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## MAKE NECROPSIES EASIER



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*This work is a heartfelt tribute to  
the cherished individuals who have  
left us. May their souls find  
eternal peace and God's mercy be  
upon them.*

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## **Introduction**

Postmortem training is part of veterinarian education, but veterinarians are typically unsure when working with postmortem material because their interests are naturally more focused on treating and supervising live animals. In order to help veterinary students and professionals feel more comfortable expanding their practices to regularly do postmortem examinations, this manual offers basic instructions for conducting postmortem examinations in the clinic and on farms.

Systematic inspection of dead animals, documentation of pathological lesions, and interpretation of findings are all part of necropsy. An understanding of histology, microbiology, immunology, and toxicity is required for confirmation. The necropsy examination is a crucial component of disease investigation; as a result, veterinarians should be knowledgeable about postmortem examination techniques, noting lesions, and recording of lesions and collection of proper material for laboratory.

There are many ways to approach a necropsy. The technique presented in this manual is modified based on our insights gained by teaching pathology over thirty years.

## **1- Definition**

A necropsy, or post mortem examination, is the examination of the body of an animal after it has died. The word "necropsy" should not be interchanged or confused with the term "autopsy", which strictly means a human examining the body of another human following death of the latter, and as such does not apply to an animal postmortem.

Necropsy is carried out to determine the precise cause of death, and when done correctly, it involves examining the animal's body as a whole as well as each organ in detail. Determining the cause of death, whether it was due to sickness or trauma, can be done with the help of a careful examination and organ sample.

In veterinary medicine, a necropsy investigation also aims to analyze dysfunction at the level of the entire animal or even the herd. Analysis of dysfunction based only on cellular, organ, or system level is insufficient.

## **2- Conditions for a successful necropsy**

2-1 One of the most important things to remember when performing necropsy is to do it as soon as possible after death. Changes in tissues occur within 20 minutes after the animal has died. Because the real reason for an animal's death may be masked by these alterations. This is especially true if it's hot outside, the animal has fever, and the disease symptoms point to GI tract involvement. The thickness and type of an animal's coat, the animal's physiological state at the moment of death, the rate of rumen fermentation, and the amount of body fat all affect how quickly heat accumulates and dissipates, which has an impact on decomposition.

2-2 When doing a necropsy, it's critical to consider biosecurity. The ideal location for a necropsy is:

- Away from other animals, food storage areas, and workers on the property.
- A place that can be quickly and completely sterilized
- If you don't have access to a concrete pad like that; the dirt area should be away from other animals on the property and it is best to have the area in direct sunlight because the heat and light will help kill many pathogens.

2-3 Keep in mind that any post-mortem examination should take into account your personal safety, as well as the protection of your helpers and the laboratory employees. Never do necropsies while dressed normally. Put on coveralls, rubber boots, and gloves. You may choose to wear a mask and/or goggles.

2-4 Never eat, drink, or smoke while conducting a necropsy.

2-5 Prelabel specimen containers to ensure all recommended specimens will be collected.

### **3 Commemorative**

A necropsy is comparable to detective work in that it includes more than just examining an animal's interior. Do your best to learn everything you can about the animal. This helps you to build a comprehensive picture of the cause of death.

- ✓ A written record of animal age, sex, production cycle, breed, clinical signs prior to death, history of trauma or disease, etc....
- ✓ Note date and time of death and where the animal died.
- ✓ Does it look like the animal just laid down and died or does it appear that the animal struggled?
- ✓ Note if any other animals are affected, make note of their symptoms, age, location, etc....
- ✓ Consider a feed analysis if you suspect nutritional problems.
- ✓ Therapeutic and preventive measures adopted.
- ✓ It may be useful to take pictures of your findings.
- ✓ Do not hesitate to ask the owner any questions that may help you in the diagnosis such as pasture conditions, types of forage, stocking rate, supplemental feeding, hay and grain storage practices, weather information, and epidemiology of past disease outbreaks...

#### **4 Equipment needed for postmortem**

The equipment required during postmortem operation is listed below:

- Gloves
- Boots
- Coveralls
- Protective glasses
- Boning knife
- Steel - for sharpening
- Scissors
- Wire cutters
- 10% buffered formalin (from a veterinarian)
- Sealable bag (Zip-lock bags)
- Permanent marker
- Needles
- Syringes

## 5 External Examination

The physical inspection of a living animal and the external examination are extremely comparable. The objective of the external examination is to establish or confirm the animal's identifying characteristics (species, breed, sex, coat color, distinguishing markings, and tattoo), to record any signs of prior medical or surgical intervention, and to find and describe any exterior lesions.

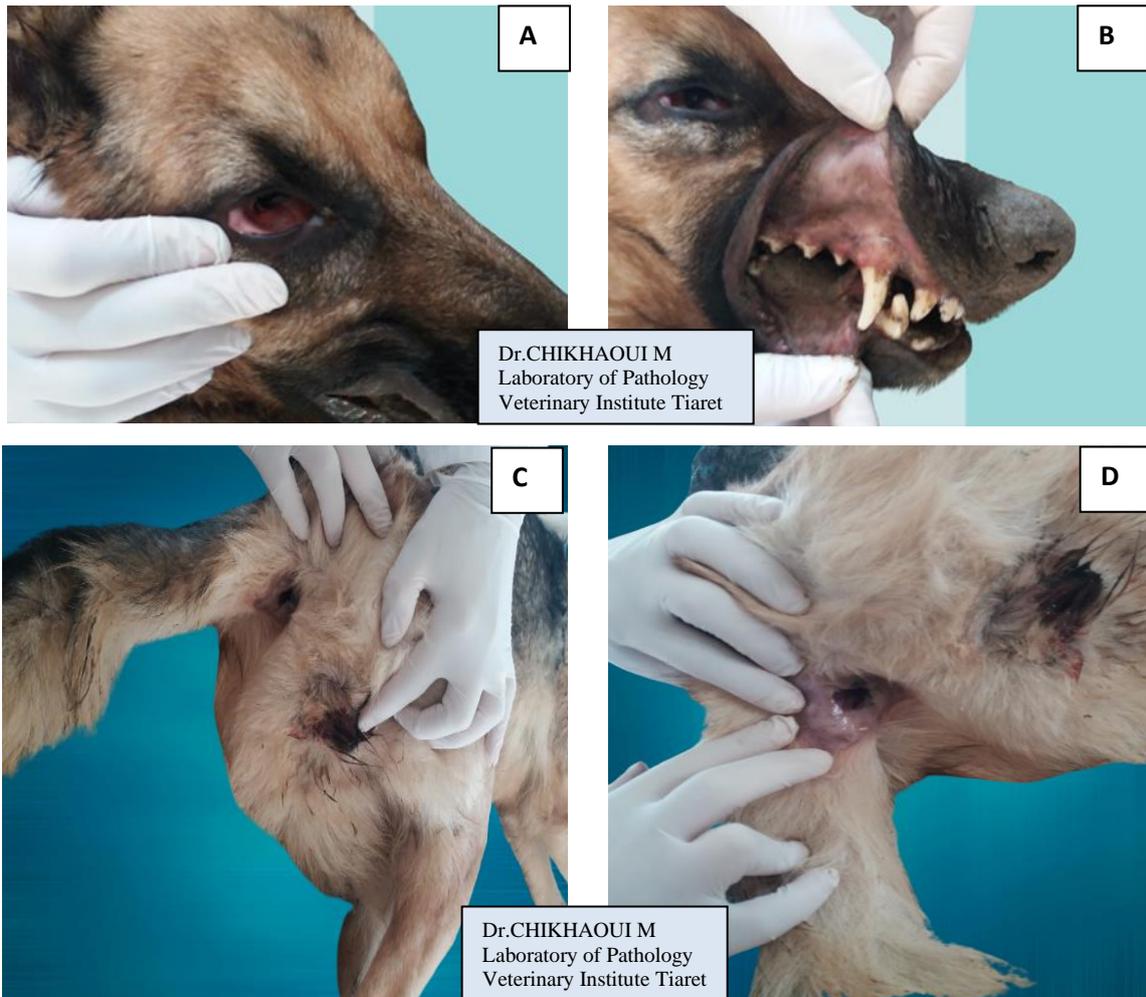
Before beginning the necropsy:

- Obtain a body weight on the animal.
- In the absence of a birth date, tooth eruption and wear patterns can be used to estimate the animal's age (Fig. 1).



