

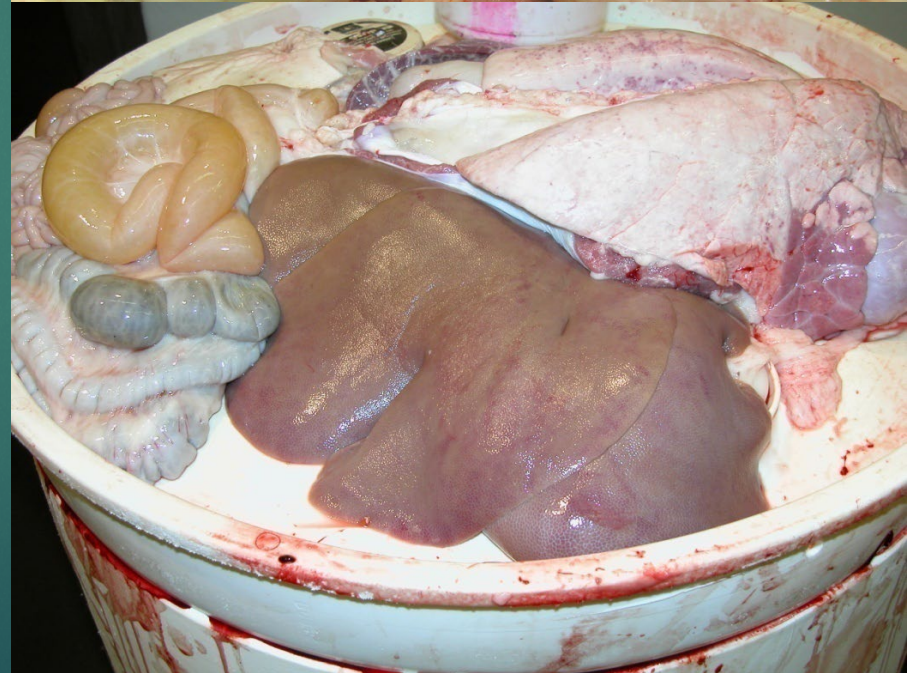


SWINE PATHOLOGY

Anemia



Note the paleness of the lungs and other viscera.

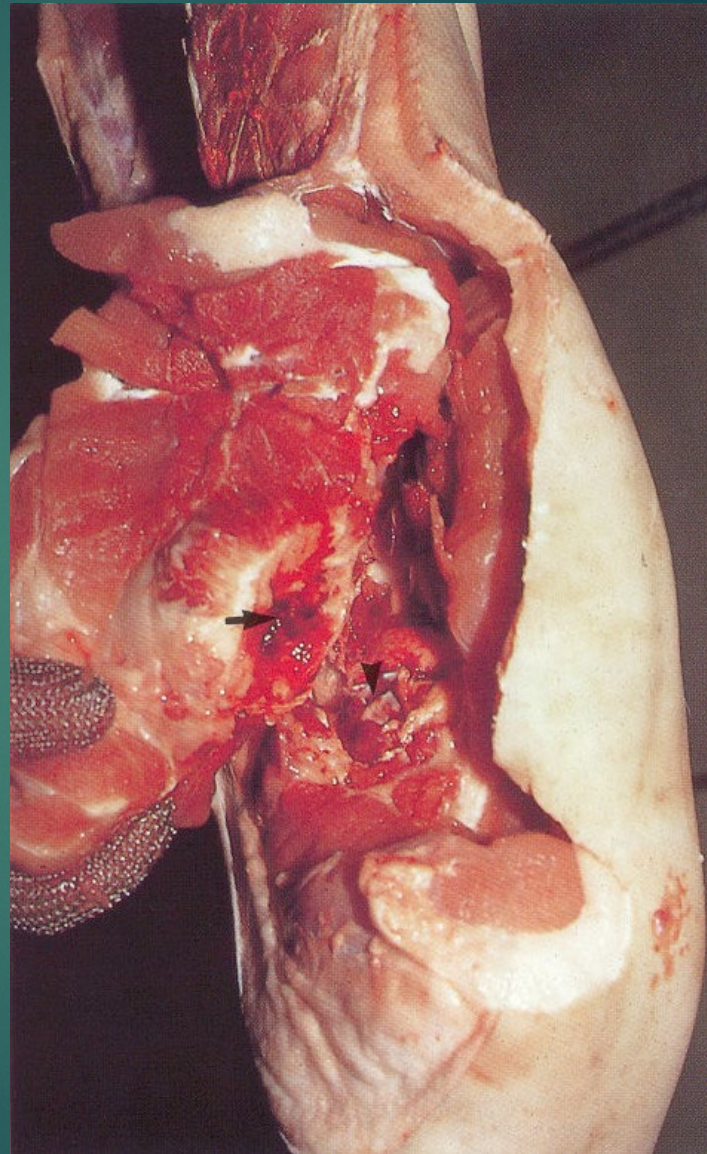


Arthritis

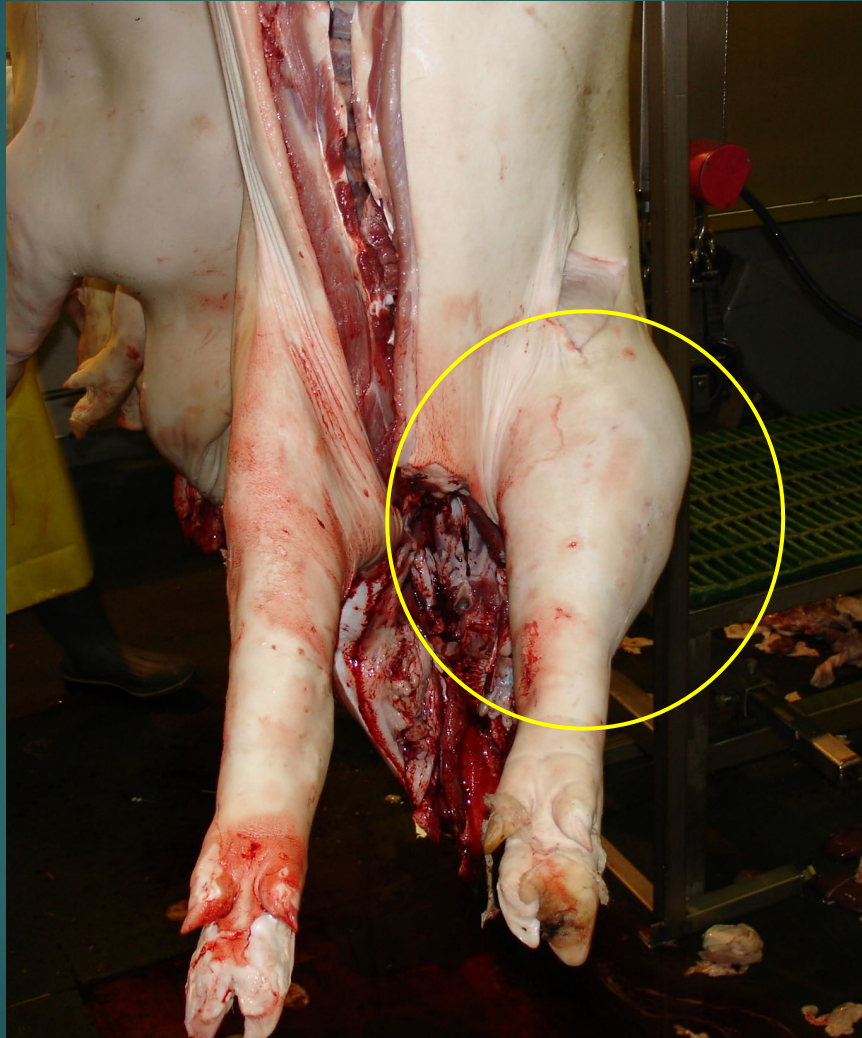
9 CFR 311.7

- ▶ May be in a single joint or may be a part of other disease processes.
- ▶ Lymph nodes will give evidence of severity of arthritis in the adjacent joint.
 - ▶ For example, enlarged, darkened internal iliac lymph nodes are a common finding with arthritis in the hindquarters.
- ▶ Joints with localized arthritis and corresponding lymph nodes shall be removed and condemned during dressing operations and before inspection is completed.

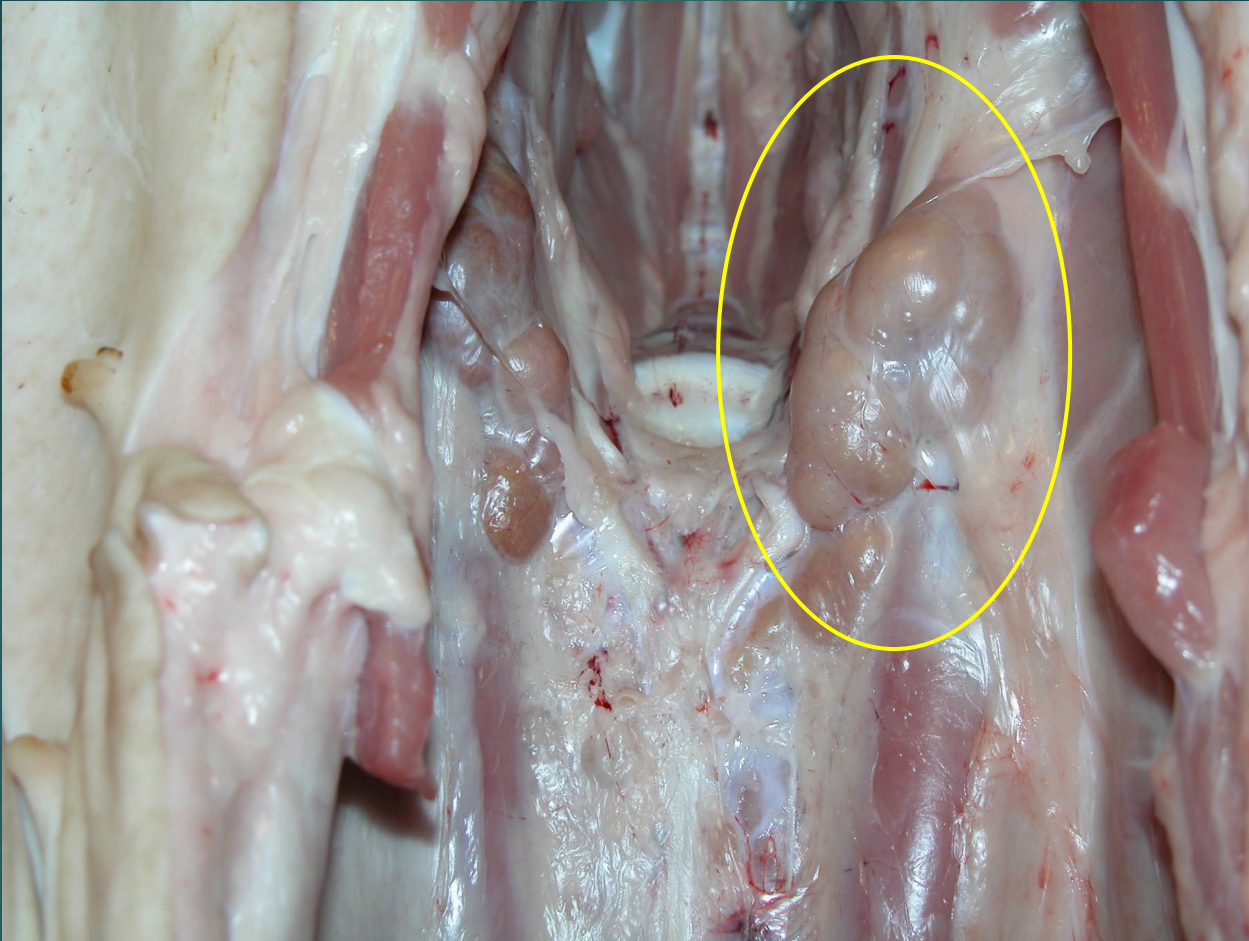
Arthritis



Arthritis



Arthritis

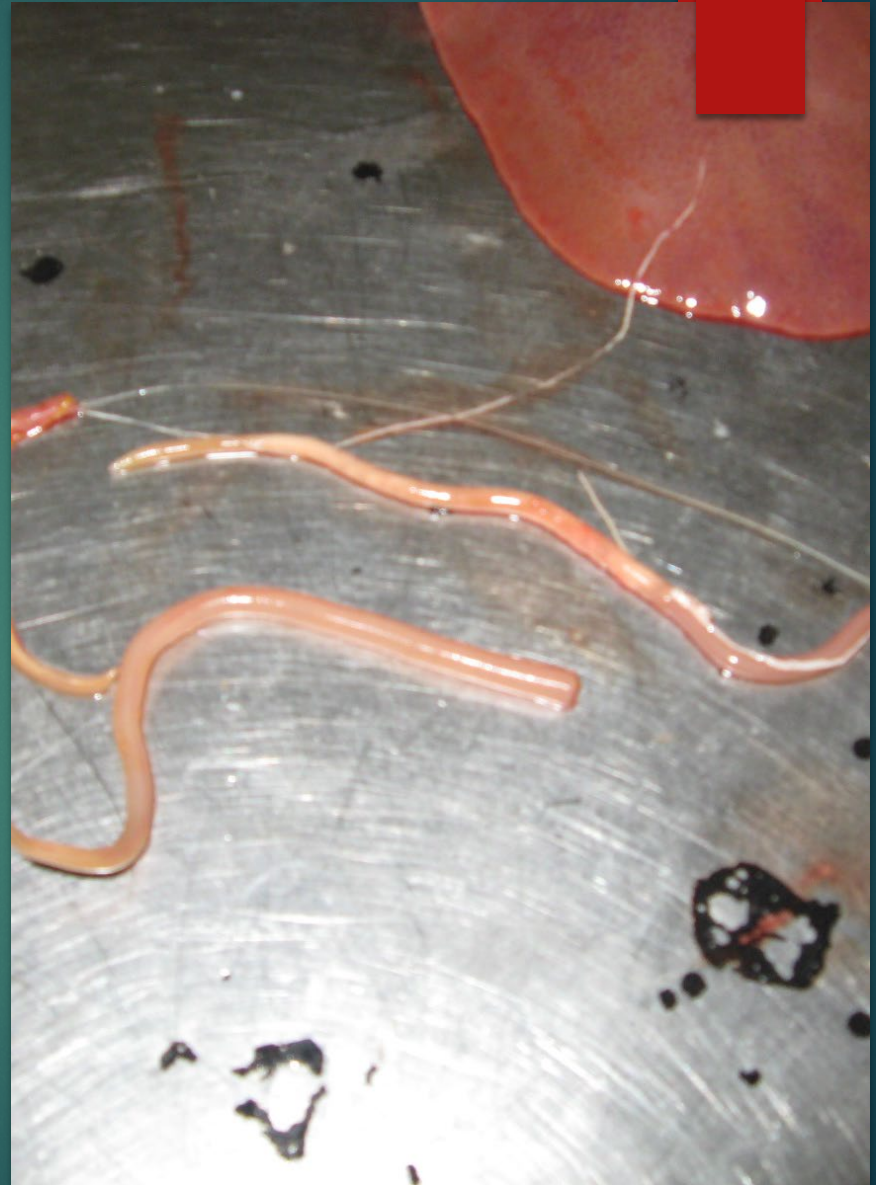


Shown above is an enlarged internal iliac lymph node due to the corresponding joint being affected by arthritis.

