

Necropsy Procedure for Pig Caretakers

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Diagnostic investigations are essential in swine health management. While veterinarians traditionally interpret postmortem findings, logistical challenges due to limited veterinary availability across multiple integrated farms often hinder timely in-person postmortem assessments. This fact sheet provides pig caretakers with practical instructions for executing a necropsy technique and image capturing, aiding veterinarians in remotely identifying causes of death, and facilitating an assertive decision-making process.

1 // Before You Start

Your attending veterinarian should be contacted in case there is a death in your property that needs to be better investigated. Inform the veterinarian prior to you intending to perform the procedure and provide him/her with the history of the pig. This history will be important for the interpretation of the findings, or even to direct your attention to specific organs for taking pictures.

A necropsy is more successful on supporting the determination of cause of death/disease if it is

performed as soon as possible after the pig died or was euthanized. Otherwise, unless you place the carcass under refrigerated conditions (between 33° and 50° F), it is not recommended to perform the necropsy because the deterioration of organs can compromise the interpretation of the findings.

2// Tips for Documenting the Necropsy for Veterinarians

Clear and informative pictures are extremely important for the interpretation of the images by your veterinarian.

Consider taking the pictures on a clean surface. If possible, place a ruler or a standard object for size

reference (a pen, for example) close to the organ or to what you believe is not normal and needs more attention.

When each organ is being photographed, it is important that each organ is legible to observe, centered in the middle of the screen, and taken on a clean space.

3// External Inspection

The first thing that will need to be done is to examine the body condition of the pig. This will include classifying the pig as either thin, average, or overweight.

Next, you will examine the animal externally. Make sure you are checking for skin lesions,

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Figure 1. Necessary instruments for a basic pig necropsy procedure.

lesions on the eyes or ears, discharge from any opening, evidence of diarrhea, swollen joints, or traumatic injuries. When examining, make sure to document any unusual findings prior to beginning the necropsy.

4// Stabilize the Carcass

To start, place the pig on a flat surface ventral (belly) side up. Make sure the flat surface (floor or table) is cleared and you have all needed supplies close in proximity to access **(Figure 1)**.

Next, use your knife to cut under the arms toward the axilla (the space below the shoulder) and the thorax (between the neck and the abdomen). For the hindlimbs, cut the inguinal/groin skin (between the hip and the thigh) on both sides. Make sure to cut those areas until both forelimbs and hindlimbs are facing laterally up and lying flat. This will stabilize the pig carcass and facilitate for a better execution of the next steps.

5// Opening the Cavities

When opening the cavities, start by opening the thoracic cavity by removing the sternum (the bone that connects the rib racks in the center of the body). Begin by entering the knife beneath the skin towards the top part of the sternum. While gripping the chest slightly, rotate the knife blade ventrally (upward) to avoid unintentionally cutting internal organs. Continue to cut along the ribs and the cartilage with either a knife or rib cutters to expose the thoracic cavity. Now enter the knife below the skin and cut along the inguinal/groin region until the entirety of the abdominal cavity opens up.

It is crucial that you cut lightly but forcefully and be aware not to cut too deep or you will damage the organs. Cartilage can be cut by a knife without much resistance. If this cut is getting too difficult to complete, you might be forcing the knife against the bone.

As a result, change the knife position to aim for the cartilage instead. At this point of the necropsy, it could be beneficial to capture a photograph of the entire cavity before removing organs from both the thoracic and abdominal cavities **(Figure 2)**.

6// Locate and Remove the Esophagus, Trachea, and Lungs

Once both the abdominal and thoracic cavities are exposed and opened, you will then locate the throat near the top of the neck and begin to cut the soft tissue underneath it. Holding the throat, extend the cut underneath the trachea and esophagus until you reach the entrance of the thoracic cavity. At this point, make sure the soft tissue surrounding the trachea, the esophagus, and the first pair of ribs is cut free.

