

Canine Necropsy Dissection Procedures

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Dogs are laid on their left sides (Puppies may be placed on their back).

1. Lift the right forelimb, insert the knife in the axillary region, and cut its muscular attachment to thorax. Reflect the limb dorsally until it lays flat on the table.
2. Lift the right hindlimb, cut the inguinal area skin and the adductor muscles, and disarticulate the coxofemoral joint. Reflect the limb dorsally until it lays flat on the table.
3. A midline skin incision is made from the symphysis of the mandible to the anus, circumventing the umbilicus and male external genitalia.
4. The skin right-dorsal to the midline incision is reflected to the mid-dorsal line throughout the entire length of the animal. The skin below the midline incision is reflected down 2-5 cm below the midventral line. Be careful not to cut the visceral organs.
5. Open the abdomen by incising the muscles immediately caudal to the costal arch, starting at the most lateral point and continuing ventrally to the xiphoid and then dorsally to the longissimus dorsi. Incise along the linea alba from the xiphoid to the cranial brim of the pelvis and then dorsally to the longissimus dorsi. Reflect the incised abdominal wall dorsally.
6. Cut the diaphragm free from the ribs starting in the middle of the to the cranial brim of the pelvis and then dorsally to the costal attachment and cut ventrally towards the xiphoid and dorsally towards the sublumbar muscles - keeping the knife as close to the ribs as possible.
7. Prior to removing the rib cage with the rib shears, cut and reflect the whole longissimus dorsi muscle dorsally and the pectoral muscle ventrally. Remove cervical muscles ventral to the trachea (Sterno-cephalicus, -hyoideus, -thyroideus), leaving the thyroids attached to the trachea. The first cut in the ribs is along a straight line starting at the last rib close to the transverse

process of the first lumbar vertebra and in a straight line to the dorsal end of the first rib (which is dorsal to the reflected neck organs). The second cut follows an imaginary straight line - just dorsal to the xiphoid cartilage and just dorsal to the sternum, to the ventral end of the first rib. This is ventral to the esophagus and trachea at the thoracic inlet. Cut the ribs along these lines and remove the rib cage to expose the thoracic cavity and its contents in situ.

8. After removal of the upper rib cage and the lateral abdominal wall, it is very important to inspect the thoracic and abdominal organs in situ. Observe closely, without touching, the anatomic relationships for signs of volvulus, torsion, intussusception, hernia, displacement, etc., prior to removal of organs. Haste at this point could interfere with interpretation of a lesion later. Collection of specimens for bacteriologic examination or direct culturing is done at this time.
9. Cut the symphysis mandible with bone cutting forceps, pruning shears, or a saw. Detach the muscles from the medial and lateral surfaces of the ramus, and disarticulate and reflect the right ramus, usually by twisting, to expose the entire buccal cavity.
10. Grasp the tongue and free it from the other ramus of the mandible by cutting its muscle attachments. Cut transversely between the hard and soft palates and reflect the tongue and pharynx ventro-caudally towards the thorax. Disarticulate the hyoid bones by cutting through the cartilaginous middle cornu with knife or bone cutting forceps. Free the esophagus and trachea by cutting dorsal to them as far as the thoracic inlet. Pull the thoracic viscera (heart and lungs) ventrolaterally, while cutting between the aorta and the ventral aspect of the thoracic vertebrae as far as the diaphragm. Transect the aorta, esophagus and caudal vena cava just cranial to the diaphragm and free the pericardium from the sternum. Be careful not to cut the trachea or esophagus, or to rip your gloves.
11. Lift the thoracic viscera and neck organs and place them with their dorsal surfaces upper-most, on a clean table.
12. Examination of the esophagus, thyroids, parathyroids, trachea, bronchi, and bronchioles is completed before the heart and greater vessels are opened.

Do not remove the heart from the thoracic viscera unless the heart has to be weighed.