**Figure 1.** Gazelle. Tooth examination for age determination

- Prior to placing the carcass in the final necropsy position, the "downside" of the carcass (the left external and muscular skeletal aspects) should be examined.
- Mammary glands and external genitalia are evaluated for symmetry and consistency.
- Lymph nodes are palpated before the carcass is opened.
- visual examination of the eyes, ears, oral cavity, skin and hair coat, nails, external genitalia, umbilicus, and perineum and palpation of the skull, limbs, joints, ribs, vertebrae, and pelvis (Fig. 2).



**Figure2.** Female dog. External review. **A.** Assessing the condition of the conjunctiva and eyes. **B.** Inspecting the oral mucosa. **C.** Evaluating the vulva. **D.** Examining the anus.

- Note any external abnormalities
- Cutaneous abrasions, lacerations, hemorrhages, masses
- Areas of acanthosis, hyperkeratosis, excessive pigmentation (melanosis) or hypopigmentation (Fig. 3)



**Figure 3.** Lamb. Hyperkeratosis in the ears

- Areas of inflammation or crusting in unpigmented areas of skin (e.g., photosensitive dermatitis)
- Interdigital inflammation, ulcers, pustules, blisters
- External parasites (fleas, mites, ticks, lice)
- Nasal, ocular, vulvar, penile discharges
- Diarrhea (Fig. 4).



**Figure 4.** Dog. Dirty anal part due to diarrhea

- Exudate in external ear canals
- Dental tartar, gingivitis, oral ulcers (Fig. 5)



**Figure 5.** Dog. Uremic ulcers on the oral mucosa

- Subcutaneous edema
- It is valuable to assess the body condition score and degree of postmortem change in cases where little history is available or the circumstances of the death are unknown.
- Mucous membranes are examined for (Anemia, icterus, Cyanosis...) (Fig. 6)



**Figure 6.** Dog. Icteric oral mucosa (yellow color)

- Muscle and bones are examined before the carcass is opened. The limbs are flexed if possible and evaluated for fractures or joint disease.
- Rigor mortis begins approximately 3 hours after death, peaks at 12 hours, and declines over days, depending on environmental conditions. If the carcass is in rigor

mortis and was not moved at time of death, the positioning of the limbs and head is noted.

➤ An overview photograph of the body as a whole and photographs of all external lesions should be taken before making the first incision.

## 6 NECROPSY PROCEDURE

### 6-1- Positioning

Different veterinarians possess various preferences for how the carcass should be placed during the necropsy. The most practicable position for a field necropsy is lateral recumbency because it provides easier access to the dorsal abdomen and thorax's organs and structures. The inability to assess an organ's symmetry (in the case of the lungs) or estimate the size difference between paired organs (in the case of lymph nodes) is a disadvantage of lateral recumbency. Right lateral recumbency is preferred by certain diagnostic pathologists because it provides quick spleen visibility (Fig. 7A). Left lateral recumbency is advised for establishing the orientation of the gastrointestinal system and liver; this allows for early access to and visualization of the pylorus, ileocecal junction, and gallbladder.

In the case of small animals (dogs, cats, and even sheep and goats), and in the presence of a necropsy table, it is best to place the animal dorsally (Fig. 9)



**Figure 7.** Gazelle. Lateral recumbency.

### 6-2- Skinning the Carcass

Place the body in dorsal recumbency. Disarticulate the four limbs, if the animal is small, the disarticulation can be done by force of the arms only, if the animal is larger or if the rigor mortis is already installed cut the pectoral muscles and brachial plexus to reflect the right forelimbs (Fig. 8). Locate the glenohumoral joint by depressing the

forelimb, which will elevate the joint. Cut across the medial side of the joint at the highest point of the shoulder (Fig.8). Assess the volume, color, and viscosity of synovial fluid. Inspect and palpate the articular cartilage and examine the joint capsule insertion line for irregularities. Palpate the coxofemoral junction to locate the joint space and open the joint capsule.



**Figure 8.** Dog. Disarticulation of the four limbs at the scapulo-humeral and coxo-femoral joints.

Make a first line of incision from the chin to the anus, in the male, the penis and the testicles are bypassed (Fig.9). In adult females, examine the mammary gland tissue as you reflect the skin and collect samples of any nodules or areas of thickening, as well as a section of normal gland.

Make two other lines of incision perpendicular to the first, one from the mid-axilla of the cannon of the right fore limb to the mid-axilla of the cannon of the left fore limb. The second for the hind limbs by proceeding in the same way (Fig.9). Then gradually begin stripping the skin until complete removal (Fig.10).



**Figure 9.** The incision lines for skinning the carcass



**Figure 10.** Skinned dog carcass

### **6-3- Subcutaneous tissue and musculature**

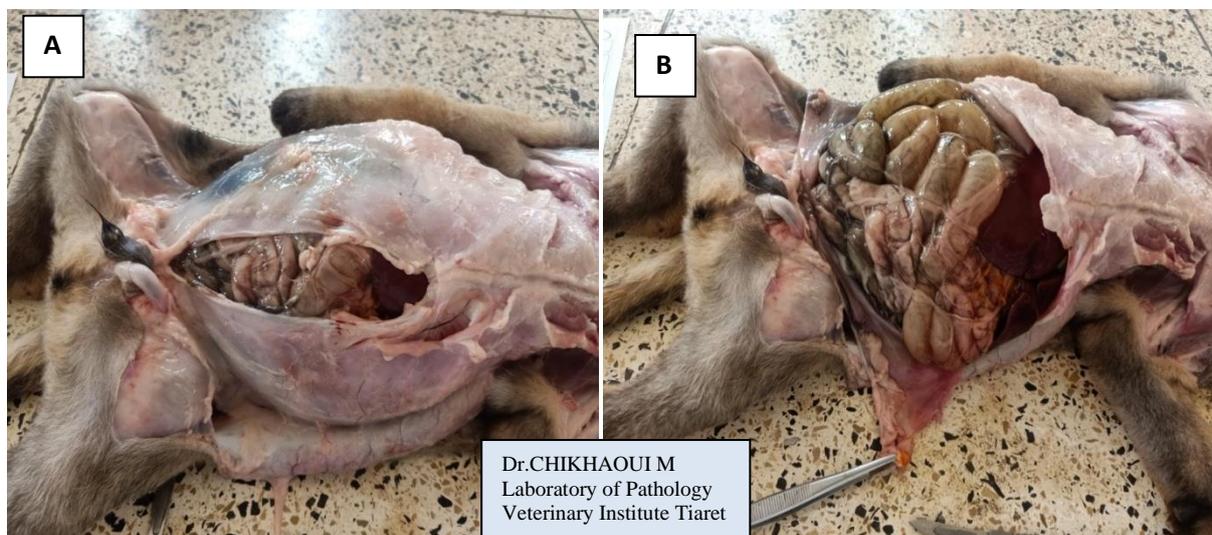
Examine the subcutaneous tissue and musculature after removal of skin for the presence of lesions such as: Congestion, haemorrhage, oedema, nodule, anemia, icterus, Fat deposits. Necrosis on muscle hardening, calcification (Fig.11A and B).