Ascarids (Roundworms)

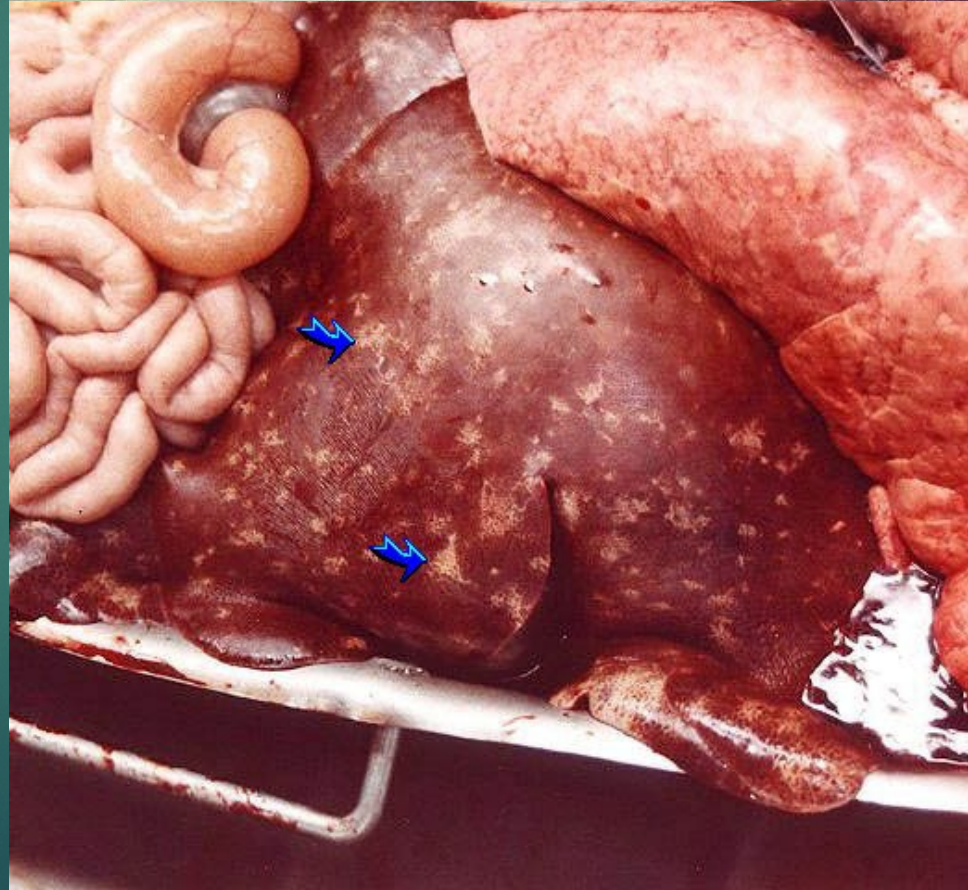
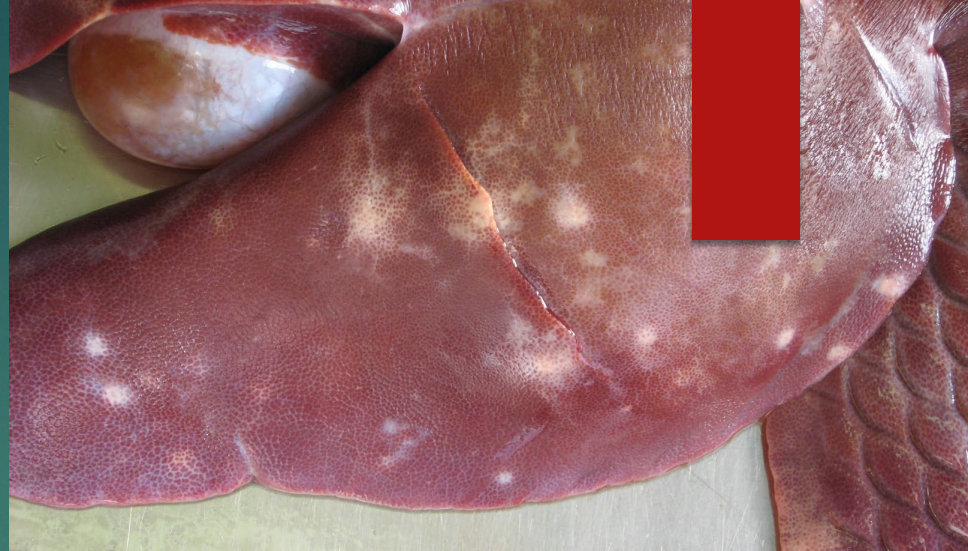
9 CFR 311.25(a)

- ▶ The larva of these roundworms frequently migrate through the liver and cause scarring on the livers surface.
- ▶ "Slight" scarring may be trimmed (spotting the liver). More than slight evidence of ascarids requires the liver to be condemned.
- ▶ Top 2 photos on this slide show the scarring on the liver as a result of Ascarid migration.

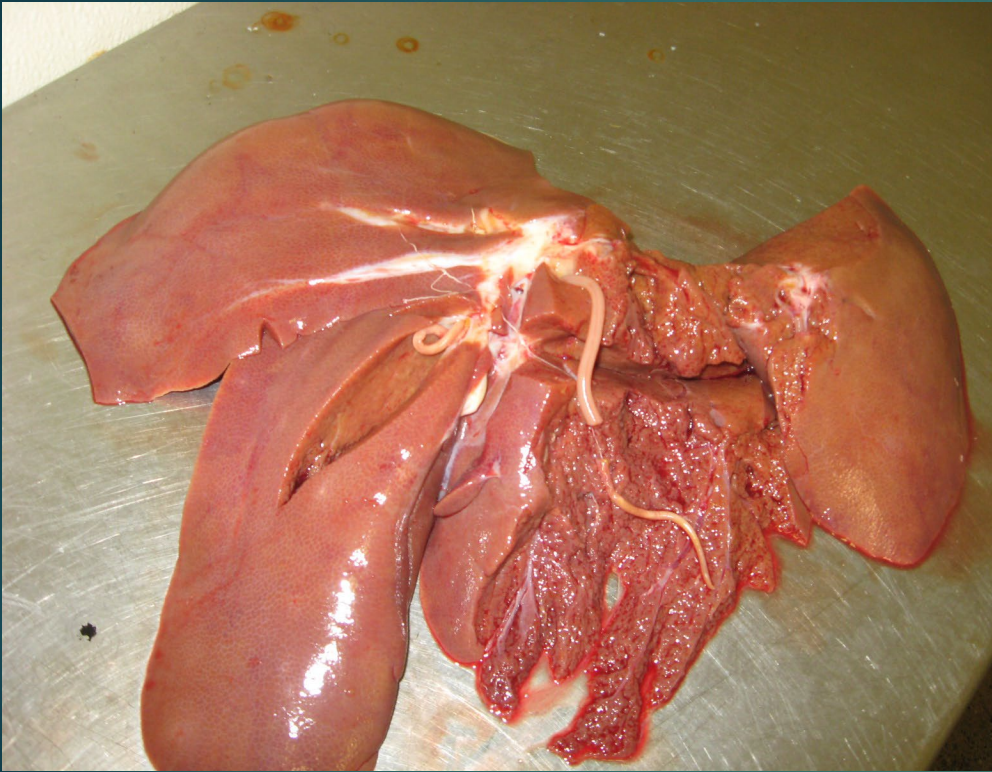


Ascarids

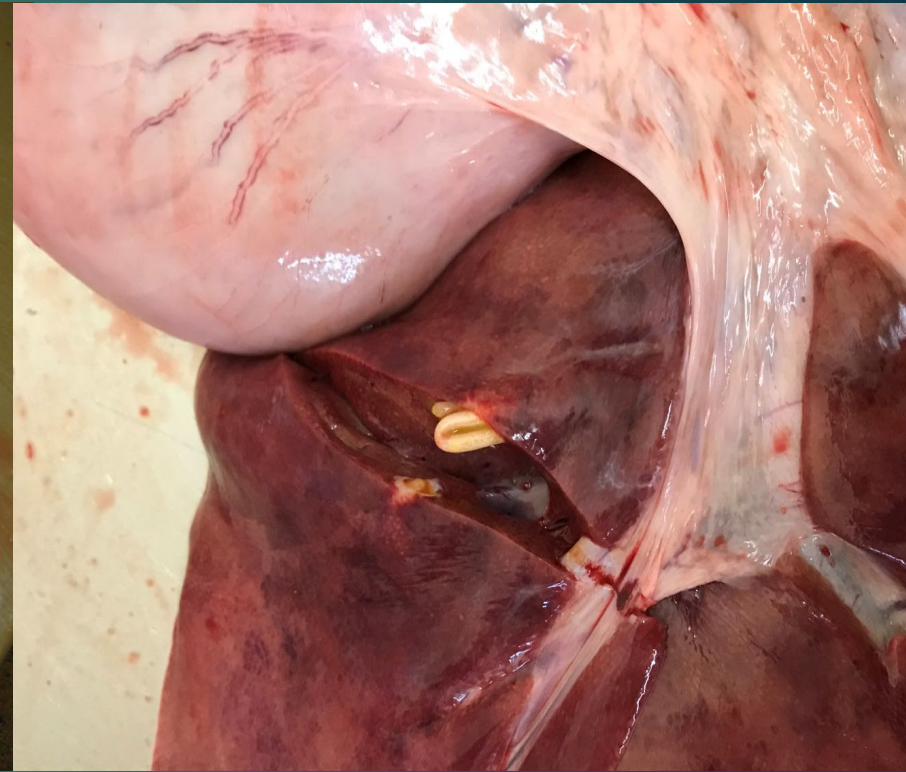
Swine parasitic scars due to infection with roundworms.



Ascarids



Ascarids shown exiting
bile duct.

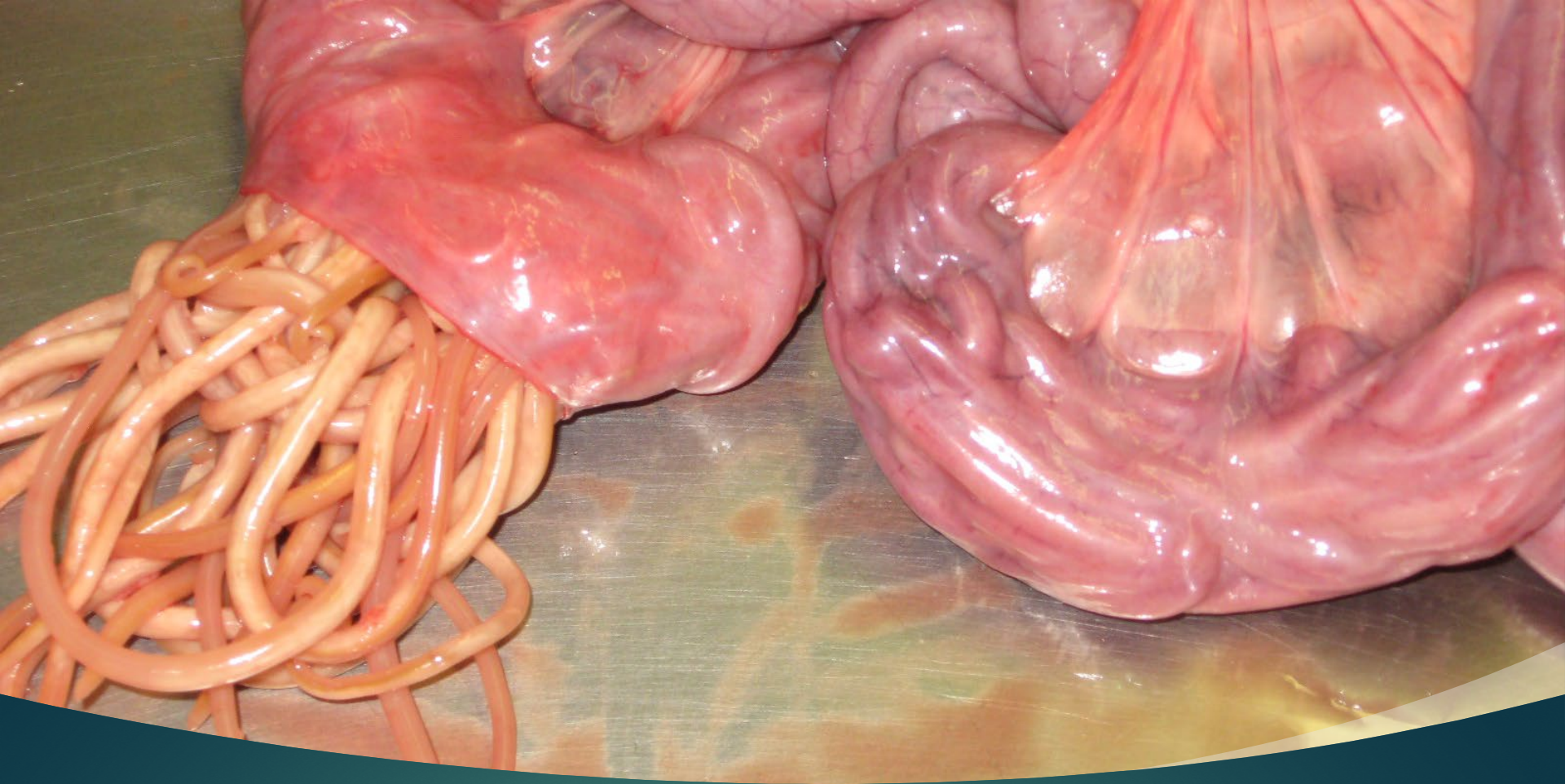


Ascarid shown in cut
surface of the liver.



Ascarids

ASCARIDS IN THE STOMACH.
NOTE THE THICKENING OF STOMACH WALL.



Ascarids

ASCARIDS IMPACTING THE INTESTINES.

Ascarids



Mesenteric Lymph Nodes
swollen from ascarid
infestation.



Cross-section of the
Mesenteric Lymph Nodes
shown in the photo on the left.