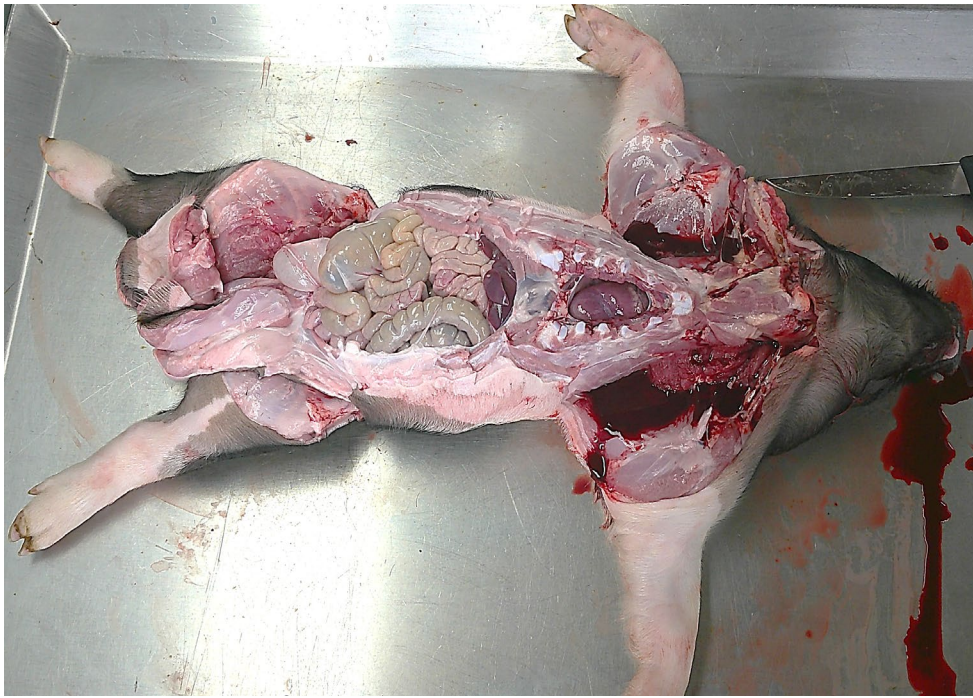


Figure 2. Pig carcass is stabilized, and the thoracic and abdominal cavities are exposed. This is a good time to pause the procedure and take a picture for the attending veterinarian. Make sure the carcass is receiving adequate lighting and that you have the whole pig included in the first picture. Then, if any abnormality is observed, a detailed picture should be taken.

Once you complete this step, begin to pull the trachea and esophagus towards the tail of the pig. Continue to pull until the heart and lungs are pulled down as well. The organs will be attached to the diaphragm, thus, cut the organs free and set them aside on the table/floor for further detailed inspection.

7// Locate and Remove the Stomach, Spleen, and Liver

Start by making a cut to separate the stomach from the intestine. Using your knife or scissors, cut the attachment of the liver to the diaphragm near the upper-right portion of the abdominal cavity and set it aside for a detailed inspection.

The liver and spleen can be removed along with the stomach or separately. Once complete, place all these organs beside the organs from the thoracic cavity for further inspection.

8// Locate and Remove the Small and Large Intestine

The small intestine corresponds to much of the intestine. The large intestine starts in the cecum (“blind gut”) and goes through the colon, which in pigs resembles a spiral pattern and will end in the rectum (last part before the anus).

When both intestines are located, pull the small and large intestine together to one side of the carcass and remove them as a block. Place this block beside the carcass for further inspection.

