules)
4. Midbrain (samples crux cerebri, substantia nigra, aqueduct of Sylvius, red nucleus and decussation of the brachium conjuctivum)
5. Pons at the level of fifth nerve exit (samples pontine tegmentum, floor of fourth ventricle, trapezoid body [ascending sensory pathways] pyramidal tract and cerebellar afferent nuclei and tracts)
6. Medulla Oblongata (samples pyramidal tracts, inferior olivary nuclei, medial lemniscus, various cranial nerve nuclei, medial longitudinal fasciculus, choroid plexus, floor of the fourth ventricle and inferior cerebellar peduncle)
7. Cerebellum (samples vermis and neo cerebellar cortex, white matter and dentate nucleus)
8. Spinal cord: cervical, thoracic and lumber (samples several levels of the spinal cord)
9. Additional sections to demonstrate abnormalities that cannot be included in the preceding sections or additional studies.

References

*Walter E. Finkbeiner, Philip C. Ursell, and Richard L. Davis,* Autopsy Pathology, A Manual and Atlas, 2009, Elsevier, ISBN: 978-1-4160-5453-5

Gilbert Barnes E. Potters Pathology of the Fetus, Infant and Child. Philadelphia

Gilbert Barnes E. Handbook of Pediatric Autopsy Pathology, 2005. Humana Press

**ADULT AUTOPSY TEMPLATE - TRAUMA**

**External Examination**

The decedent (length, \_\_\_\_ cm; weight, \_\_\_\_ kg) is a well-developed, well-nourished/poorly nourished/obese/cachectic, phenotypically (race) male/female appearing younger than/older than the recorded age of \_\_\_\_. The unembalmed/embalmed, unclothed/clothed body is identified by a tag attached to the right/left great toe. (In forensic cases, describe the identification on the outside of the body bag and any security precautions preventing unauthorized opening of the bag. Describe the decedent’s clothing, jewelry, pocket contents, and so forth in detail.) There is mild/ moderate/pronounced rigor mortis present in the jaws, neck, back,and extremities. A violaceous posterior/anterior/other lividity pattern is present. The body is cold/warm/other. The decedent is normocephalic/other and without apparent trauma about the face or scalp/other. The scalp hair is (color) and \_\_\_cm in average length. (In males, describe facial hair.) The bones of the forehead, nose, cheeks, and jaw are intact/other to palpation. The irides are (color), and the pupils are equal and round measuring \_\_\_\_ cm bilaterally/other. The conjunctivae are pink/other, and the sclerae are lear/icteric/other. The ears are well-formed and symmetrical/other, and the external auditor canals are without/with discharge. The nose is well-formed and symmetrical/other. The external nares are patent/other and without hemorrhage or discharge/other. The lips are intact/other. The mouth contains a small amount of seromucous secretion/other and no obstructing materials or lesions/other. The native teeth are present/absent and in good/poor repair. The buccal mucosa is pink/other and shows no signs of trauma/other. The neck is symmetrical. There is no palpable crepitus or hypermobility. The trachea is palpably straight and in the midline/deviated to the right or left. The chest is symmetrical/other and without palpable crepitus or bony deformity. The breasts are soft/other without palpable masses, skin retraction, or nipple discharge/other. The abdomen appears flat/distended and soft/hard without palpable evidence of organomegaly or external trauma/other. Pubic hair is present in the usual male/female distribution/other. The external genitalia are unremarkable and atraumatic. (For males: The penis appears circumcised/uncircumcised. Both testes are descended and palpable in the scrotum/other.) There is no palpable cervical, axillary, or inguinal lymphadenopathy/other The upper extremities are symmetrical and well developed/other. The fingernails are thin and translucent/other. The nail beds show no cyanosis/other. There is no clubbing/other. The lower extremities are symmetrical and well muscled/other. There is no pedal edema/other. The toenails are thin/thickened/other and translucent/opaque/other. The soles of the feet are soft/callused/other. The posterior trunk shows a symmetrical external contour/other. The spine appears straight/other. The anus is closed and atraumatic/other. The skin color is white/brown/tan/yellow/pale. The skin shows no irregularity/poor turgor and elasticity/eruptions/rashes/other.