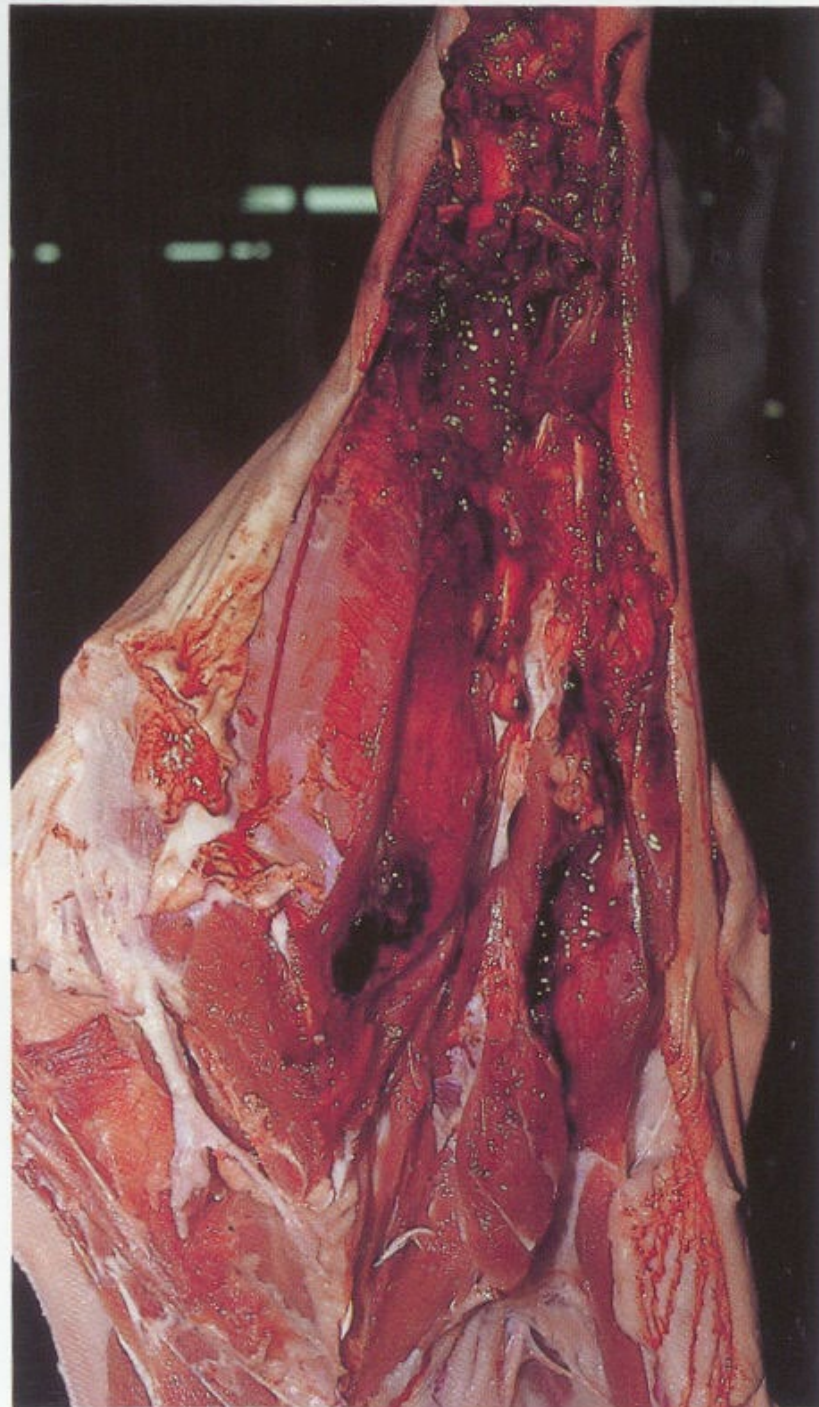
Atrophic Rhinitis

- ▶ Usually see sneezing in swine herds and causes turbinate bones to become damaged, shrink, or become distorted.
- ▶ May be caused by infectious and/or non-infectious organisms
 - ▶ Infectious: bacterial organisms, viruses
 - ▶ Non-infectious: dust, high ammonia levels
- ▶ Since this condition is usually localized, head tissues can be removed without contamination and saved for food.



Bruised Tissue

- ▶ Bruised tissue should be trimmed and condemned.
- ▶ If evidence of infection exists, retain the carcass and parts for veterinary disposition.



Central Nervous System Disorder

- ▶ Has many different causes and manifests itself in different ways.
- ▶ Commonly seen in animals displaying CNS signs is circling, walking into things, staggering, etc.
- ▶ These animals are always to be suspected at antemortem for veterinary disposition.

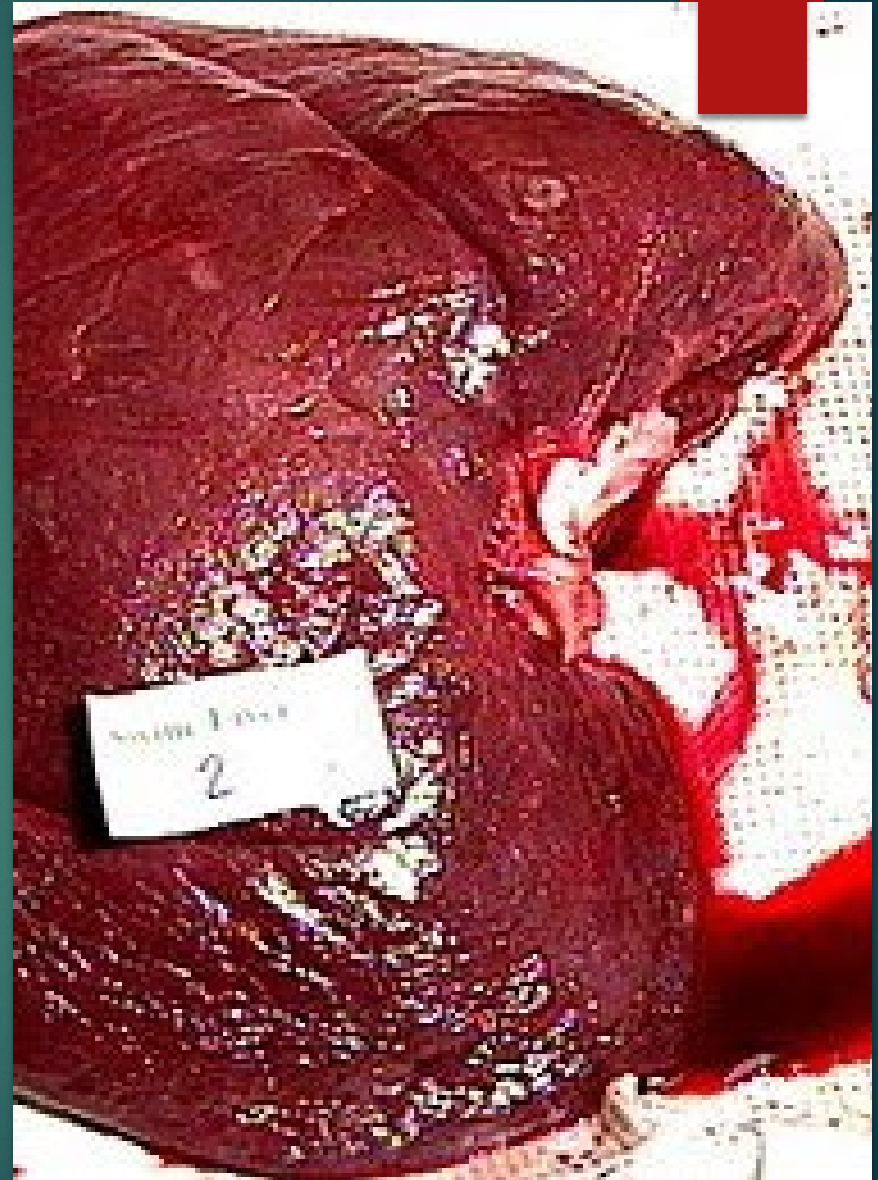


Central Nervous System Disorder as seen by MPID Inspection Personnel!



Cirrhosis of the Liver

- ▶ A progressive disease where the healthy living tissue is replaced with scar tissue.
- ▶ Palpation of this liver would present with a very tough texture.
- ▶ Livers with this condition are to be condemned.





Congested Liver

- ▶ Caused by a back-up of blood in the liver.
- ▶ If there is doubt as to whether the condition is localized to the liver or if other pathology exists, the carcass and parts should be retained for veterinary disposition.

Cysticercosis

9 CFR 311.24

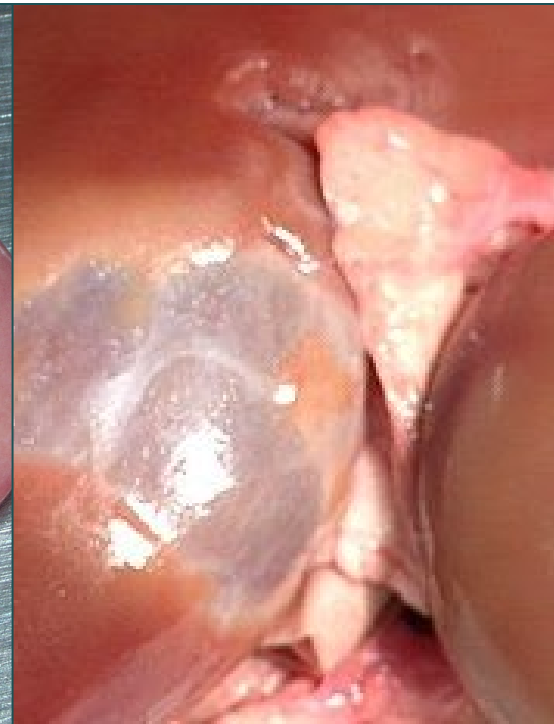
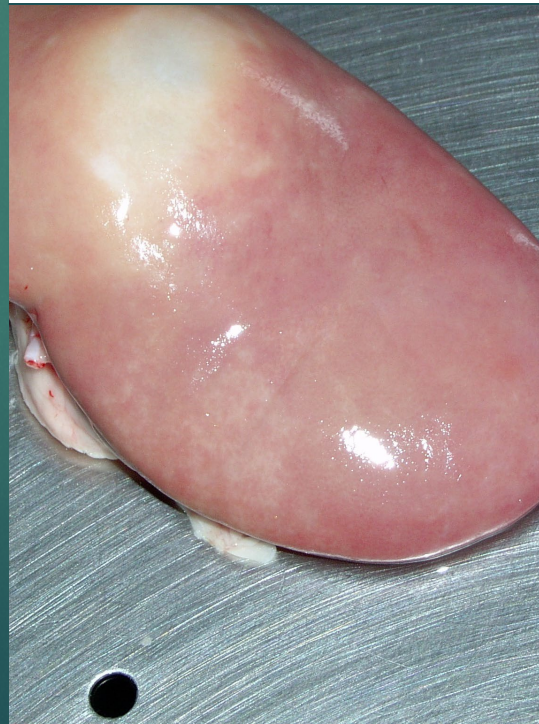
- ▶ A parasitic condition caused by a tapeworm cyst.
- ▶ Similar to beef measles, it can affect any muscle tissue in the carcass.
- ▶ In pork, the heart seems to be the most common site.
- ▶ The carcass and parts must be retained for veterinary disposition.



Cystic Kidney

9 CFR 311.16(a)(7)

- ▶ Clear, fluid filled cysts of varying sizes.
- ▶ Condemn the kidneys (unless the condition is slight) and pass the carcass for food.



Cystitis

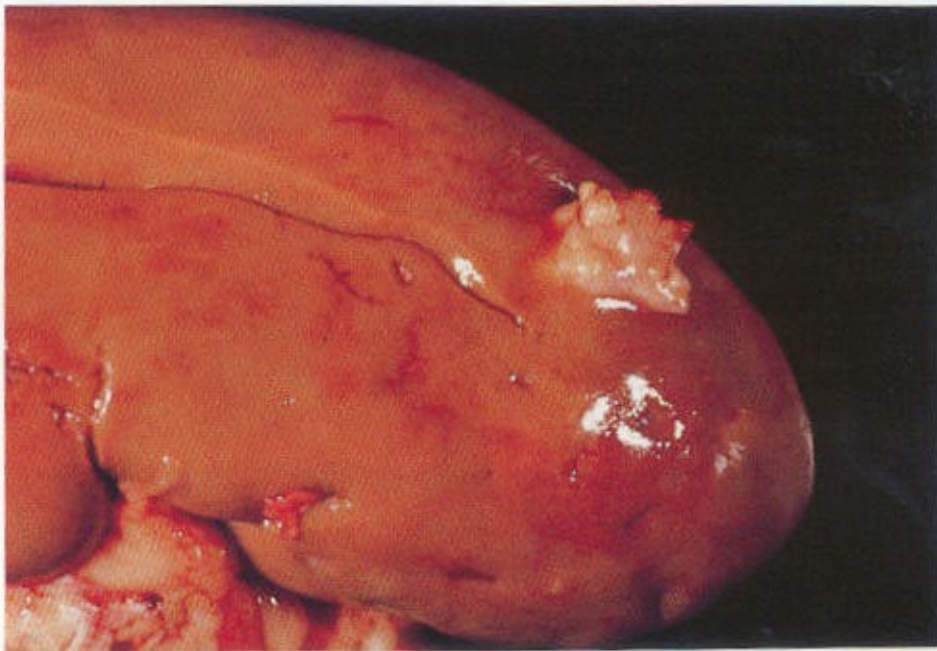
- ▶ Inflammation of the bladder caused by a bacterial infection.
- ▶ If there is doubt as to whether the condition is localized or if other pathology exists, the carcass and parts should be retained for veterinary disposition.