EXAMINATION OF HEART:

Follow the circulation of the blood returning to the right atrium. The pericardium is incised and examined.

1. Open the anterior and posterior vena cavae longitudinally and remove postmortem blood clot.
2. Open the right atrium along its length (blood clot is common in the atrium and should be removed gently so the endocardium can be examined); the atrial aspect of the tricuspid valve is examined for patency and the presence of endocarditis or thickening.
3. Open the right ventricle with a knife or scissors, cutting through the tricuspid valve and continuing towards the apex, keeping close to the interventricular septum; then from the apex, the incision is continued towards the base of the heart so that the lateral wall of the right ventricle is reflected, followed by an incision through the pulmonary valve.
4. The left heart is opened in a similar systematic manner, beginning with the pulmonary veins and finishing by opening the aortic valve, aortic trunk and extramural coronary arteries.

ALTERNATIVE:

When the objective quantification of equivocal ventricular dilatation and hypertrophy is necessary, an alternative procedure is recommended, as follows:

- A1. The heart is separated from the lungs by transecting the great vessels, approximately 1 cm distal to the ligamentum arteriosus.
- A2. The right heart is examined as described above.
- A3. The left ventricular wall is bisected with a single longitudinal knife cut from base to apex. The left ventricular valve is measured.
- A4. The left half of the left ventricular wall is transversely cut through the papillary muscle to the

septum without cutting into the septum itself.

- A5. The knife is placed flat on the septum with the point inserted into the aorta, and a cut is made through the aortic valve along the ventroseptal angle, freeing the upper portion of the ventricular wall from the septum.
- A6. The exposed aortic valve is measured. The left ventricle and interventricular septum are dissected from the atrium and the aortic valve.
- A7. The right ventricle is dissected from the atrium and the pulmonic valve.
- A8. The total cardiac, left ventricular plus interventricular septum, and right ventricular weights are measured.

Removal of Abdominal Viscera:

- 1. Pick up any loop of small intestine and cut the mesentery close to the intestine. Continue to cut cranially until the stomach, with pancreas and spleen attached, is separated from the liver and diaphragm and cut caudally until the caudal end of colon is ligated and cut transversely. Remove entire gastrointestinal tract from the abdomen and place it aside.
- 2. Remove the liver and diaphragm together by cutting the diaphragm as close to its costal attachments as possible.

Removal of Urinary and/or Reproductive Tracts:

- 1. Identify adrenal glands, kidneys, ureters and urinary bladder, ovaries, uterus, testicles, and external genitalia.
- 2. Remove adrenal glands first, and then remove kidneys, make mid-sagittal sections, and strip the capsule off a hemisection.
- 3. Remove urinary bladder with prostate in male and with genital tract in female animals.

4. Both urinary and reproductive tracts may be removed in their entirety. This is done by making 3 cuts in the pelvis: 1 cranial to the obturator foramen; 1 caudal to the obturator foramen; and 1 through the body of ilium. Then remove the free lateral wall of the pelvis.

Removal of the Head:

1. Turn the head with its ventral surface uppermost.
2. Cut behind the angle of the mandible deep to the caudal border of occipital condyles exposing the foramen magnum. Cut the cord transversely with the tip of the knife.
3. Disarticulate the atlanto-occipital joint by following the condyle surfaces, cutting the attached ligaments.
4. Remove skin from the head.

Removal of the Brain:

1. If no CNS involvement is expected, the head may be sawed midsagittally and the brain removed by cutting the cranial nerves and dura mater free from the cranial vault.
2. A better procedure is to remove the brain intact by nibbling the calvaria away with ronguers or bone cutting forceps starting close to the eye and working caudally.
3. The dura over the cerebral hemispheres is cut adjacent to the cut edge of the skull and the falx cerebri and tentorium cerebelli are cut.
4. Turn the skull upside down and sever the cranial nerves while supporting the weight of the brain with your hand or on the table top.