**Scars and Identifying Marks**

Describe scars and identifying marks.

**Evidence of Therapeutic Intervention**

The following medical paraphernalia are in place: (Describe intravenous or intraarterial lines, Foley catheters, endotracheal tubes, recent surgical incisions, and so forth.)

**Evidence of External Trauma**

**Gunshot Wounds**

**Entrance**. Describe location, dimensions, abrasions, contusions, soot, stippling, or muzzle mark; satellite injuries; bone beveling. This wound is centered \_\_\_\_\_ cm from the top of the head and \_\_\_\_\_ cm to the left/right of the anterior/posterior midline.

**Exit**. Describe location, description, dimensions, abrasions, contusions. This wound is centered cm from the top of the head and cm to the right/left of the anterior/posterior midline.

**Path of projectile**. Highlight path of projectile through body. Recovery of projectile. A projectile/projectile fragment is recovered from the \_\_\_\_\_ and is labeled “No. \_\_\_\_\_.” This fragment is a deformed, copper-colored, lead-cored slug/other. There is no radiographic evidence of metal fragments or retained projectile/other.

—or—

**Recovery of projectile**. No projectile is recovered (perforating wound). Direction of wound. The projectile traveled from (right to left, front to back, and downward/other).

**Summary:** In summary, this is a (perforating/penetrating) (gunshot/shotgun) wound \_\_\_\_\_ of range that entered the body\_\_\_\_\_, (highlights of path), and exited the body \_\_\_\_\_. The direction of the wound track is \_\_\_\_\_. A/No projectile is recovered.

**Sharp-Force Injuries**

**Stab Wound** Describe location, dimensions, orientation, wound edges, contusions, abrasions. The wound is centered \_\_\_ cm from the top of the head and cm to the left/right of the anterior/posterior midline.

**Wound track**. This incised wound penetrates at a depth of \_\_\_cm (describe internal injuries).

**Direction of wound**. This wound tracks from (right to left, front to back, and downward/other).Incised Wound of the head and \_ inches to the (left/right) of (anterior/posterior) midline.

**Blunt-Force Injuries**

**Hemorrhages:** Describe location, color, size, characteristics.

**Lacerations:** Describe location, size, characteristics.

**Fractures:** Describe site, characteristics (focal, crush, penetrating, traction, angulation, rotation, compression, combinations).

**Abrasions/contusions:** Describe location, color, size, characteristics.

**Injuries from Hanging and Strangulation**

**Ligature marks:** Completely/partially encircling the neck is a ligature mark measuring cm in length by cm in width with a furrow depth of cm. The ligature mark is centered across the anterior/posterior/lateral/right/left neck at the level of the \_\_\_\_\_. One end is located \_\_\_\_\_cm from the top of the head and \_\_\_\_\_cm to the right of the anterior/posterior midline; the other is\_\_\_\_\_ cm from the top of the head and \_\_\_\_\_cm to the left of anterior/posterior midline. The angulation of the ligature mark \_\_\_\_\_.Describe any wound patterns, margins, point of suspension and excoriations of the skin above or below the mark.

**Ligatures:** Accompanying the body is a ligature consisting of (type of material/associated pattern/length of ligature/diameter). Describe knot if present. The pattern/texture of the ligature is compatible with the pattern of the mark on the decedent’s neck/other.