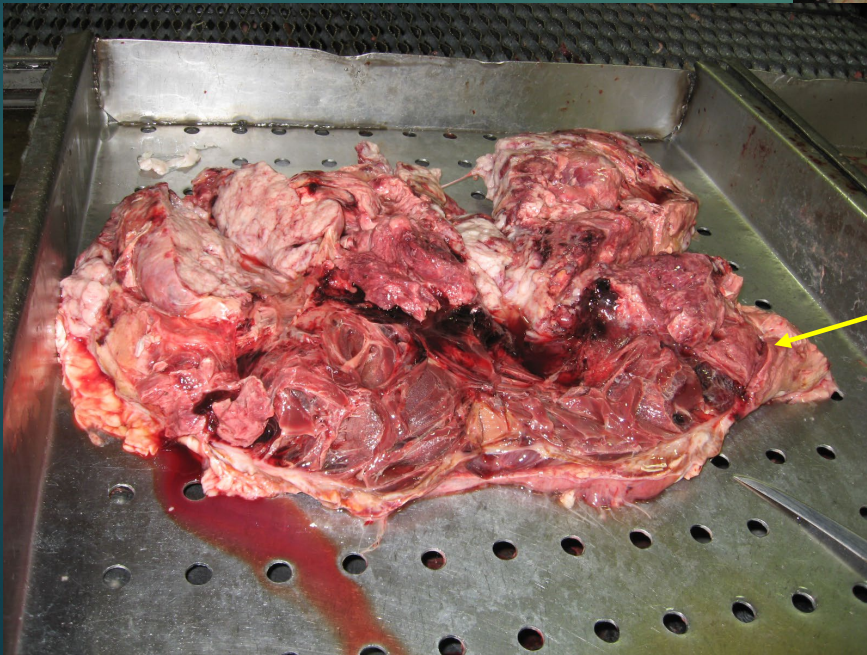
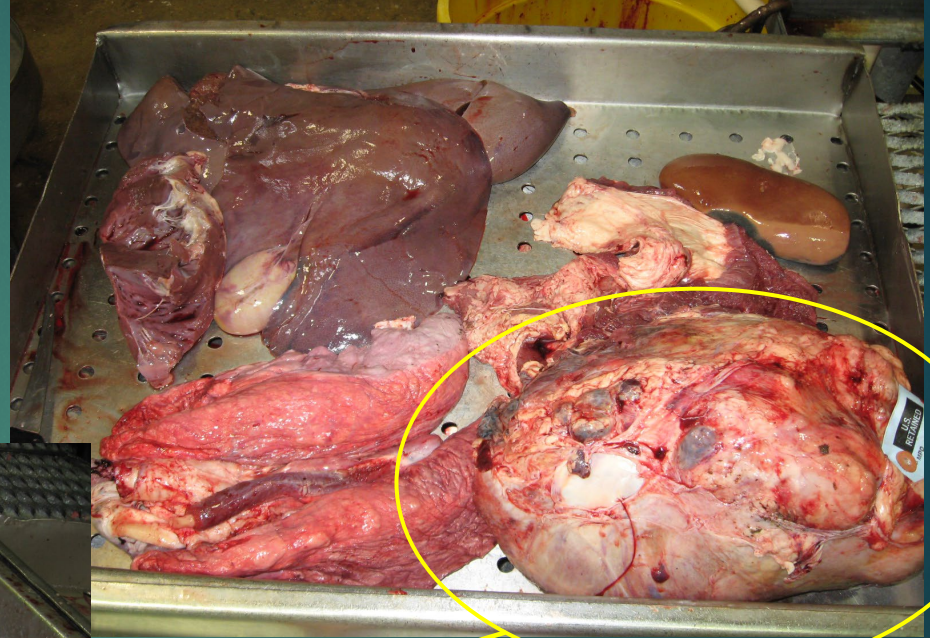
Embryonal Nephroma

9 CFR 311.11(a)

- ▶ These are tumors of the kidney.
- ▶ Generally, they are benign and occur more commonly in young animals. These should be retained for veterinary disposition
- ▶ Top picture shows a cross section of a tumor.
- ▶ Bottom picture shows a small projection on the opposite kidney.

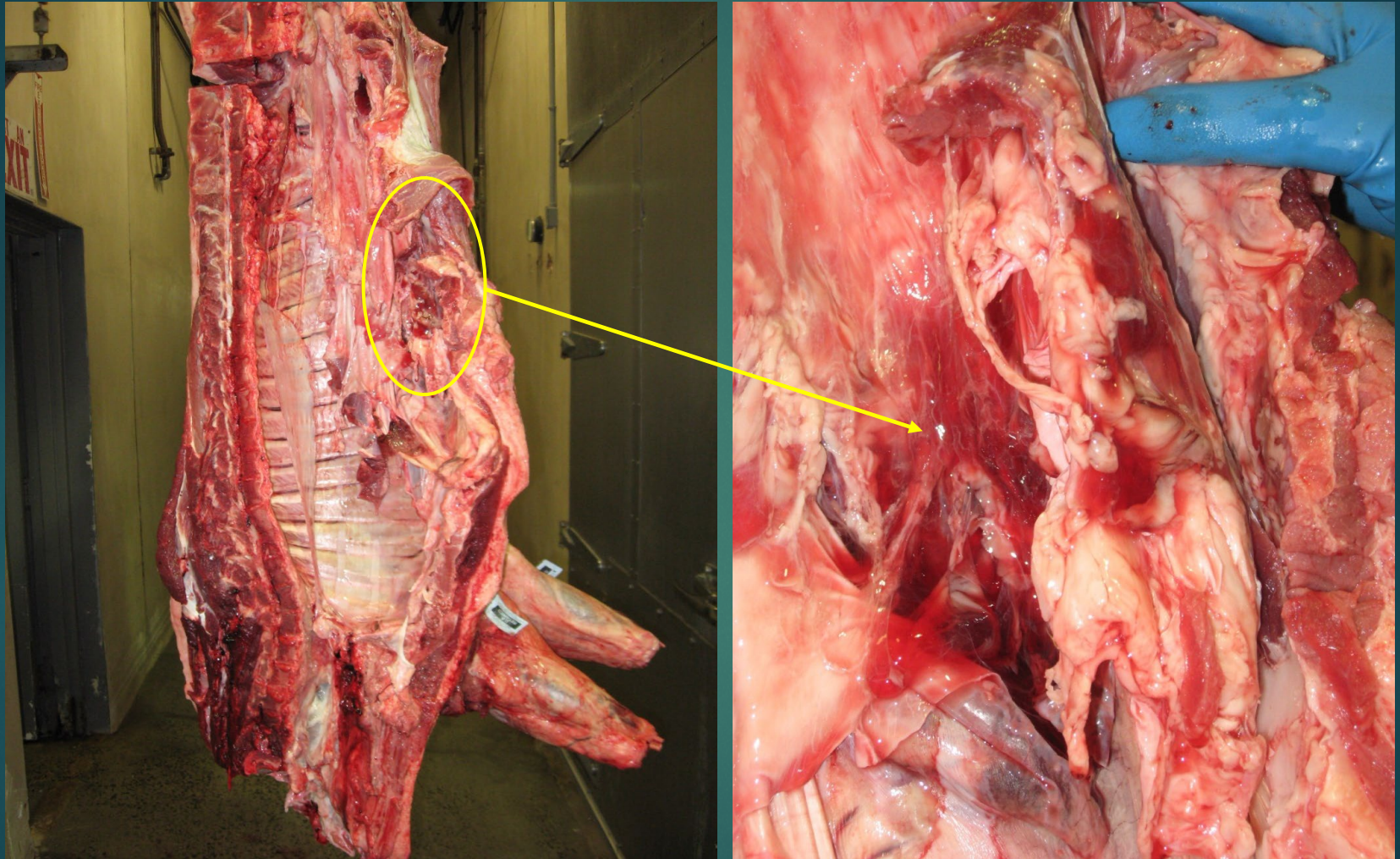


Embryonal Nephroma



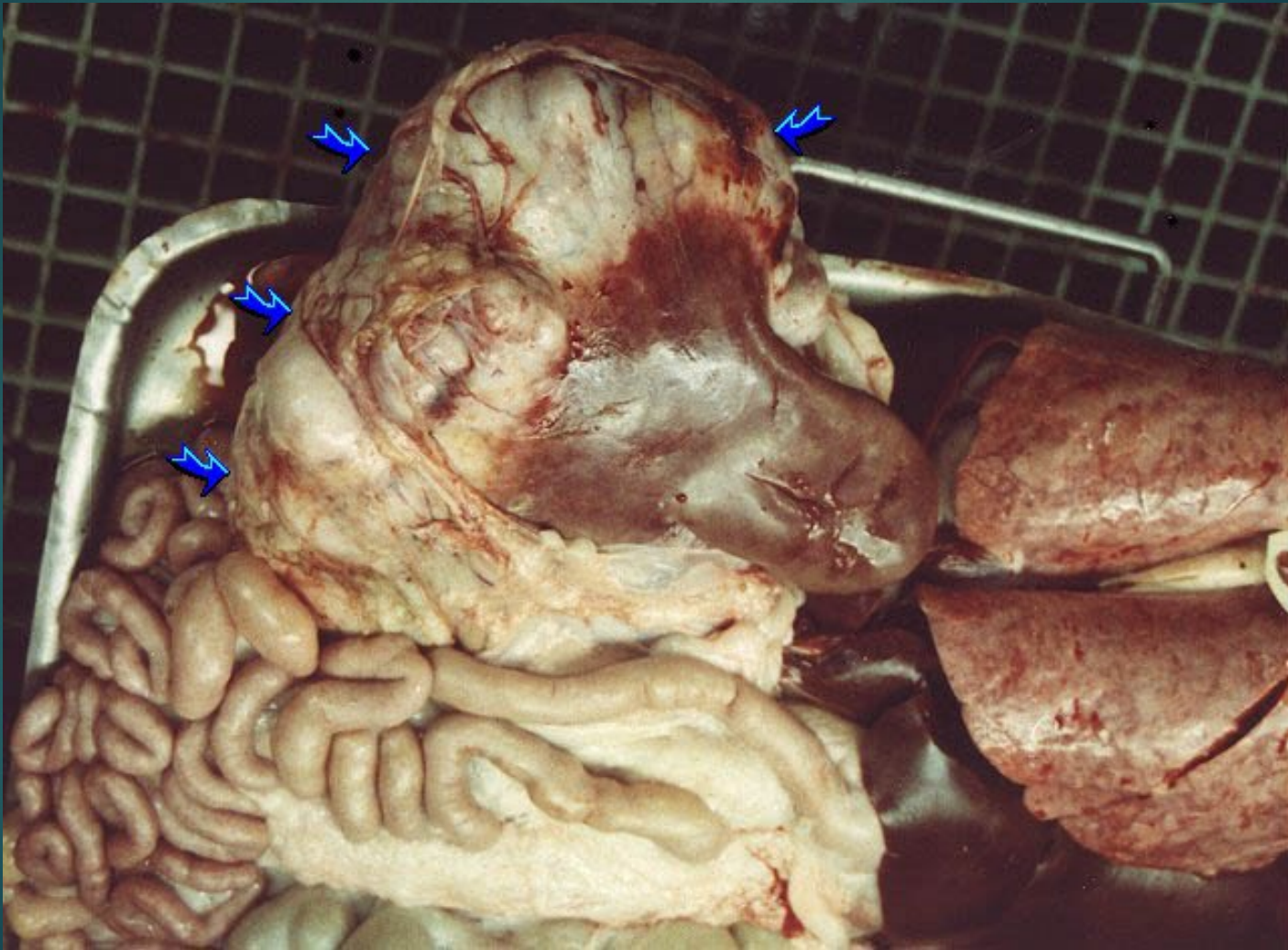
Top Photo: EN
Bottom Photo: Cross-section of
the EN shown in the top photo.
No normal kidney tissue
observed.

Embryonal Nephroma



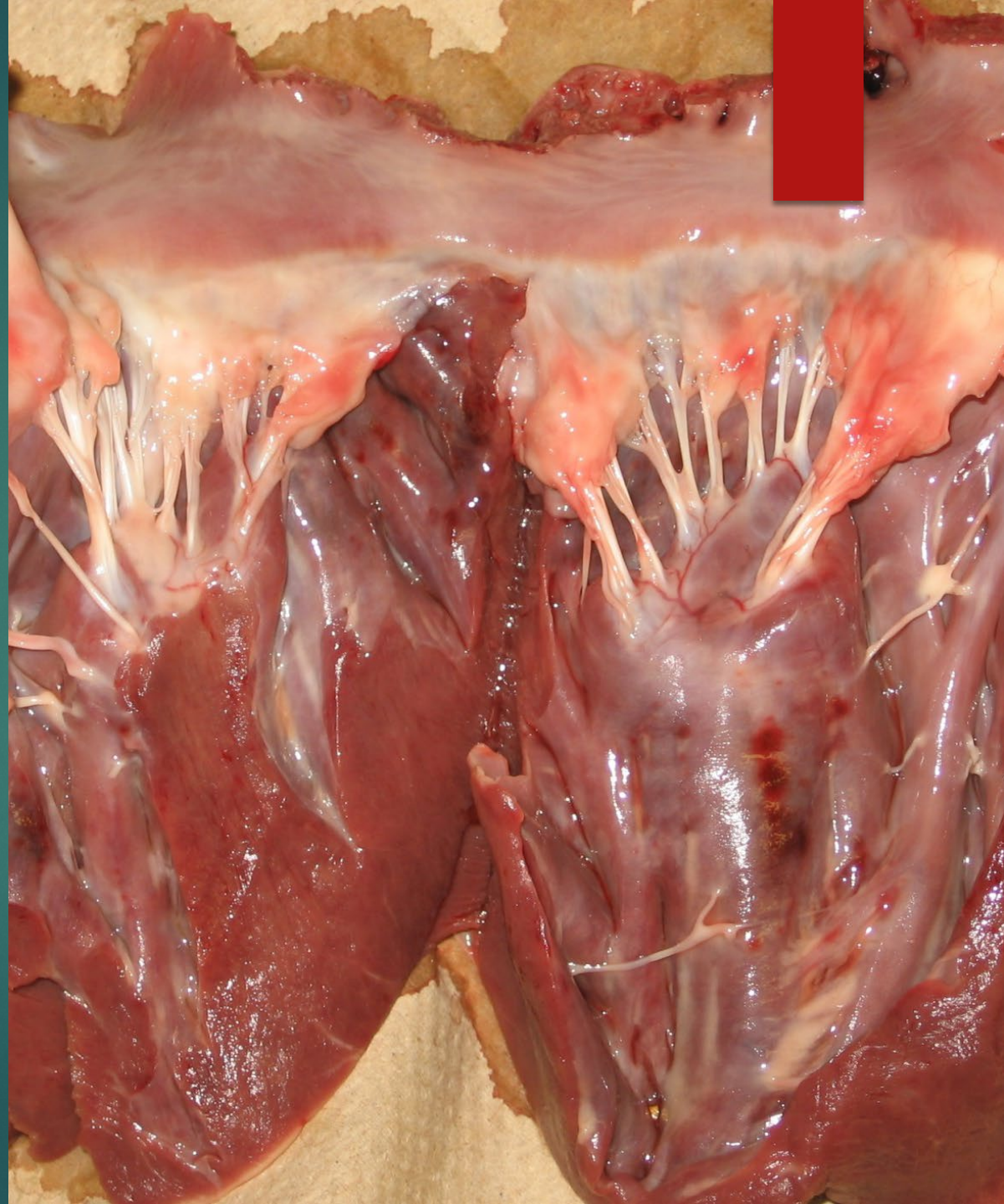
Carcass half where the embryonal nephroma from the previous slide was removed from.