**Figure 11.** Subcutaneous tissue examination. **A.** congestion with hemorrhage. **B.** Icterus

#### 6-4-Open the Abdominal Cavity

The next step is to open the abdominal cavity by cutting through the abdominal wall. The initial cut should be made just ventrally to the xiphoid process and then along the white line to the pubis (Fig. 12A ). Use a barbed probe to avoid touching the abdominal organs, and two other incisions following the costal arch (Fig.12B). Any fluid within the abdomen can be retained in the cavity, allowing for collection and quantification.



**Figure 12.** Dog. The incision lines for opening the abdominal cavity.

Just after opening the carcass, one should observe the presence of any lesion in abdominal cavity and following points must be kept in mind. Accumulation of fluid (serus, serosanguinous, blood, pus, fibrinous or fibrous adhesions, Parasites, Abscess and tumour (Fig.13). Observe the shape of the diaphragm. The muscle should be taut and concave. The umbilicus, fetal vasculature (umbilical arteries and veins), and urachus are left intact in fetuses and neonates. The intact diaphragm is penetrated with the point of a knife, before the ribs and sternum are cut, to verify negative pressure in the thoracic cavity. Make sure to examine the integrity of the diaphragm for the presence of a diaphragmatic hernia (Fig.14).



**Figure 13.** Sheep. Accumulation of sero-hemorrhagic exudate in the abdominal cavity



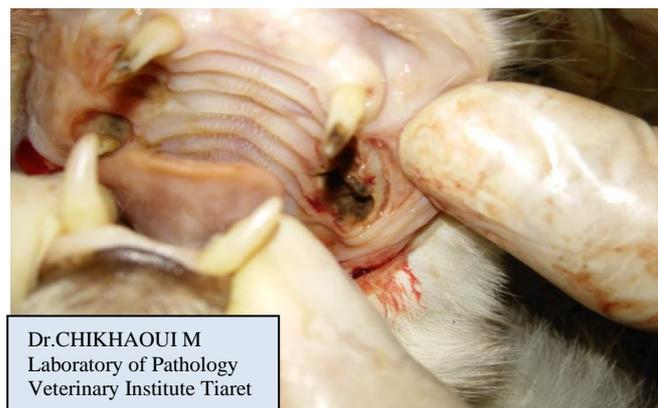
**Figure. 14.** Cat. diaphragmatic hernia

Organ tissue to be examined: Mouth cavity (Fig.15), esophagus, crop, proventriculus, gizzard (poultry), rumen reticulum, omasum, abomasum (ruminants),

stomach, intestine (duodenum, jejunum, ileum, caecum, colon, rectum), cloaca, vent (poultry), anus, liver, pancreas, gall bladder, mesenteric lymph nodes etc.



**Figure 15.** Sheep. Mouth cavity examination.



**Figure 16.** Cat. Teeth examination

### **6-5- Open the Thoracic Cavity**

Opening the thoracic cavity involves making two cuts through the rib cage: one through the cartilaginous attachments of ribs to the sternum and one through the dorsal aspect of the ribs, slightly ventral to the articulation with the vertebral transverse processes when the animal is in lateral recumbency (Fig. 3.20). When the animal is in dorsal recumbency, two cuts must be done though the cartilaginous attachments of ribs on either side of the sternum, the sternum is then removed and the ribs spread apart to

allow the organs of the thoracic cavity to be visualized. The pleural surface of the right rib cage is examined for fractures or adhesions before proceeding.

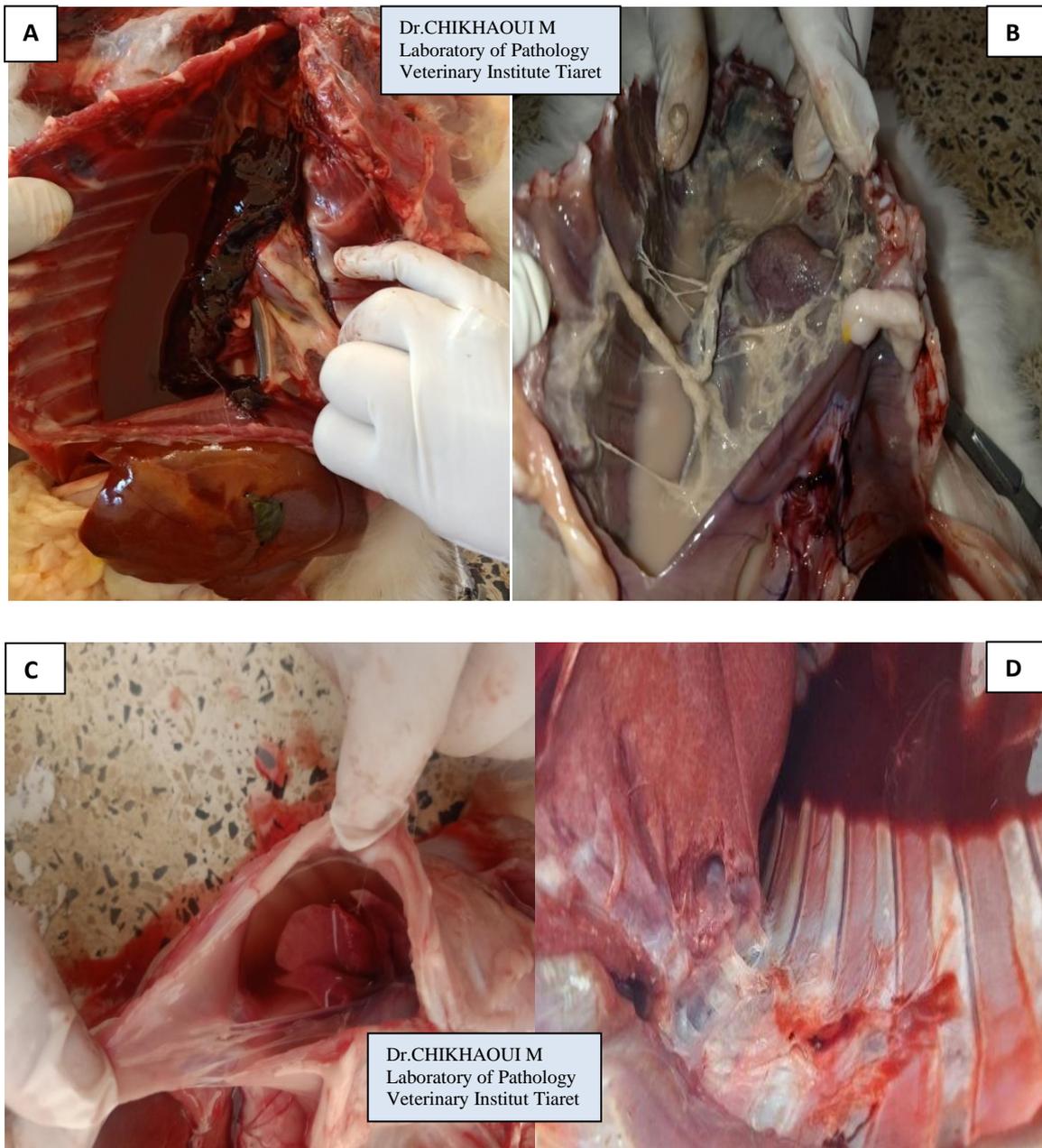


**Figure 17.** Cat. Opening of the chest cavity

The contents of the thorax and abdomen are now available for examination, yet have not been disturbed and should be in the position which they occupied at the time of death. At this point, serosal surfaces are examined, and organs evaluated for their correct anatomic position and for any grossly visible abnormalities in structure and/or pathologic processes.