**Primary Incision, Neck, and Body Cavities**

A standard Y-shaped thoracoabdominal incision reveals a subcutaneous fat thickness of \_\_\_\_ cm at the midabdominal level. There is no evidence of hemorrhage in the anterior muscles and soft tissues of the neck/other. The carotid sheaths are intact/other. The anterior cervical spine is palpably unremarkable/other. No obstructive material or lesions are present in the glottis or larynx/other. The hyoid bone and laryngeal cartilage are normally formed and intact without evidence of fractures or hemorrhage/other. The breast tissue consists of a small amount of white stroma within yellow fat/other. The sternum and ribs of the anterior chest are intact/other. The mediastinum is midline/other. The pericardial sac contains \_\_\_mL of serous fluid; its surfaces are glistening and smooth/other. The parietal pleural surfaces are glistening and smooth except for a few easily lysed apical fibrous adhesions/other. There is no pleural fluid/other. There are no pneumothoraces/other. The domes of the diaphragm are at the fifth rib bilaterally/other. Omental and mesenteric fat is abundant/other. The peritoneal surfaces are glistening and smooth/other; there are no unusual fluid collections in the abdominal space/other, and the organs occupy their usual positions/other.

**Cardiovascular System**

The **heart** (\_\_\_\_\_ g) is normally formed/other and located in its usual position in the left chest/other, with its apex pointing to the left/right/midline. There is a minimal/moderate/large amount of epicardial fat. The epicardial surface is glistening and smooth/other. The atrial chambers are not dilated/dilated. The interatrial septum is intact/other. The atrioventricular connections are present/other, and the leaflets of the atrioventricular valves are thin and delicate/other. The chordae tendineae are thin/other. The interventricular septum is intact/other. The myocardium is firm and red-brown/other. The right and left ventricular free walls measure \_\_\_cm and \_\_\_\_ cm, respectively. The outflow tracts are widely patent/other, and the semilunar valves each contain three thin and delicate/other cusps. The pulmonary artery is of appropriate caliber and configuration/other; its intimal surface is glistening and intact/other. The coronary arteries course over the surface of the heart in the usual fashion/other. There is balanced/ right dominant/left dominant coronary artery circulation. The coronary arteries are patent/other and free of atherosclerosis/other.The ascending **aorta** is of the usual caliber and arches left/other before descending along the left/other side of the vertebral column. The major arteries arise from the aortic arch and descending aorta in the usual configuration/other and are patent/other. The intimal surface of the aorta is smooth/other. The venae cavae and other major veins are patent and thin walled/other.

**Respiratory System**

The **trachea** is of normal/other caliber and courses in the usual/other fashion. The **lungs** (right, \_\_\_\_\_ g; left, \_\_\_\_\_ g) contain the usual/other lobes and fissures. The lungs collapse completely/ collapse only partially/do not collapse. The visceral pleural surfaces are slightly opaque/other with a small/moderate/large amount of anthracotic pigment. The parenchyma is soft and pale red/other. Air spaces are not enlarged/other. Respiratory mucosa is smooth and pale/other, and the lumen contains a small amount of clear mucus/other. The vessels are patent/other.

**Gastrointestinal System**

The **oesophagus** courses in the usual/other fashion to enter the stomach; its mucosal surface is white and intact/other. The squamocolumnar junction is sharp/indistinct/other. The **stomach** is empty/other and does not contain residuals of medication/other. An ethanol-like odor is apparent/not apparent. Gastric mucosa is intact with tall rugal folds/other. The wall is pliable/other. The pylorus is contracted/other. The **small intestine** is of the usual/other caliber, and its walls are pliable/other. The **cecum** is freely mobile/fixed in the right lower quadrant. The **appendix** is retrocecal/other and not inflamed/other. The **colon** contains formed brown stool/other and is of generous caliber/other. No focal mass lesions are identified throughout the gastrointestinal tract/other.

**Hepatobiliary System**

The **liver** (\_\_\_\_ g) has a sharp/blunt/other anterior margin; its surface is intact, smooth and glistening/other. The parenchyma is red-brown and firm with the usual/accentuated/other lobular pattern. Intrahepatic bile ducts and vessels are patent/other. The **gallbladder** is present/other and contains approximately \_\_\_\_ mL of viscid dark green bile/other. The wall is thin and pliable/other with reticulated intact/other mucosa. The common bile duct is patent/other into the duodenum.

**Pancreas**

The **pancreas** (\_\_\_\_\_ g) is gray/other and located in its usual position/other within the duodenal sweep. Its parenchyma has a firm/lobular/other architecture with minimal/abundant fat in the tail. The pancreatic ducts are of the usual caliber/other.