Embryonal Nephroma



Endocarditis

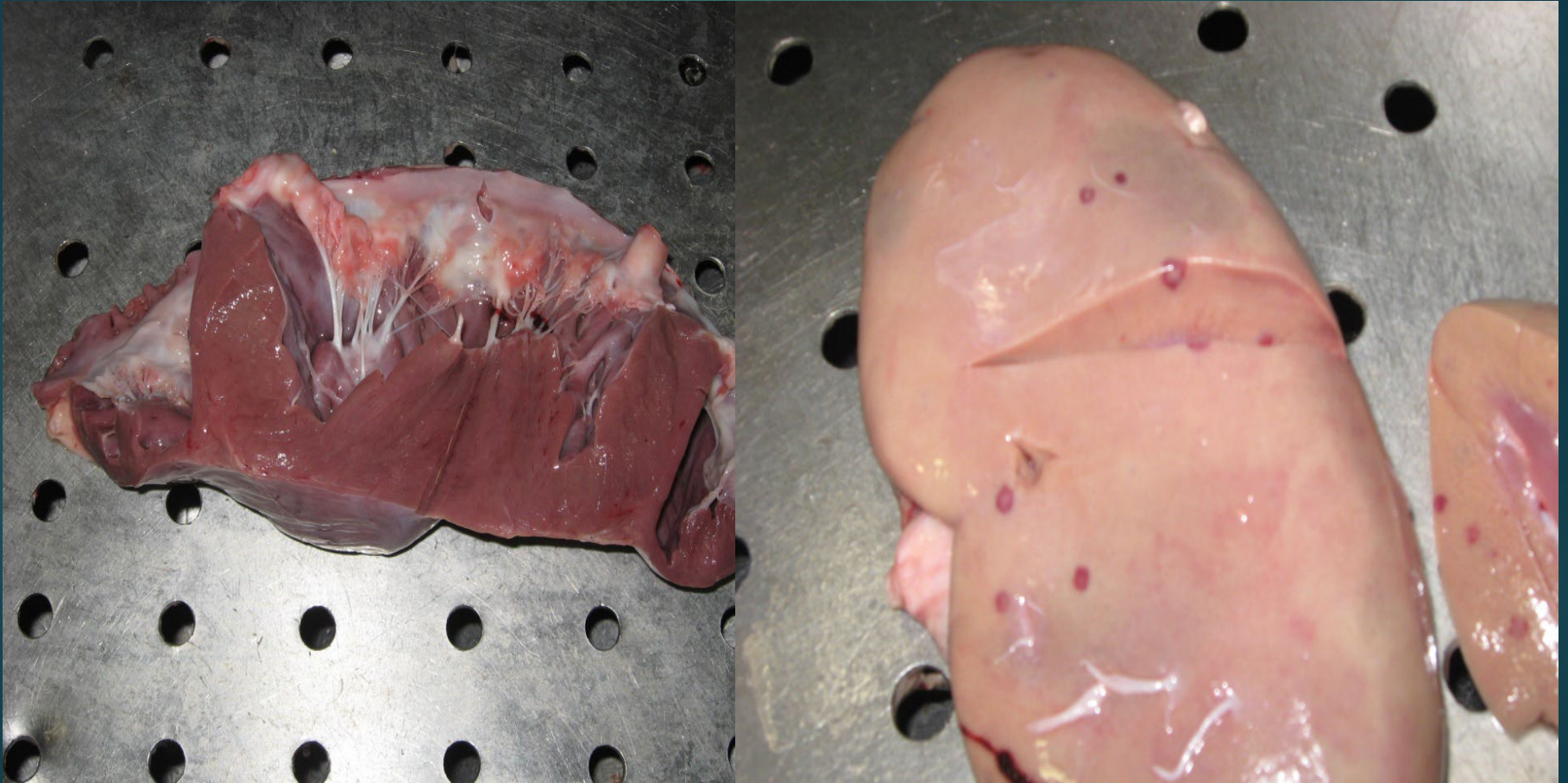
- ▶ Heart valves will be reddened.
- ▶ May be associated with more generalized conditions and bacterial septic diseases.
 - ▶ Erysipelas
 - ▶ Arthritis
 - ▶ Tail bite abscesses
- ▶ Swine PM procedures do not require the opening of the heart.
 - ▶ Vets should open the heart with retains.



Endocarditis with associated Nephritis of Kidneys and enlargement of one Kidney

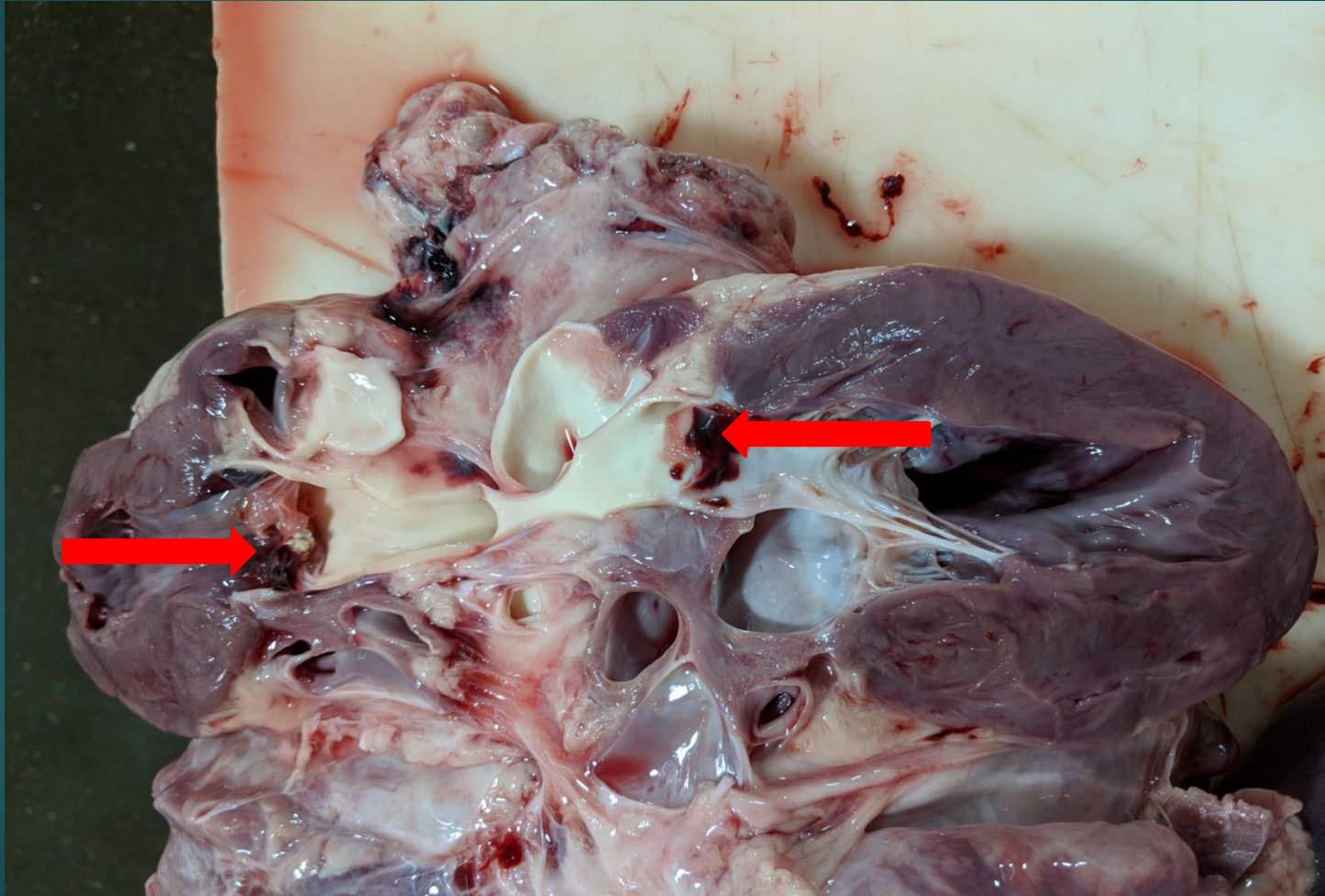


Endocarditis with associated microabscesses on the Kidneys

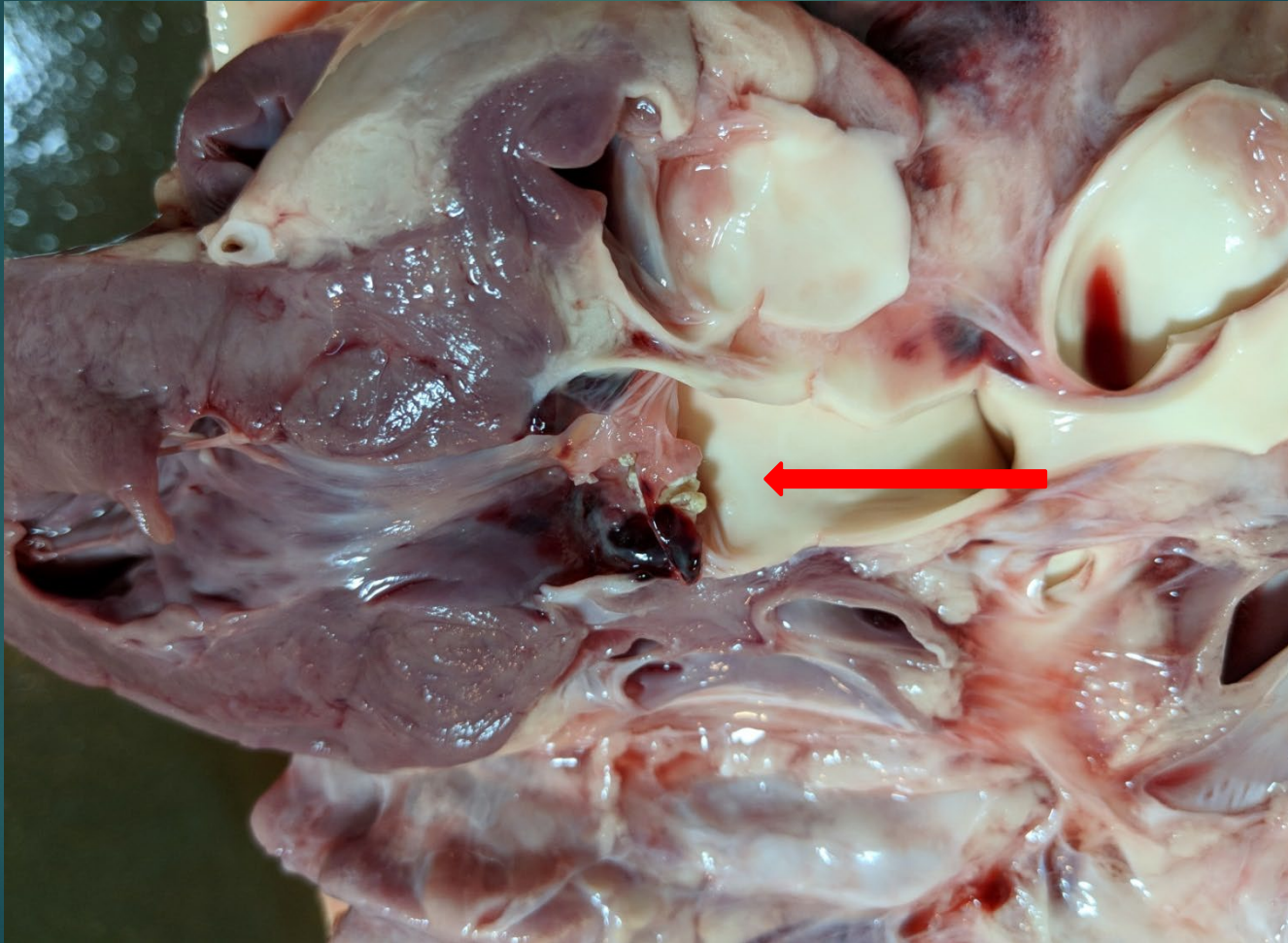


Endocarditis - Acute

Erythematous valves with fibrinous adhesions



Acute **Endocarditis** with early vegetative lesion





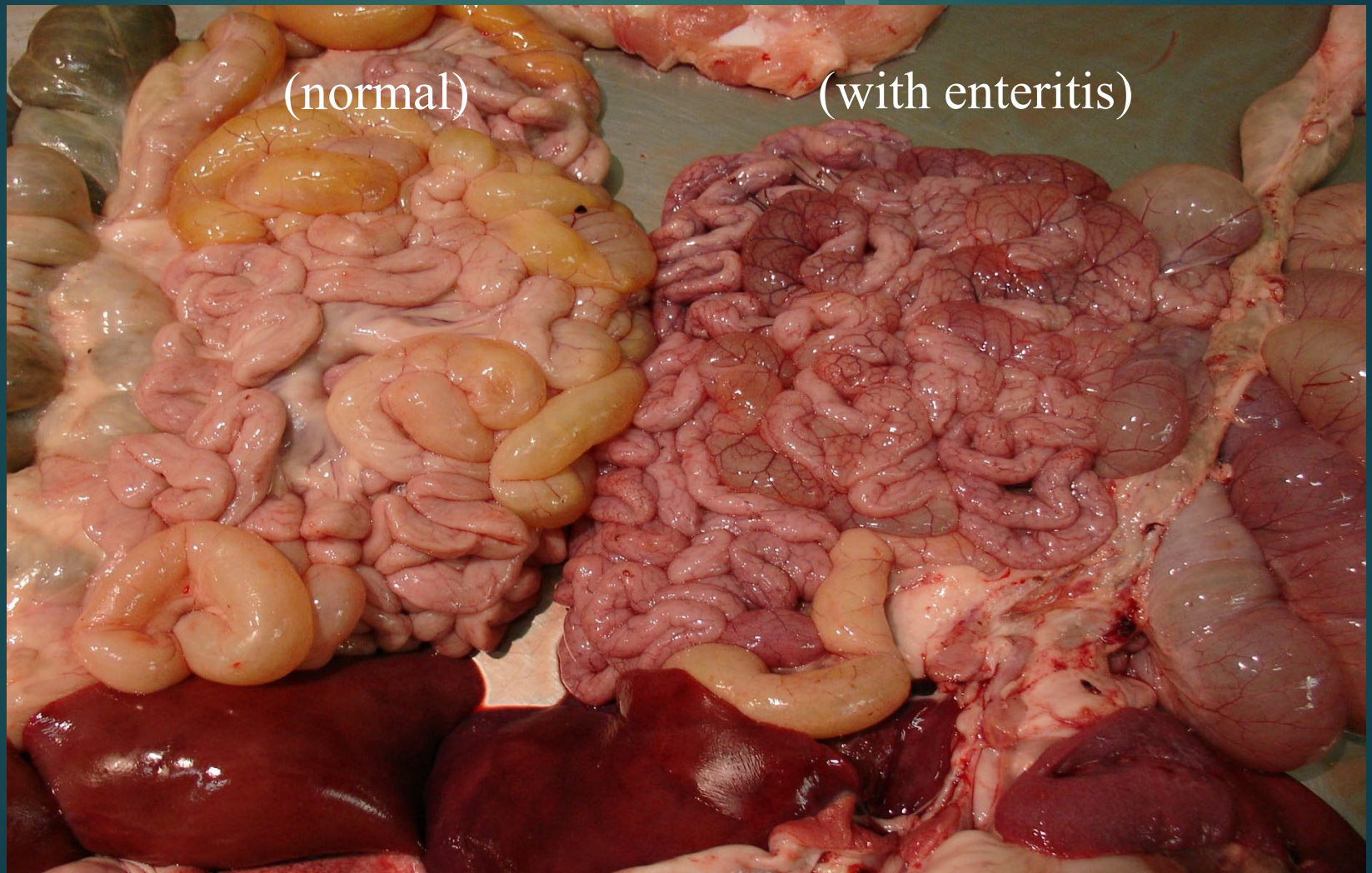
**Endocarditis -
Vegetative**

Enteritis

- ▶ Intestinal tract is hemorrhagic in appearance.
- ▶ If extensive, or acute, retain the carcass and parts for veterinary disposition.