### **6-6Thoracic Cavity Examination**

Before the removal of the heart and lungs, it is essential to thoroughly inspect the organs and structures within the thoracic cavity. The pericardial space should be carefully examined to assess fluid volume and the presence of exudate. Collection of pericardial or thoracic fluid may be necessary for various purposes, such as culture, serologic testing, or clinicopathologic analysis. Additionally, it is crucial to examine the mediastinum, lymph nodes, and the thoracic duct. Beyond the lungs, the pleural surfaces, including those on the reflected thoracic wall, should be examined for any signs of abnormalities such as hemorrhage, adhesion, fibrin, or other pathological changes.



**Figure 18.** Inspection of the thoracic cavity. A. Hemothorax. Pyothorax. C. Hydrothorax. D. Adhesion with the chest wall.

### 6-7 Removing the Pluck:

- Begin by making a slit in the intermandibular space to expose the tongue. After opening the mouth and inspecting for any lesions, ensure the tongue is separated from the mandible. Proceed by cutting the hyoid apparatus in the neck.
- With the tongue in hand, gently pull it along with the esophagus to release any connections within the chest that keep the lungs and heart in position. Continue this

process while cutting the esophagus near the diaphragm, as well as the aorta and vena cava, to facilitate the complete removal of the entire organ set, known as the "pluck" (Fig.19).

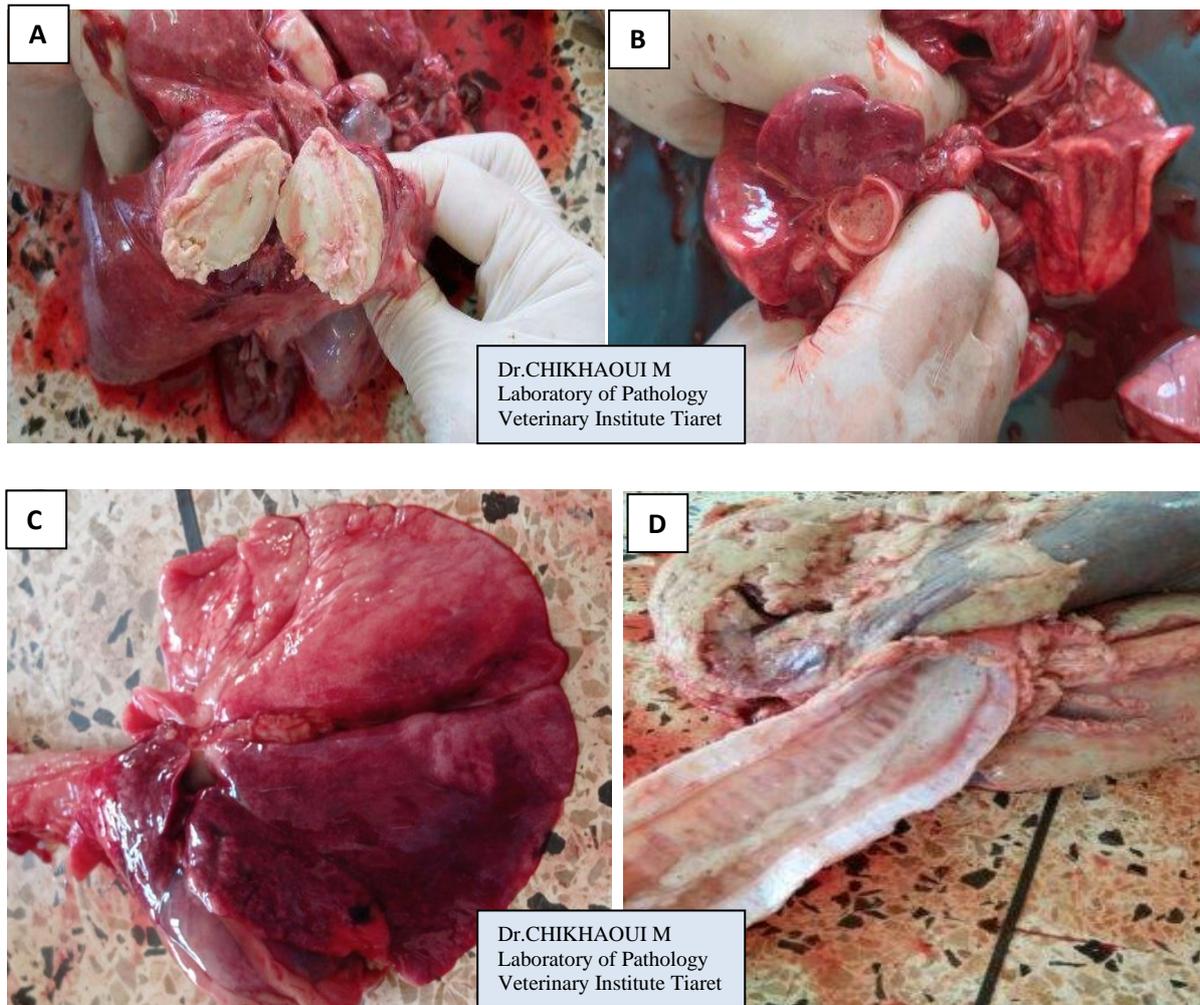


**Figure 19.** Dog. The excised pluck, including the tongue, trachea, esophagus, heart, and lungs.

### **6-8- Esophagus and Lung Investigation**

Start by using scissors to make a lengthwise incision along the esophagus. Next, carefully open up the larynx and trachea while observing for any signs of froth or unusual discharge. Follow the bronchi as far as possible into the lungs with your scissors, paying attention to any potential indications of lungworm infection.

Now, assess each individual lung lobe by palpating for softness, irregular masses, or other abnormalities. Utilize a scalpel blade to make incisions into each lobe for a closer examination. Look for signs of edema, congestion, as well as any abscesses or masses that may be present (Fig.20).



**Figure 20. Pulmonary inspection**

To evaluate the thoracic lymph nodes, assess their size and consider making incisions into them if necessary, as these nodes can sometimes be challenging to locate in their normal state.

### **6-9- Heart Investigation**

To access the pericardium, it's beneficial to make the initial incision at the highest point to retain any effusion for quantification (Fig.21D). In cats or dogs, the pericardium typically holds approximately 0.25 ml/kg of thin, clear, translucent to straw-colored fluid.