**Urinary System**

The **kidneys** (right, \_\_\_\_\_ g; left, \_\_\_\_\_ g) are located in their usual retroperitoneal position/other and have capsules that strip with the usual ease/less difficulty than usual/greater difficulty than usual to reveal smooth/granular/other surfaces. The parenchyma is red-brown/other with clearly demarcated/ill-defined corticomedullary junctions. A minimal/moderate/large amount of peripelvic fat is present. The collecting systems are not dilated/dilated/other. The pelves and ureter are patent and not dilated/other. Their mucosa is smooth/other. The **urinary bladder** contains\_\_\_\_\_ mL of clear/turbid/other urine. The bladder mucosa is intact/other.

**Reproductive System (Male)**

The **prostate** (\_\_\_\_\_ \_ \_\_\_\_\_ \_ \_\_\_\_\_ cm or \_\_\_\_\_ g) is firm/other with lobular gray-white/other parenchyma. The testes have smooth white/other capsules and tan/other parenchyma. Tubules string out in the usual manner/do not string out

**Reproductive System (Female)**

The **uterus, tubes, and ovaries** are in their usual/other relative positions within the pelvis and appear appropriate for age. The cervical os is round/elongated/other. The endometrial cavity

(\_\_\_\_\_ \_ \_\_\_\_\_ cm) is empty/other. The endometrium is pale/ other and measures \_\_\_\_\_ cm in thickness. The Fallopian tubes are narrow/other and without/other adhesions. The ovaries (right,\_\_\_\_\_ \_ \_\_\_\_\_\_ \_\_\_\_\_ cm or \_\_\_\_\_ g; left, \_\_\_\_\_ \_ \_\_\_\_\_\_ \_\_\_\_\_ cm or \_\_\_\_\_ g) are gray/other and convoluted/smooth/other with firmgray parenchyma containing a few scattered cortical corpora lutea and albicantia/homogeneous parenchyma/other.

**Lymphoreticular System**

The **thymic tissue** is ill defined; its parenchyma largely replaced by fat/other. The **spleen** (\_\_\_\_ g) has a smooth, intact/other capsule. Splenic parenchyma is dark red/other. The follicles are small/other, and trabeculae are delicate/other. There is no/other lymphadenopathy. The **mediastinal lymph** nodes are soft and black/other. Other **lymph nodes** are small and gray/other. Rib and vertebral marrow is red, moist, and ample/other.

**Endocrine System**

The **pituitary** (\_\_\_\_\_ g) fills the sella turcica/other. The **thyroid gland** is symmetrical, red-brown, and firm/other. The **adrenal glands** have uniform yellow cortices/other separated from the medullary gray/other by a thin, red line.

**Musculoskeletal System**

**Cartilage** is firm/other. The **bone** is hard/other. The vertebrae, ribs, pelvis, and long bones are intact without gross evidence of fracture or deformity/other. **Skeletal muscles** are red-brown, firm and appropriate mass for the decedent’s age and sex/other.

**Head and Central Nervous System**

Reflection of the **scalp** reveals no evidence of subgaleal hemorrhage/other. The underlying **calvarium** is intact and normal in thickness/other. The **dura** is intact/other and its inner surface smooth and glistening/other. The dural sinuses are patent/other. Cerebrospinal fluid is clear/other. The **brain** weighs \_\_\_\_\_ g. The leptomeninges are thin and transparent with no vascular congestion, subarachnoid hemorrhage, or exudate/other. The circle of Willis and other basal vasculature are intact and normally formed/other. The vessels are patent and thin walled/other. The cranial nerves are intact and normally distributed/other. The dorsal convexities of the brain are symmetrical with a well-developed gyral pattern/other. The brainstem and cerebellum show the usual/other external configuration. There is no localized external softening or contusion of the brain. There is no displacement of the cingulate gyrus, medial temporal lobe, or cerebellar tonsils/other.

**END**