Enteritis



Erysipelas (Diamond Skin)

9 CFR 311.6

- ▶ Erysipelas is a disease of swine caused by the organism *Erysipelothrix rhusiopathiae*.
- ▶ Per MPID Notice 1-20:
 - ▶ If the carcass presents with skin lesions and any other disease condition, the carcass and viscera must be retained for veterinary disposition.
 - ▶ If the carcass presents with only diamond skin lesions, regardless of the number and no other signs of disease are seen, IPP may have the establishment trim all diamond skin lesions.
 - ▶ If the inspector is unsure of the significance of additional abnormalities or if there are any questions, the carcass and viscera should be retained for veterinary disposition.

Erysipelas (As seen at antemortem)



Erysipelas

- ▶ The disease starts with an infection of the skin, but can lead to several other diseases/abnormalities such as:

Arthritis

Red, swollen Lymph Nodes

Paintbrush hemorrhages on stomach

Endocarditis

Congested Liver

Turkey Egg Kidneys

Septicemia



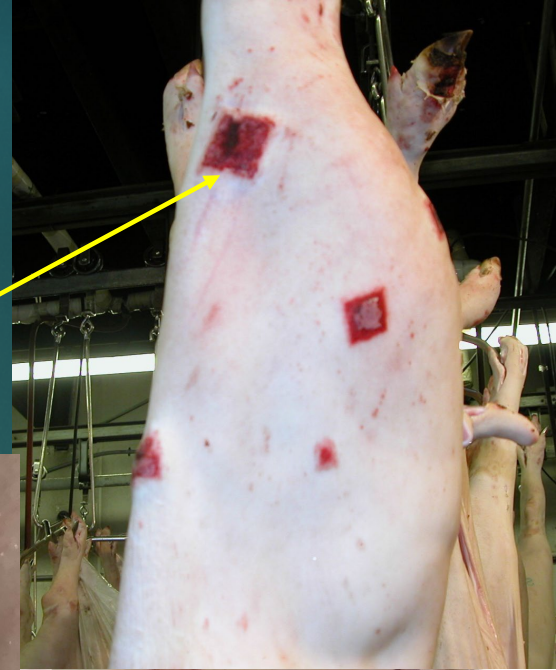
Erysipelas:

Acute vs. Chronic vs.
Acute on Chronic

Acute: Bright red,
inflamed

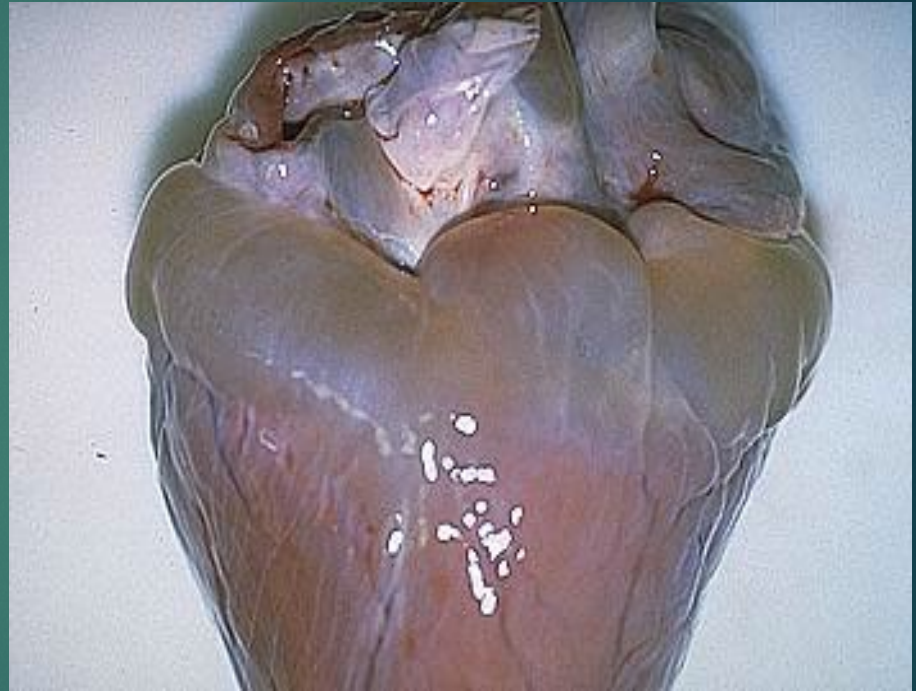
Chronic: tan

Acute on chronic:
Previous infection has
resolved; reinfected



Fat Sloughing of the Heart Cap

- ▶ The gelatinous appearance of the heart fat is often an indication of emaciation.
 - ▶ Emaciation is a condition in which the carcass has reached a state of degeneration due to lack of nutritional input.
 - ▶ There will be no normal fat and the musculature will be moist and glassy.
 - ▶ You may see a watery material running down the backbone and dripping off the neck after the carcass is split.
- ▶ Retain carcasses in which you suspect emaciation for veterinary disposition.





Fungal Granuloma – Liver

Hermaphrodite



Male and female external genitalia observed.

Hermaphrodite



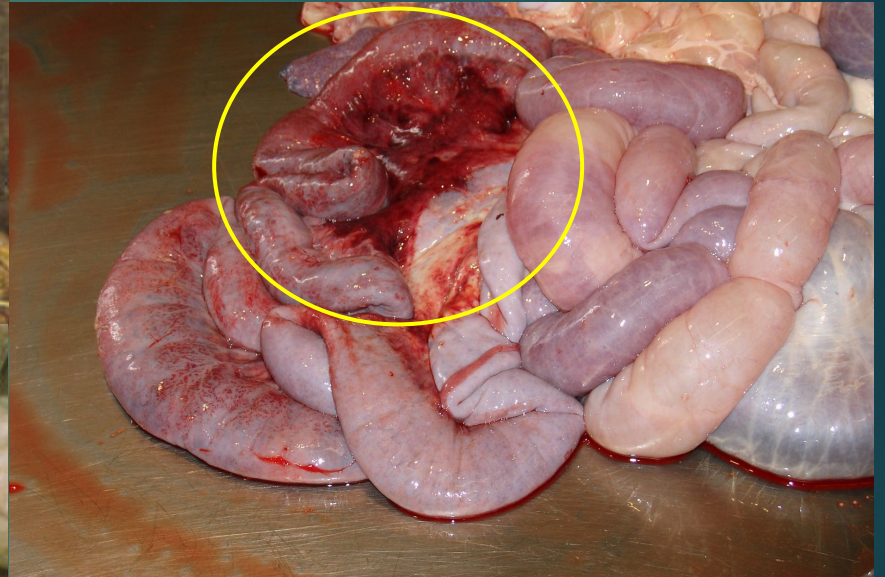
Testicles and spermatic cords observed.

Hermaphrodite



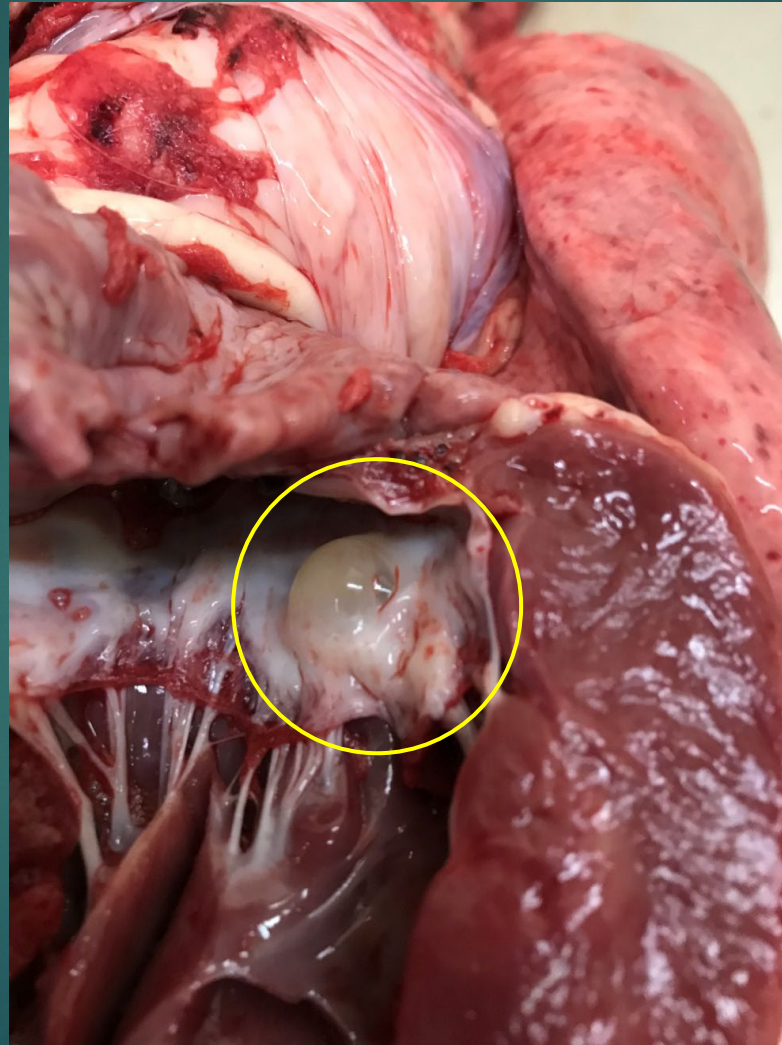
Mixture of male and female internal genitalia observed. Not specially ovaries or testicles and a smaller than normal-sized penis.

Hernia



This portion of the intestines
was in the hernia.

Heart Valve Cyst



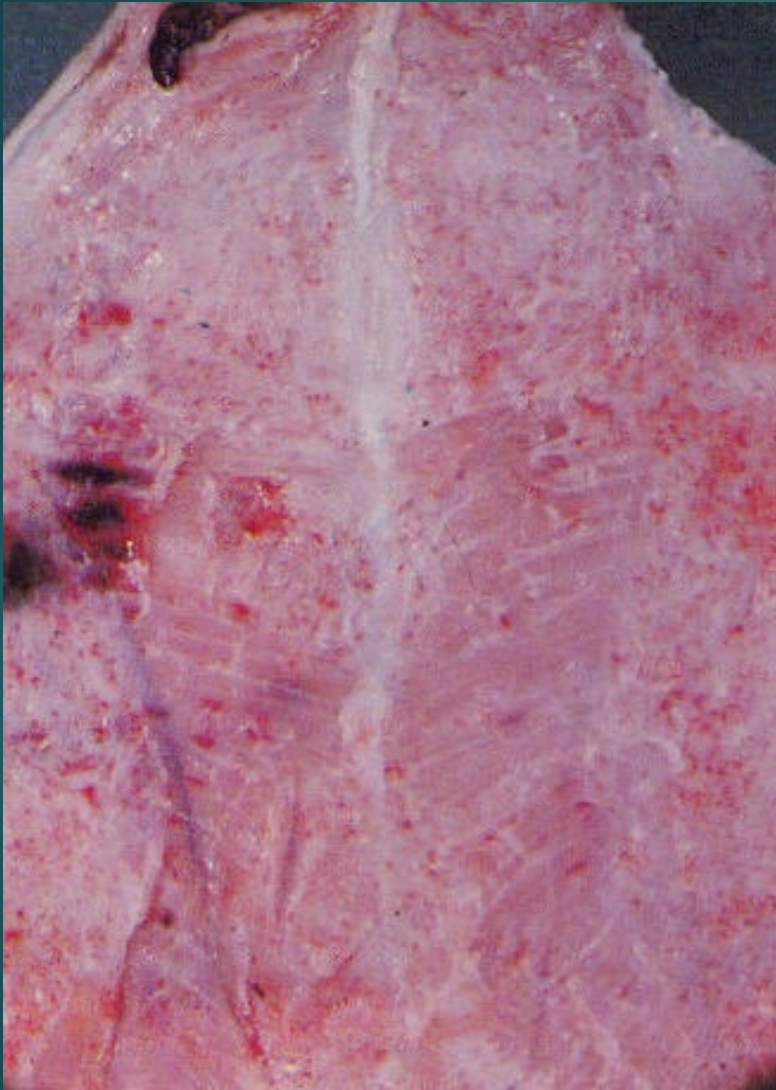
Hog Cholera

9 CFR 311.3

- ▶ Identified by such findings as hemorrhagic lymph nodes and red spots on belly and legs, and possibly a "turkey egg" kidney.
- ▶ If abnormal hemorrhages are observed, the carcass should be retained for veterinary disposition
- ▶ Not currently in the U.S., but there's huge potential for economic impact.
- ▶ Animal should be suspected at antemortem for veterinary disposition.



Hog Cholera



As shown on muscle.



As shown on bladder.

Hydronephrosis (Kidney) 9 CFR 311.16(a)(7)

- ▶ One or both kidneys literally become a "bag of water".
- ▶ Normal kidney tissue is replaced by fluid.
- ▶ There is generally no effect upon the carcass.
- ▶ Affected kidneys are removed and condemned.



Icterus

9 CFR 311.19

- ▶ The carcass has a lemon-yellow appearance.
- ▶ Can be caused by anemia, biliary obstruction (ascarids) or liver dysfunction/disease.
- ▶ Icterus particularly affects connective tissues (tendons, ligaments, sclera of the eye, etc.).
- ▶ Carcasses affected with any degree of icterus are retained for veterinary disposition.
- ▶ **Note**: Often difficult to determine if icterus (true disease) vs. pigmentary changes. Can retain overnight and evaluate the next day as icterus will get more obvious over time.