9// Locate and Inspect the Kidneys and Bladder

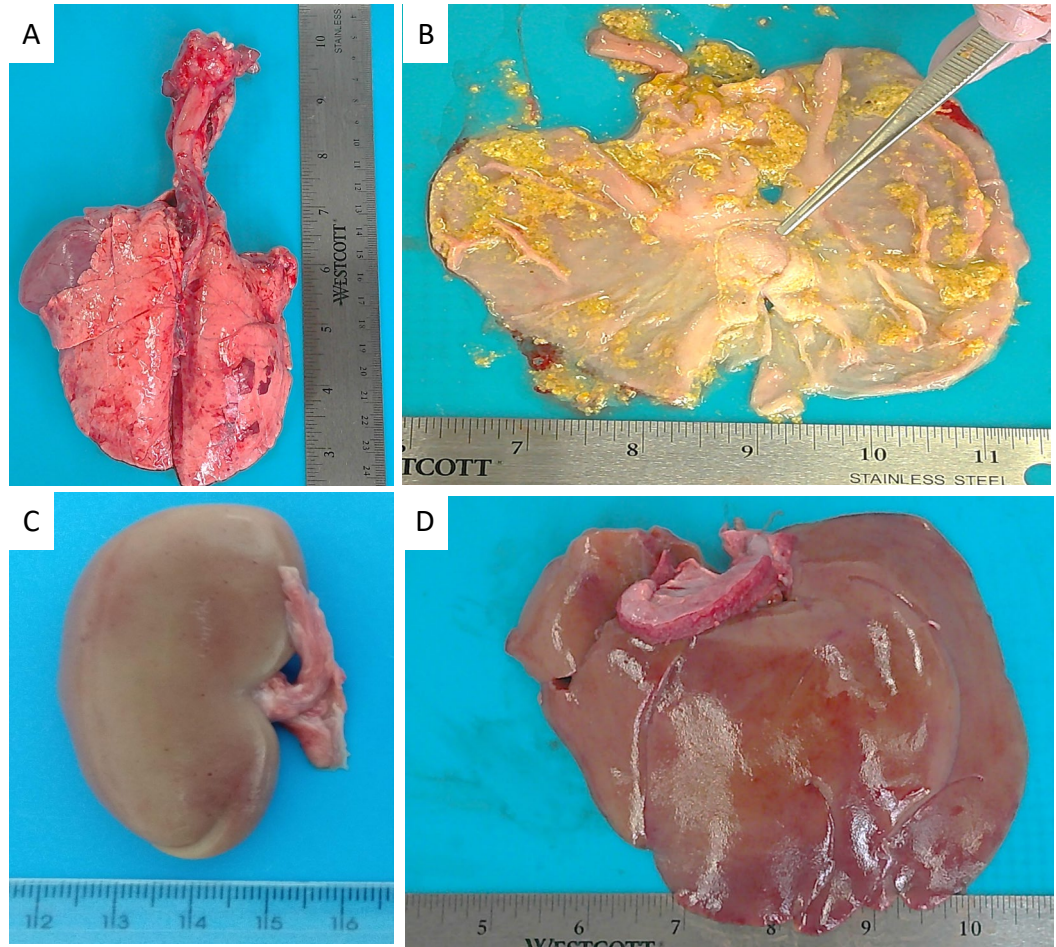
Kidneys: The kidneys are located on the dorsal (the back) area of the abdominal cavity. Start by removing both kidneys from the surrounding soft tissue. Next, you will cut each kidney longitudinally, i.e., along with the longest edge.

The kidney capsule (the outer thin skin) needs to be peeled to allow a better observation of the kidney surface. If you notice any discoloration, whitish or reddish spots, take a picture of each kidney for further inspection by the attending veterinarian.

Bladder: The bladder is located in the groin area, which is very close to the rectum. The bladder may be very small or extended depending on the amount of urine stored. Begin by cutting the bladder open with either a knife or scissors and inspect it internally. Once completed, take a picture if the internal surface has any reddish discoloration.

Note that this step is more important if you are necropsying a sow or a gilt, since females are more prone to bladder lesions than younger male pigs.

Figure 3. The internal organs removed from the carcass should be placed aside until time for evaluation and obtention of pictures. A) Lungs. Position the lungs in the surface with the trachea directed to the top of the picture and the heart positioned underneath the lungs. B) Stomach. Open the stomach following its longest curve. Expose the internal surface, carefully removing the content. Carefully observe the square whitish region around the end of the esophagus. C) Kidney. Position the kidney by exposing its biggest surface to the top. D) Liver. The longest edges of the liver should be positioned to the bottom of the picture area.



10// Organ Inspection

Now you will identify and inspect each organ:

Lungs: Once you have detached the lungs from the heart, lay the lungs flat and inspect their surface. Look for any discolored area, especially reddish discoloration. When photographing, place the trachea to the top of the screen to provide a good reference for your veterinarian (**Figure 3A**).

Heart: Observe if the sac is expanded with any kind of liquid. If this is the case, take a picture for the attending veterinarian.

Spleen: A normal spleen has cutting edges. If you notice rounded edges in the spleen, it might be enlarged and needs to be pictured.