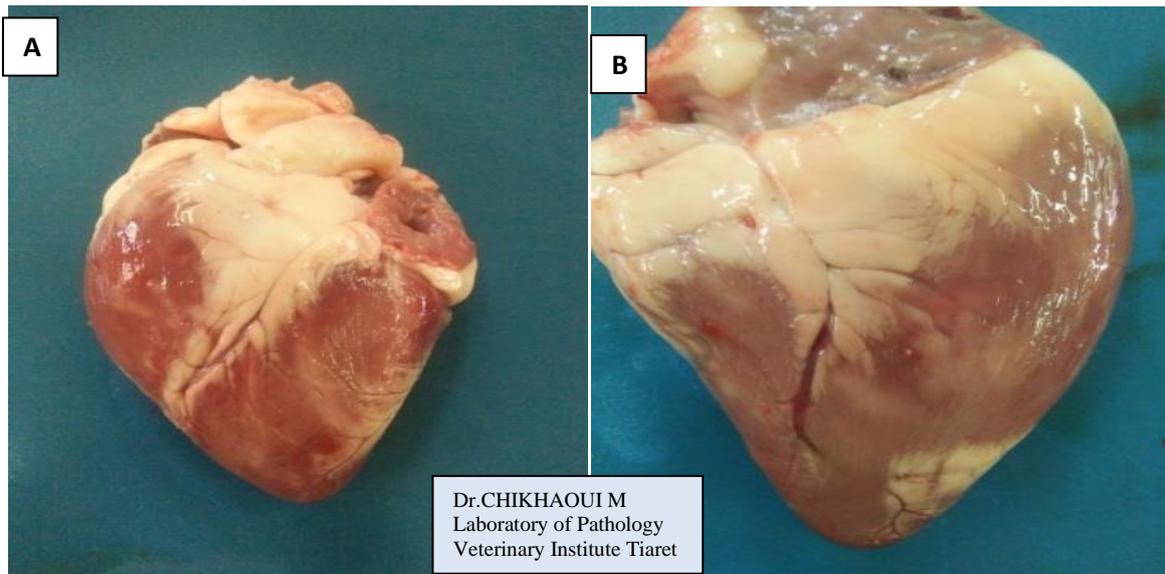
Commence by assessing the relative sizes of the atria and ventricles (Fig.21 A and B). Using scissors, create an opening in the vena cava, leading to the right atrium. Proceed by cutting through the atrioventricular valve to gain access to the right ventricle.

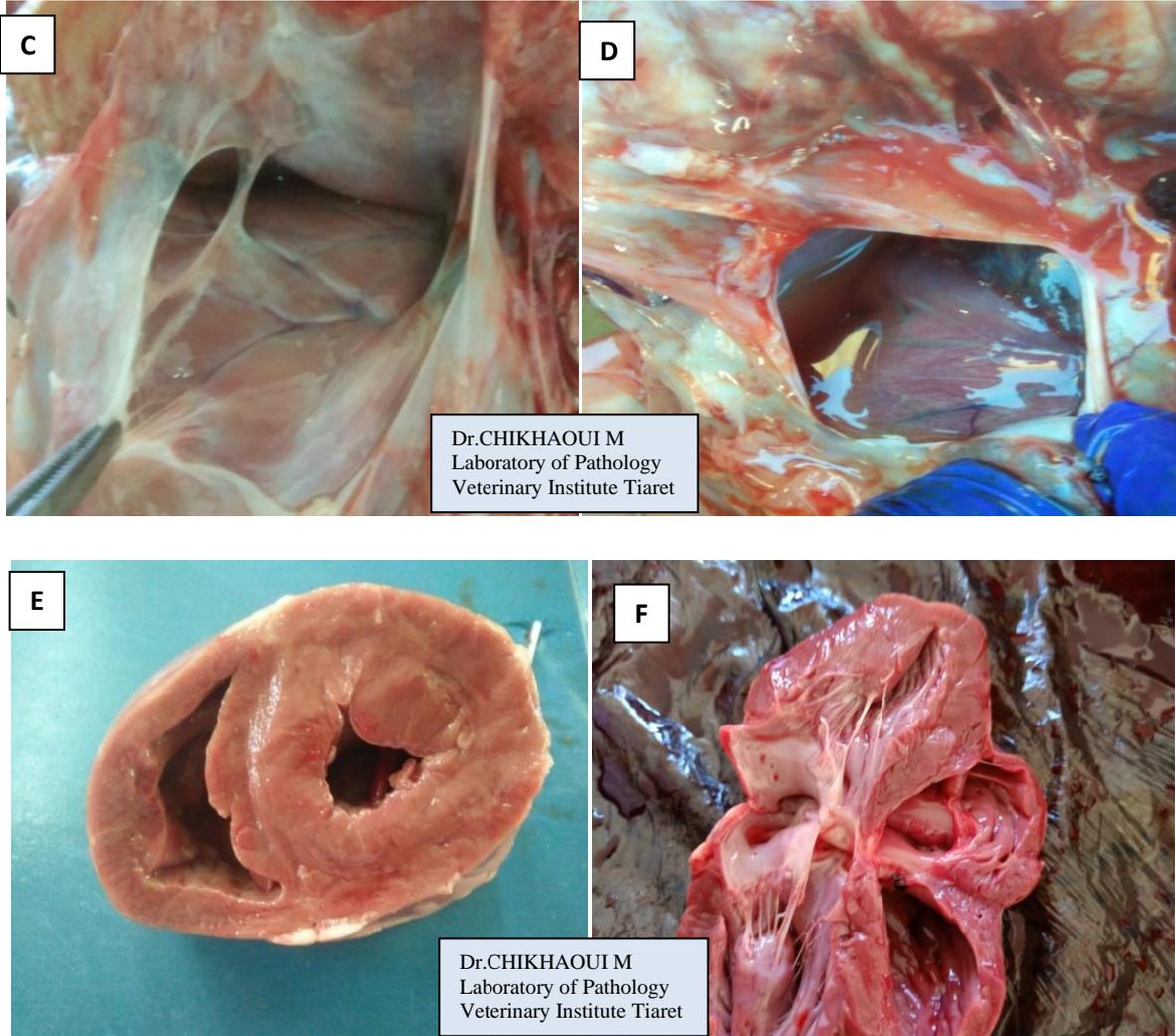
Thoroughly examine the valves and the endocardium (Fig.21F). Open the pulmonary artery to inspect the pulmonary valve.

Continuing the examination, open the left atrium and left ventricle. A straightforward approach is to make a longitudinal incision down the middle of both. Take a close look at the atrioventricular (AV) valve. Subsequently, cut through the AV valve to reveal the aorta and examine the aortic valve (Fig.21F).

For histopathology purposes, it is advisable to obtain a section that encompasses both the right and left ventricles along with the intraventricular septum (T-shaped). Depending on the size of the animal and any specific concerns, you may consider submitting the entire heart.

Make a transverse section at two-thirds of the distance from the apex of the heart, examine myocardial thickness for myocardial atrophy or hypertrophy (Fig21.E).





**Figure 21.** Heart inspection.

## 7 Examination of Organs

Once all three body cavities have been opened, it's essential to examine the organs in their original positions. Take note of the organs' positioning and coloration, assess the characteristics of any fluid present in the thoracic, abdominal, or pericardial cavities, and evaluate the extent of autolysis.

