Appendix IX

Heart Dissection Protocol

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Heart Dissection - YouTube

1. Remove the thoracic viscera, including Heart and Lung.
2. Incise the pericardial sac:
    a. Examine the pericardial fluid (Volume, Color, presence of fibrinous material), If abnormalities are detected, measure with refractometer
3. Leave the heart at the lung for better examination of vessels
    a. (The heart may be detached from the lungs if anomalies are absent, but it is usually better left attached to allow careful examination of vessels, for instance, pulmonary artery for thrombi).
4. Externally examine the atria, ventricles, and coronary arteries and confirm normal relationships.
5. When opening the heart, always inspect structures before cutting, and try to preserve a stenotic or dilated valve or vessel.
6. Open the *right atrium*, from the caudal vena cava to the tip of the auricular appendage. Note any thrombus and **check the right AV valve and the foramen ovale/fossa ovalis**. Leave the cranial vena cava unopened, as a block of tissue to include the *sinus node* may be taken at the junction of the cranial vena cava and the right auricle. Examine the right AV valve before cutting.
7. Open the lateral side of the *right ventricle* adjacent to the ventricular septum. Examine the right AV valve and chordae tendineae. The septal leaflet of the right AV valve is normally thicker than the free leaflets. Transect the moderator band (trabecula septomarginalis).
8. Cut through the rostral wall of the right ventricle, and open the *pulmonic valve* if there is no stenosis. Check the pulmonary arteries for thrombi, especially in animals with indwelling jugular catheters. Note the patency or closure of the ductus arteriosus (bear to the right when opening the pulmonary artery in neonates to avoid cutting through a patent ductus arteriosus and creating a false anomaly).
9. Open the *left atrium* by cutting into the auricular appendage and then parallel to the ventricular groove. Examine the interatrial septum, foramen ovale/fossa ovalis, and the left AV valve.
10. Open the *left ventricle* by cutting longitudinally through the free wall (from base to apex), examining the left AV valve before cutting it. Chordae tendineae should be carefully examined before cutting the left AV valve to ensure that pre-existing ruptures of the chordae are detected.
11. Continue to follow the blood flow by cutting through the left ventricular outflow tract and into the aorta. Note that the pulmonary artery will be transected by this action.
12. The circumference of the 4 cardiac valves may be measured at this time with a flexible ruler or string. Normal right AV/left AV valve circumference ratio for dogs is 2:1.
13. If no abnormalities are detected, hearth can be detached from the lung
14. Measure Heart-Weights (Removal of all blood-clots)
    a. Whole Heart
    b. Right ventricular free wall
    c. Left ventricular free wall
    d. Septum

15. Take Samples for Histopathology
    a. Left ventricular papillary muscle (most susceptible to damage and most representative in case of generalized disease)

Information:

- Neonates: In neonatal heart, the wall thickness of the left and right ventricles is approximal equal, it Is not until a month or more after birth that the mature proportions are attained.
- Ventricular wall thickness is poorly correlated with ventricular mass -> heart weights provide more valid information about ventricular hypertrophy than do thickness measurements (correlate to body weight)
- Note that rigor mortis begins earlier in myocardial than in skeletal musculature and reaches greater development in the more powerful left ventricle. Rigor should completely express the blood from the left ventricle; rigor of the right ventricle is less efficient, and emptying is incomplete. The presence of some clotted blood in the right ventricle is normal, whereas if present in the left ventricle, it is indicative of incomplete rigor and therefore perhaps of severe myocardial degeneration. The presence of unclotted blood in the left ventricle some hours after death is more difficult to interpret. Unclotted blood, the result of fibrinolysis, may flow back into the ventricle when rigor passes.