Icterus

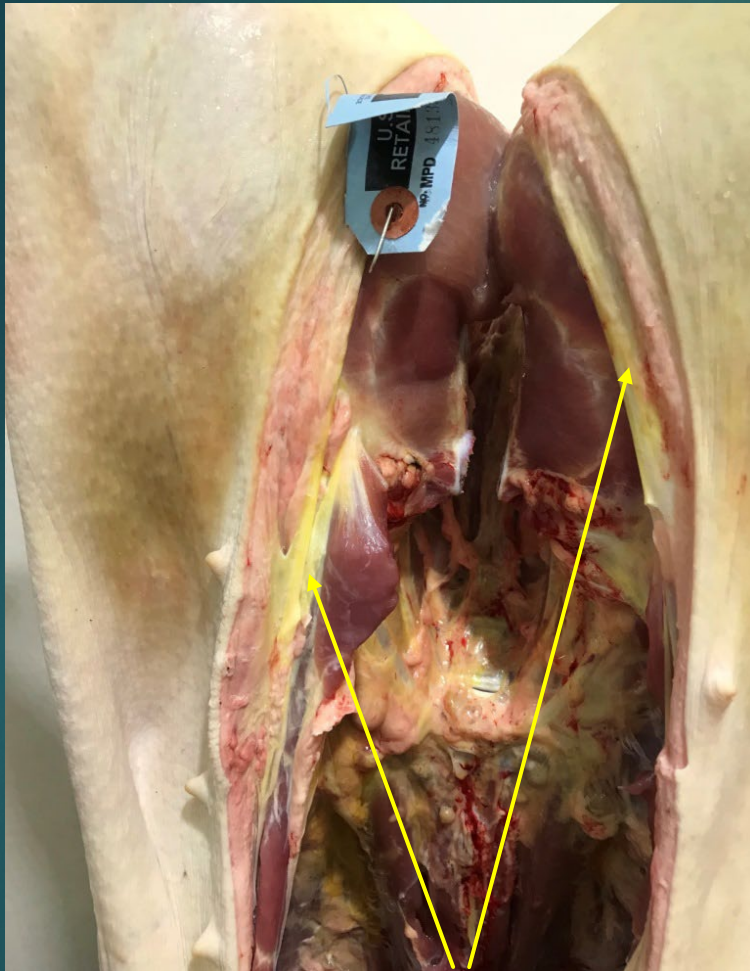


Normal pigmentation of skin.



Yellow pigmentation of skin indicative of icterus.

Icterus



Note the yellowing of connective tissues.

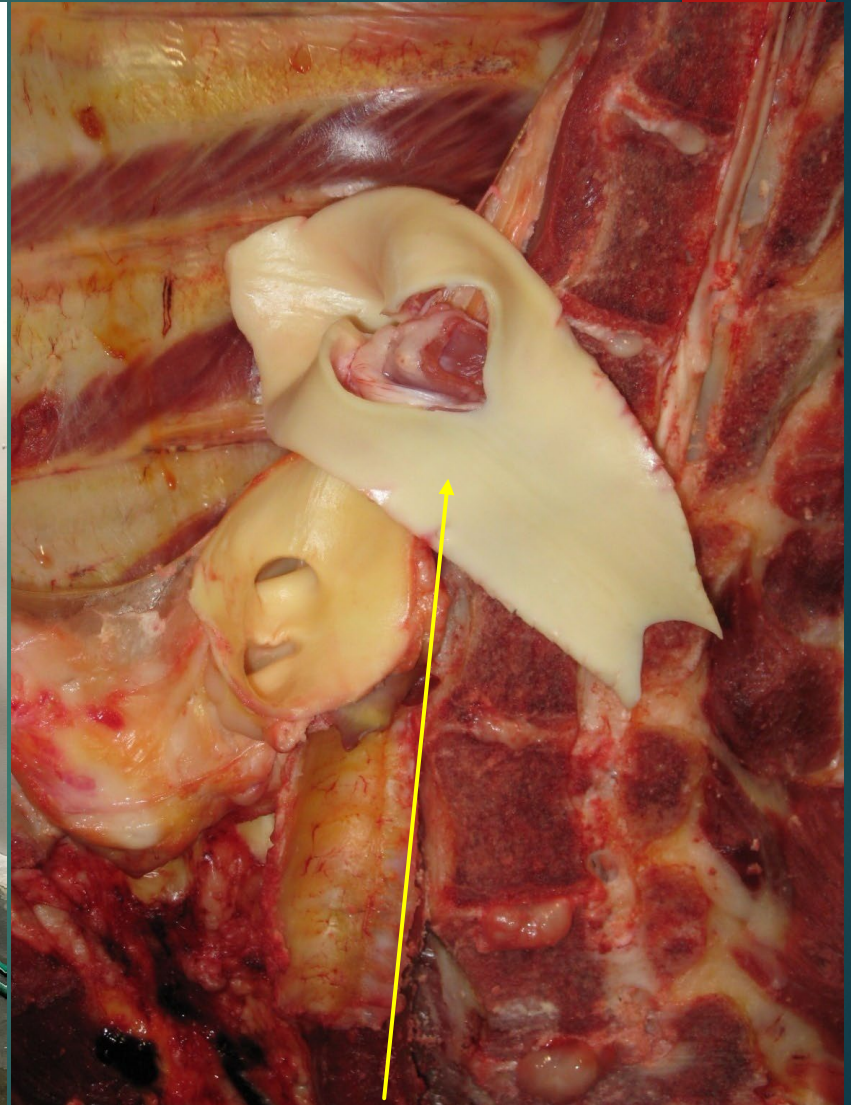


Note the yellowing of the skin.

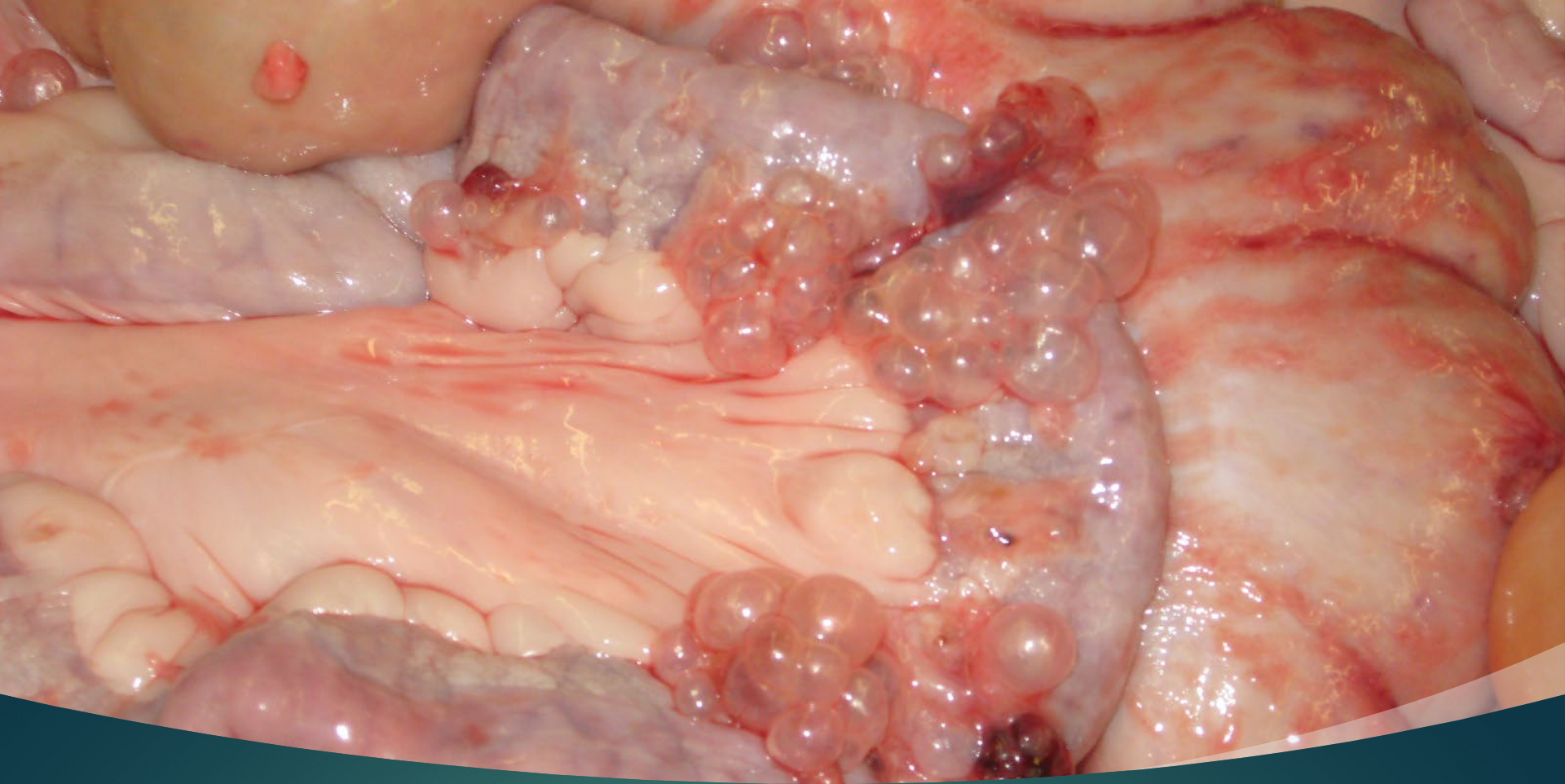
Icterus



Note the yellowing of the pleura.



Note the yellowing of the aortic tissue.



Intestinal Emphysema

Kidney Infarcts

- ▶ As in the spleen, infarcts are quite commonly seen in the kidneys with certain disease processes.
- ▶ The photo on this slide shows a chronic infection as evidenced by the white, pale-colored area. The lesion looks like an upside-down candy corn.





Kidney Infarcts

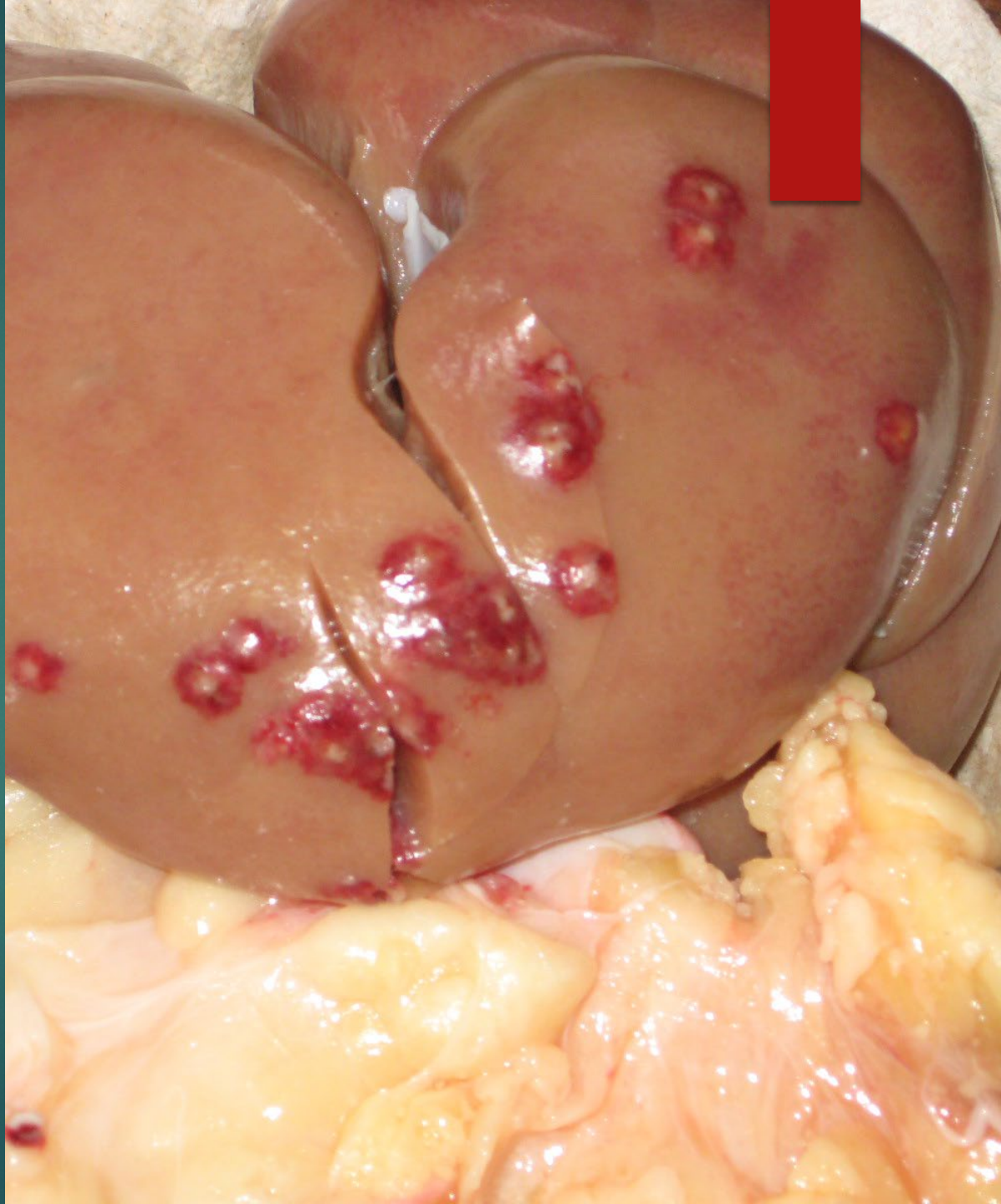
THE PHOTOS ON THIS SLIDE SHOWS AN ACUTE INFECTION AS EVIDENCED BY THE OVERALL REDNESS AND PETECHIAL HEMHORRAGES.