Ensure you check for the presence or absence of all organs during this phase. The color and pattern of vascular congestion of visible organs should be noted.



**Figure 22.** Dog. Three body cavities opened.

It is crucial to observe and document the anatomical positions of all organs, particularly those within the abdomen. Special attention should be given to assessing any signs of congestion, enlargement, or contraction relative to their typical sizes. The location and condition of the organs is particularly significant when determining whether organ displacement has taken place, distinguishing between pre-mortem and post-mortem occurrences, and ascertaining whether an organ that might have been displaced earlier has resumed its normal position after death. This juncture in the procedure presents an excellent opportunity for capturing an overview photograph (refer to Fig. 22). Some significant diagnostic findings, such as a blocked bile duct or intestinal displacement, can only be fully comprehended when the organs remain intact.



**Figure 23.** Cat. Displacement of organs in the chest cavity following a diaphragmatic hernia.

✚ To gain a comprehensive view of the abdominal organs, remove and inspect the omentum (as shown in Fig.24).



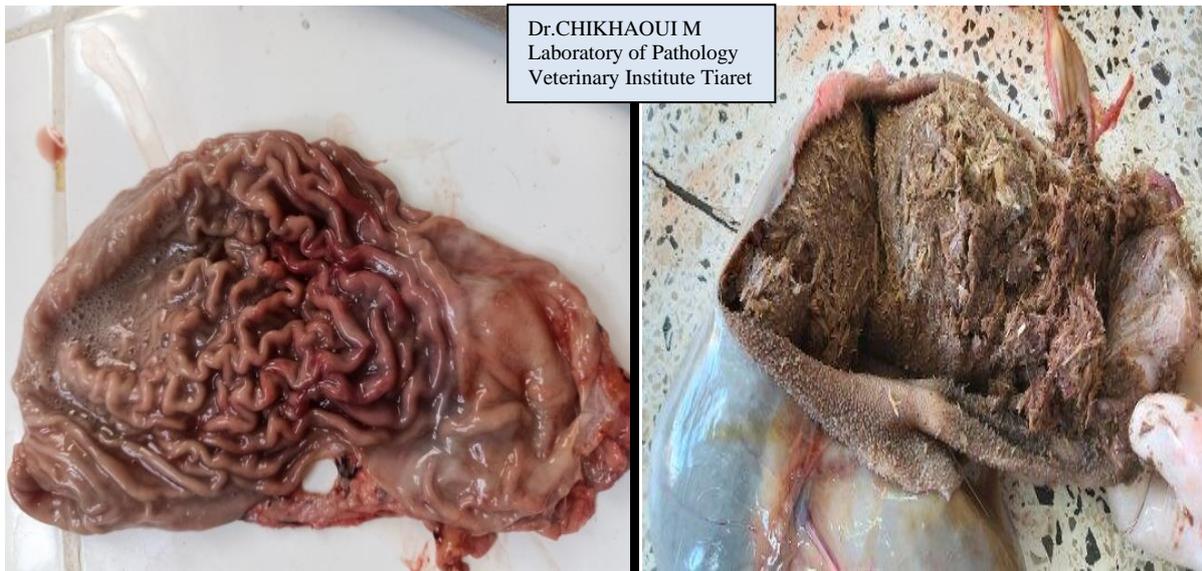
**Figure 24.** Cat. Removal and inspection of the omentum

✚ Removal of the abdominal organs commences with the spleen of monogastric animals where it is present on the uppermost side. Check size, any lumps, then slice open in a few areas. For visualizing the left kidney and adrenal gland, you can achieve this by gently reflecting the intestines dorsally.



**Figure 25.** Dog. Removal and inspection of the spleen.

Ideally, when handling the gastrointestinal tract, it is recommended to divide it into distinct segments by placing dual ligatures at each planned incision point and sequentially removing each section. The use of ligatures serves to prevent the leakage of gastrointestinal contents and the potential contamination of other organs by bacteria. However, in situations where ligatures are not employed, it is important to exercise caution while holding the cut ends to minimize the risk of content spillage. Ligating the gut before cross-sectioning and removal is indispensable when there is a need to prevent contamination, and it is advisable when obtaining gut samples for virological, bacteriological, or other procedural purposes. Open the stomach or abomasum and forestomachs to check for feed quantity, type and assess the mucosa- ?any erosions or ulcers (fig.26) . Open the small intestine, specifically at the levels of the duodenum, jejunum, cecum, and colon (Fig.27). If the primary indications point to gastrointestinal issues, it is advisable to open the entire gastrointestinal tract for examination. Before dissecting the organ, it is recommended to obtain several representative samples from various segments of the intestines, including the duodenum, jejunum, ileum, and colon. Ensure that the tubular sections of these samples are of a size that allows formalin to penetrate effectively, typically around 1-2 centimeters in length. Mesenteric lymph nodes; slice open a few, check the size is normal.

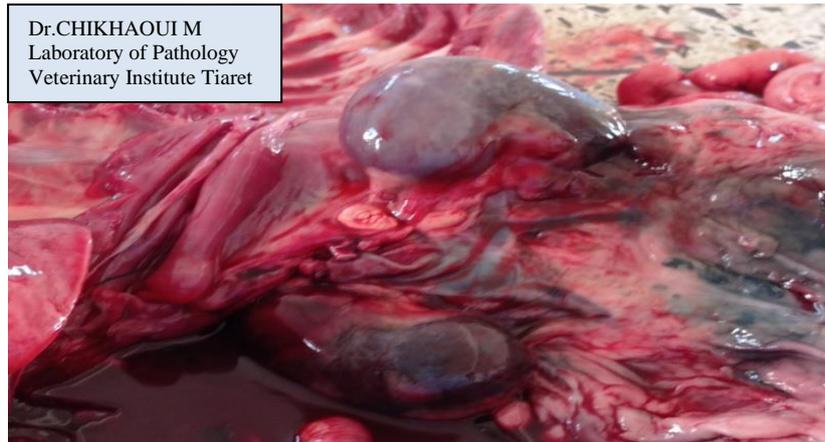


**Figure 26.** Dog. Examination of the gastric mucosa after opening the stomach.



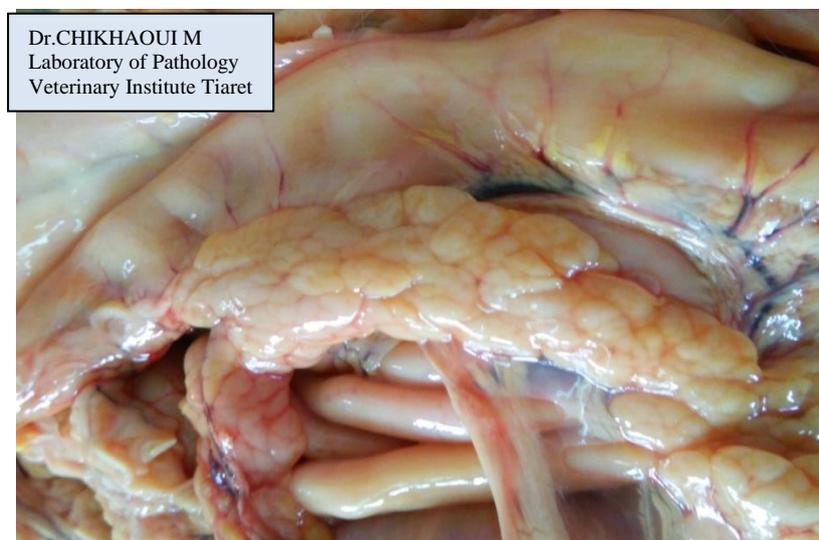
**Figure 27.** Dog. Intestinal examination

The kidneys should remain in the body cavity as you remove the alimentary tract (Fig.28). You can incise the hepatoduodenal ligament and remove the liver and diaphragm separately.