Stomach: Start by opening the stomach using the longest curve as a reference. Remove the contents within the stomach into your closest waste bin carefully, without scraping the surface with the knife, scissors or another instrument. Observe the internal surface by looking for any lesions or discoloration.

Note: a square shaped area where the esophagus ends is the most likely area to find ulcers (**Figure 3B**).

Liver: Inspect the liver surface and take a picture if you observe any area with discoloration. Make a series of slices across the entire liver, where you will evaluate each slice and examine for abnormalities, such as nodules. If something abnormal is observed, take a picture for the attending veterinarian (**Figure 3D**).

Intestines (small/large): Open a few areas of the intestine (small and large) and take pictures if there are any sections with abnormalities or discoloration, especially increased thickness, increased transparency, and red/dark red discoloration.

Note: If any abnormalities are observed within any of the organs, including discoloring, lesions, or masses, take a photo for further observation for your veterinarian. Don't forget to use a ruler or another object for size reference.

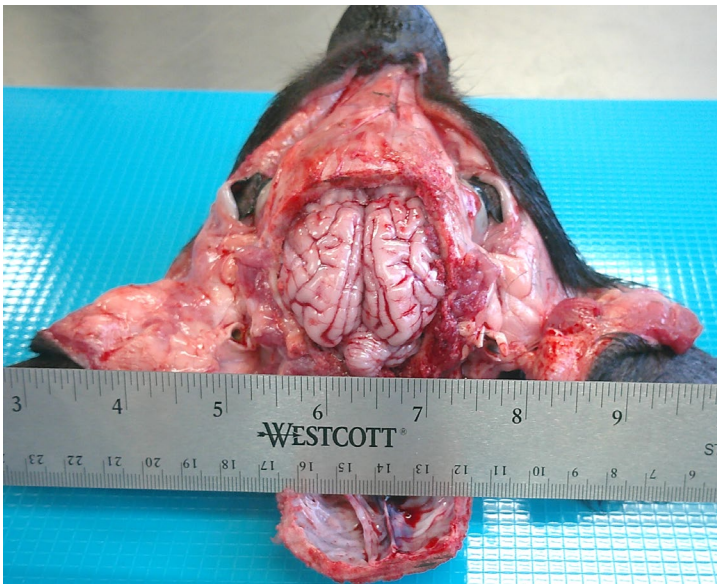


Figure 4. The brain surface is exposed after the opening of the head.



Figure 5. If joints are swollen or if the pig was limping, open the joint and photograph the surface.

11 // Removal & Opening of the Head

If the pig has a history of clinical neurological signs (difficulty to move, head tilt, lateral recumbency, paddling, etc.), the head should be opened and observed. If opening the head is the case, this step should precede the inspection of the other organs to warrant a timely inspection of the brain. This step is done prior to organ inspection due to the brain decomposing quickly.

This process will begin by locating the back of the skull and upper spine and moving the head up and down (flexing and extending motion). Once this region is located, cut the soft tissue around the neck.

Once you are able to pry open the skull and expose the brain, use forceps and scissors to cut away the tougher outer covering membrane overlying the brain. Capturing a photo of the brain surface would be the final step in regard to examining the head. **(Figure 4)**

12 // Opening of the Joints

In the cases of lameness, lesions, or joint swelling, it is recommended to open the affected joints. It is common that the most affected joints are usually the knees, shoulders, and the hocks.

To expose the joint, start by bending the joint and cutting where you find the bones moving over each other. Continue to cut through until the joint is exposed. When the joint is completely exposed, check the consistency and color of the joint fluid (the fluid should be clear and sticky if normal) and cartilage surface.

(Figure 5)

13 // Clean Up Methods

Once the necropsy procedure and photographs have been completed, dispose the specimen and other materials appropriately. The farm procedures for cleaning and disinfecting the working area should be followed. Be sure to disinfect your instruments and to wash your hands with both soap and water immediately after the necropsy.

If you wish to learn more details about the pig necropsy procedure, access the educational video:

<https://go.screenpal.com/watch/cZfleQVsgCQ>

Useful References

Department of Primary Industries and Regional Development. Pigs: a step-by-step guide to sampling and post-mortem. Available at: <https://www.agric.wa.gov.au/livestock-biosecurity/pigs-step-step-guide-sampling-and-post-mortem?page=0%2C1>

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