**Figure 28.** Dog. Kidneys remaining in the body cavity after removal of the alimentary tract

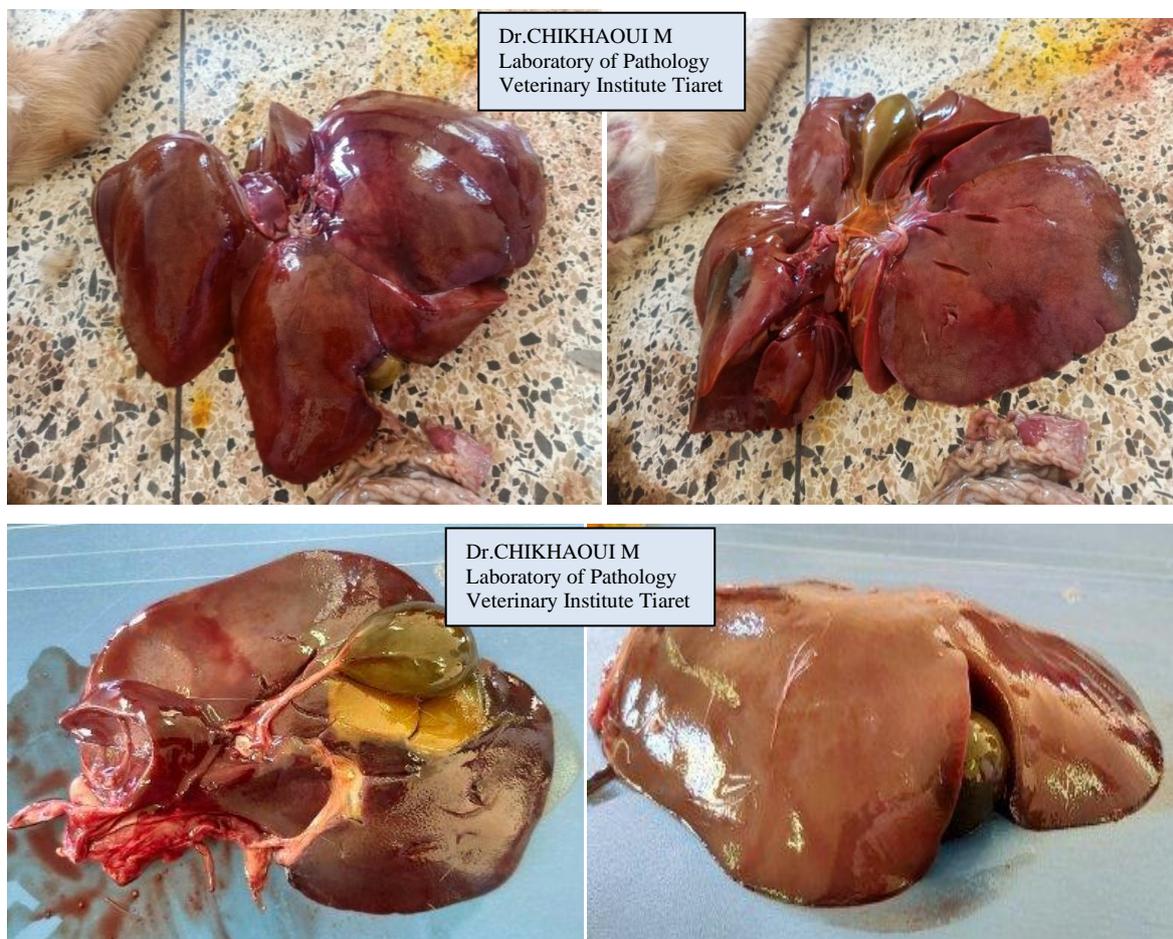
✚ The pancreas is situated within the mesentery, positioned between the descending and ascending portions of the duodenum. During this procedure, it can either be extracted separately or left connected to the duodenum (Fig.29). The latter option enables the possibility of trimming sections for histopathological examination while keeping the duodenum attached. This approach facilitates the clear identification of the duodenal tissue on microscope slides



**Figure 29.** Dog. Pancreas within the mesentery.

At this juncture, the liver can be easily extracted by making incisions to disconnect it from the diaphragm and the various lateral ligaments. Subsequently, the liver should be carefully placed on a table for a thorough examination. Quickly check

for evenness of color, any reticular pattern and whether the gall bladder is full. To assess the vascular system, the vena cava can be incised, and its tributary veins can be traced back into each liver lobe. Similarly, the biliary system should be examined by tracing its tributaries from the common bile duct. Lastly, the liver parenchyma should be inspected by positioning the liver with its caudal side facing downward on the table and making transverse incisions, keeping the knife blade parallel to the table surface. This method allows for a comprehensive examination of the liver parenchyma and offers the advantage of reconstructing the liver more effectively compared to the occasional practice of dicing the parenchyma.



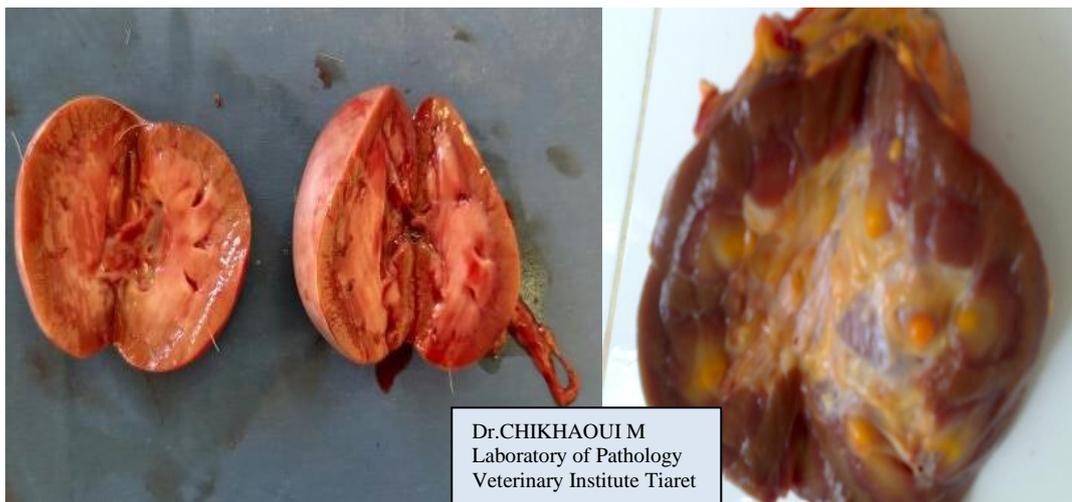
**Figure 30.** Liver inspection.

✚ Before removing the urogenital organs, it is necessary to excise the pelvic floor. This can be achieved most efficiently by using a knife to separate the musculature from the ventral side of the pelvis. In smaller animals, the pubic symphysis can be divided, and the pelvis can be opened up. For larger animals, the choice of tool (such as a meat

saw, Stryker saw, or bone cutters) depends on the animal's size. Two cuts are made on each side of the pelvis, extending from the pelvic brim to the obturator foramen of that side and through the ischium. These cuts should be positioned as laterally as possible to maximize exposure of the pelvic organs. After these cuts are made, the internal connective tissues of the ventral pelvis are incised, allowing for the removal of a bone plate that includes the entire pubic symphysis.

The urinary tract is removed as a single unit by gently turning it ventrally and carefully dissecting the adrenals, kidneys, and bladder, separating them from their supporting ligaments, surrounding connective tissues, and fat. After removal, the organs are examined by making incisions in the ureters, starting from the renal pelvis down to the bladder.

To distinguish the right from the left side, the uppermost adrenal gland and kidney should be longitudinally incised in situ and then removed individually. The other adrenal and kidney can be incised transversely, examined, and subsequently removed. This combination of longitudinal and transverse incisions serves to identify the origin of each organ from either the right or left side once they are outside the body. While additional incisions may be necessary to investigate specific features or lesions, maintaining the primary incision, whether longitudinal or transverse, during tissue trimming for histology allows the pathologist to quickly determine the side of the body from which each organ section originated. We must also ensure if the capsule peels off easily, and note if any discoloration is present (as referred in fig. 31). The bladder should also be opened and inspected (Fig. 32).



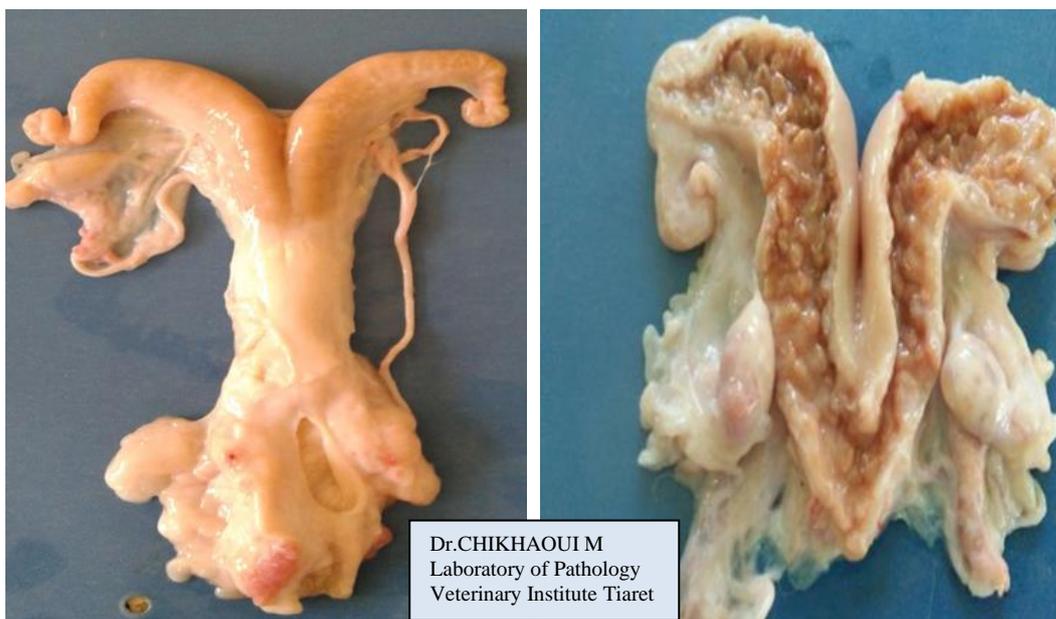
**Figure 31.** Kidney inspection.



**Figure 32.** Bladder inspection.

In female animals, the reproductive tract is extracted by dissecting from the ovaries and uterus towards the vagina while leaving the bladder attached. A circular incision is made in the perineal skin to facilitate the removal of the vagina and the mucocutaneous junction, keeping them connected to the other genital structures. When removing the urogenital organs, the rectum is also taken out using the same technique. This involves making a circular incision in the perineal skin that encompasses both the rectum and vagina, allowing for the removal of the pelvic organs as a cohesive unit.

Following removal, the female reproductive tract is examined by sectioning the ovaries and then incising from the tip of each uterine horn distally into the body of the uterus and from there to the vagina. Check for abnormalities and slice open the bladder to check the mucosa. Consider collecting urine with a needle and syringe before opening the bladder (Fig. 33).





**Figure 33.** Female genital tract inspection.

In the case of male animals, the adrenals, urinary tract, and rectum can be reflected and dissected in a similar manner as in females. However, for males, the perineal incision should be extended ventrally to encompass the scrotum and then continued cranially to include the penis.

## 8 The carcass examination

After the removal and examination of the main visceral organs from the carcass, the subsequent procedures involve comprehensive inspections of both the remaining carcass and the removed organ systems. Initially, close attention is given to the remaining musculature, which is now easily accessible. The bones are carefully examined for size, shape, and strength. The femur, if available, can be separated using a band saw to enable the assessment of bone marrow, the ratio of medullary to cortical bone, and the overall gross structure and strength of each. This assessment can be enhanced by using pressurized water to flush out the bone marrow from the medulla. Additionally, incisions should be made in the joint capsules to examine the surfaces of several joints. The costochondral junctions are also evaluated, and two or three representative ones can be removed and sectioned using a band saw for further analysis (Fig.34).



**Figure 34.** Dog. Carcass and joints inspection.

## **9 Remove the Brain**

The extraction of the brain can be one of the most challenging aspects of a necropsy due to the brain's delicate nature and its snug confinement within the bony cranium. The recommended approach begins with the reflection of the head's skin. This involves making a midline incision along the dorsal aspect and then gently peeling the skin back laterally. Subsequently, it's important to eliminate as much soft tissue as possible from the skull. Depending on the size of the animal and the acceptable level of risk for potential brain damage, you can opt to use either an oscillating saw or bone cutters for this step.

The first incision is made horizontally, crossing the skull along a line drawn between the posterior commissure of each eye. The second incision begins at the dorsal part of the right occipital condyle, extends laterally around the poll region, and then moves anteriorly to intersect with the first incision just medial to the eye. A similar cut is replicated on the opposite side of the head (as illustrated in Figures 35).

The examination and subsequent removal of the meninges involve cutting them with scissors. Additionally, it's crucial to cut the falx cerebri and tentorium cerebellum to prevent tearing of the brain during its extraction. During this process, careful attention should be paid to the underside of the cranial vault that has been removed, as well as the meningeal surfaces and the overall shape of the brain and its associated structures.

To proceed with the brain removal, the head is inverted, and it should be held so that the palm of one hand is positioned directly under the brain. The brain is detached by cutting the cranial nerves and meninges, starting at the base of the brain near the foramen magnum. Once the brain has been loosened from its base, it will gently fall into the prosector's palm. Subsequently, both the brain and the skull structures can be closely examined. While still in place, it's important to inspect the pituitary gland and eyes, which can be removed following the surgical procedure for eye enucleation.

If the necropsy has so far been inconclusive or the history was consistent with neurological disease, sampling of the CNS is recommended.



**Figure 35.** Dog. Opening of the cranial box

### **10- Post-necropsy**

- a. Decontaminate instruments before cleaning them.
- b. Clean and disinfect all work surfaces.
- c. Decontaminate self (e.g., disinfect and remove boots, gloves, and coveralls).
- d. Record the necropsy findings.

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