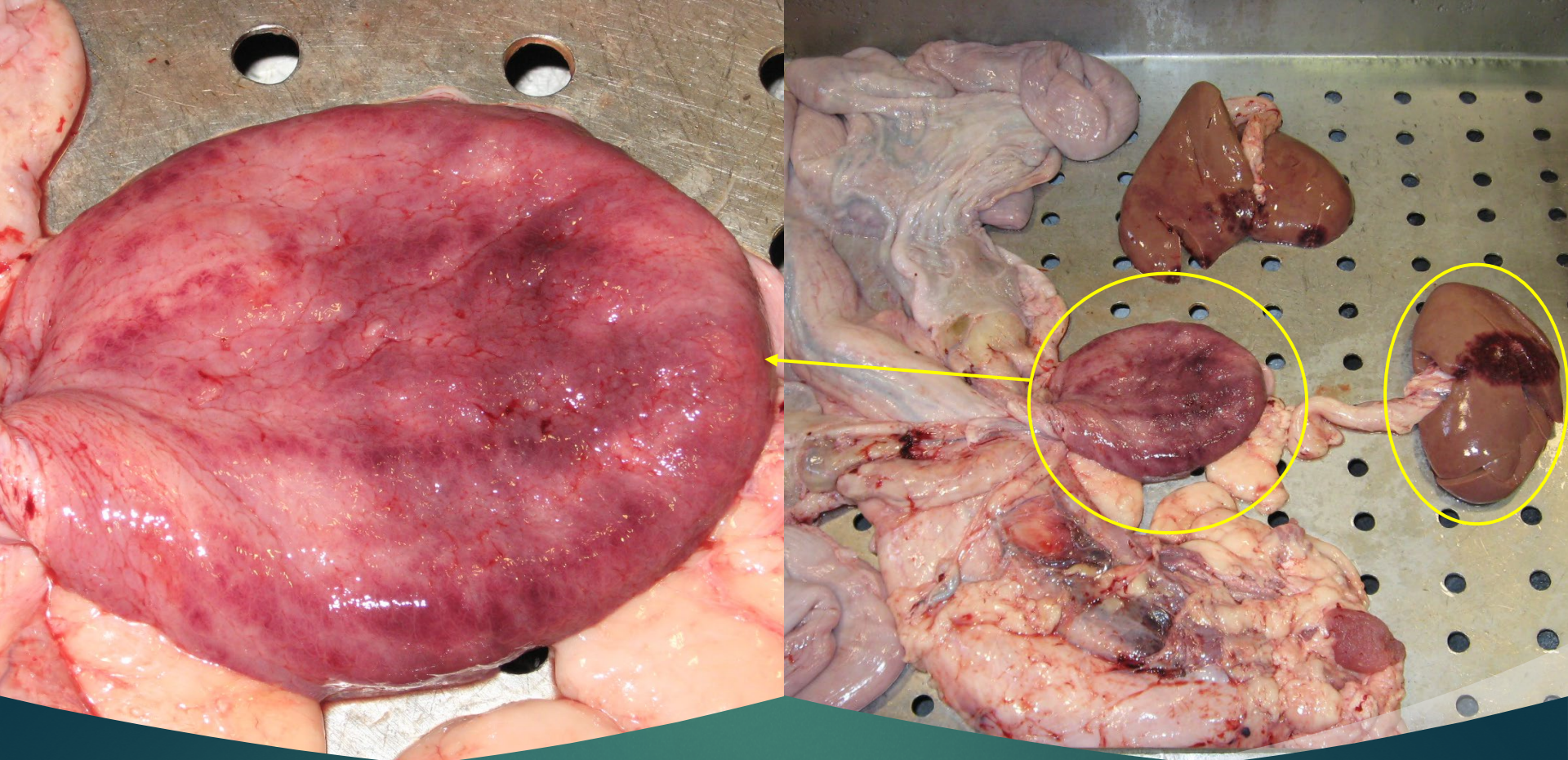
Kidney Infarcts

- ▶ Both of these photos are from the same kidney, therefore why it is imperative that both sides of the kidneys should be inspected during postmortem procedures.



Kidney Infarcts / Micro- abscesses





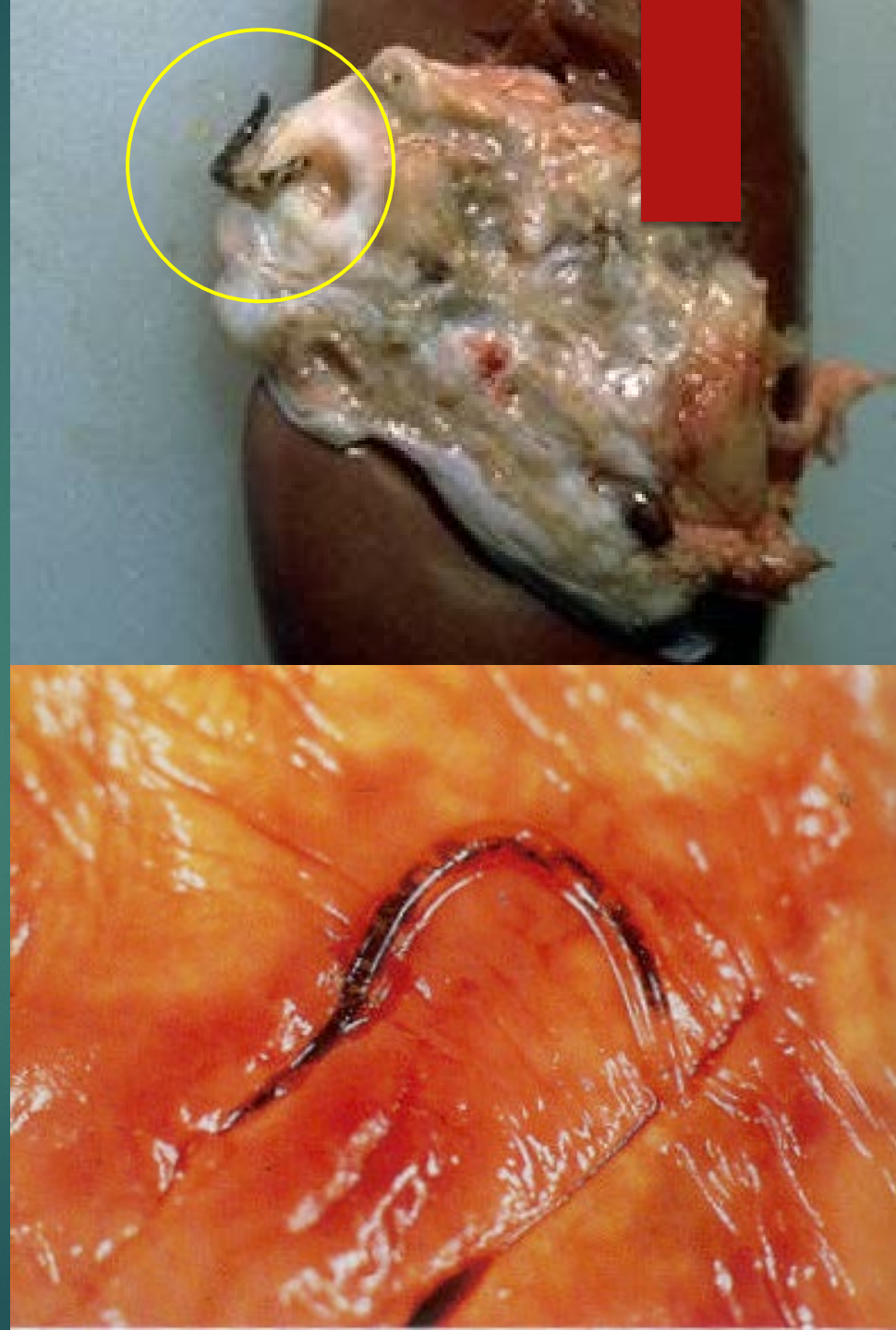
Kidney Infarcts - Ascending Infection

Ascending infection as evidenced by kidney infarcts. The bladder also shows evidence of acute infection (redness) and a thickened bladder wall.

Kidney Worms

9 CFR 311.25

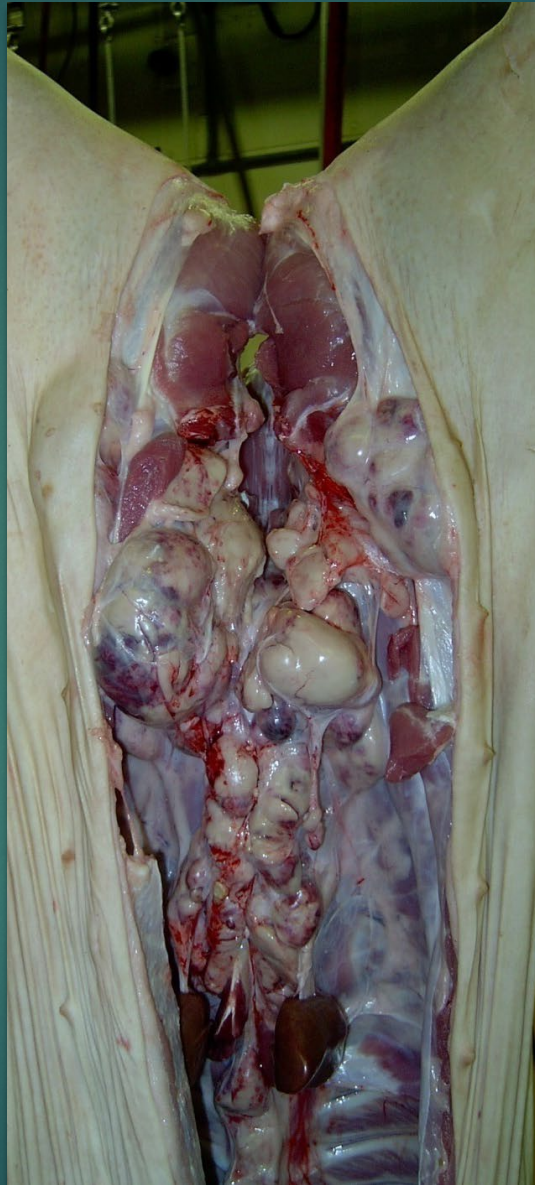
- ▶ Caused by parasites and can also be seen in the soft tissue of the carcass and abdominal viscera.
- ▶ Generally, this is a localized condition. Condemn the kidney and affected tissues.
- ▶ Postmortem findings may include the following:
 - ▶ Adult kidney worms found in pelvic region, muscles (loin, ham), organs (kidney, liver, pancreas, spleen, lungs)
 - ▶ Brown-yellow color to skin and fat
 - ▶ Cysts and/or abscesses near kidneys



Lymphoma

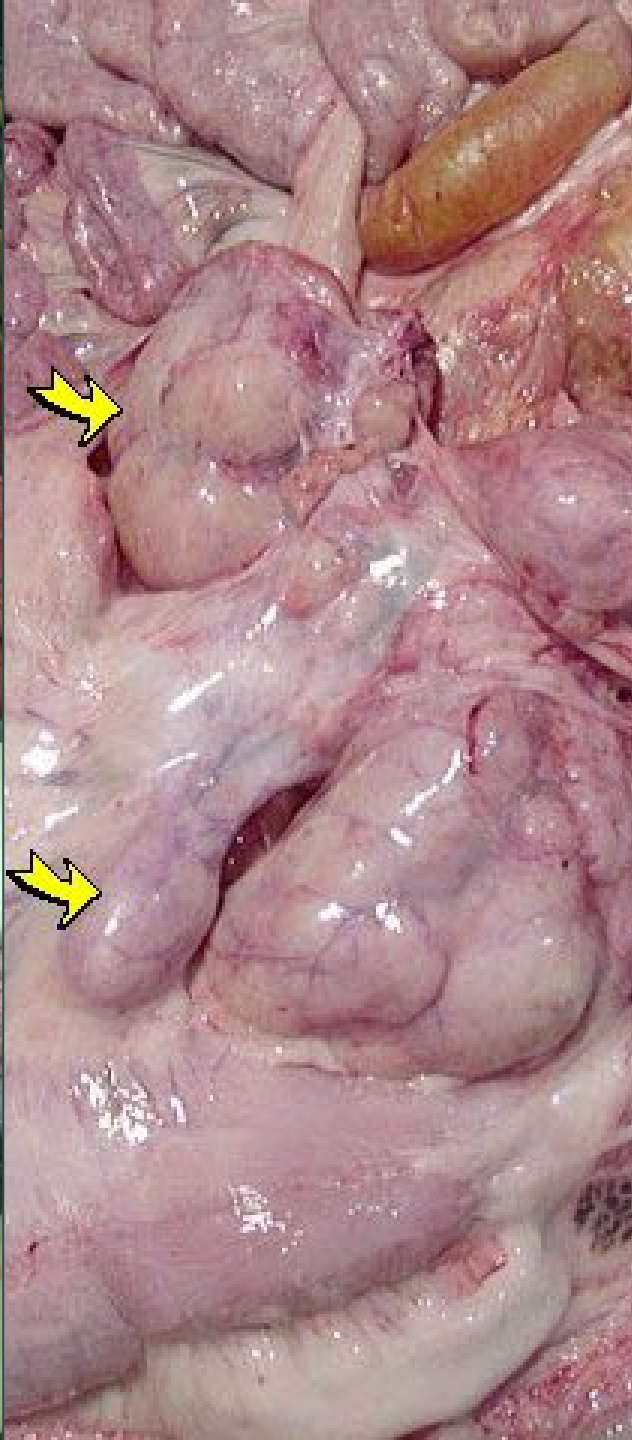
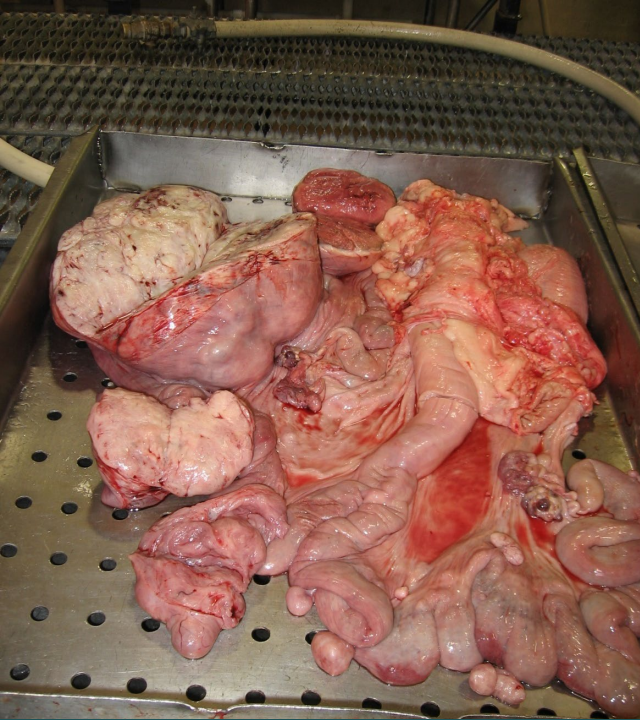
9 CFR 311.11(b)

- ▶ A cancerous disease of the lymph nodes.
- ▶ Characterized by lymph nodes 5 times or more normal size.
- ▶ Lymphoma can also be seen in the right atrium of the heart, abomasum, and uterus.
- ▶ If lymphoma is suspected, always retain the carcass and parts for veterinary disposition.



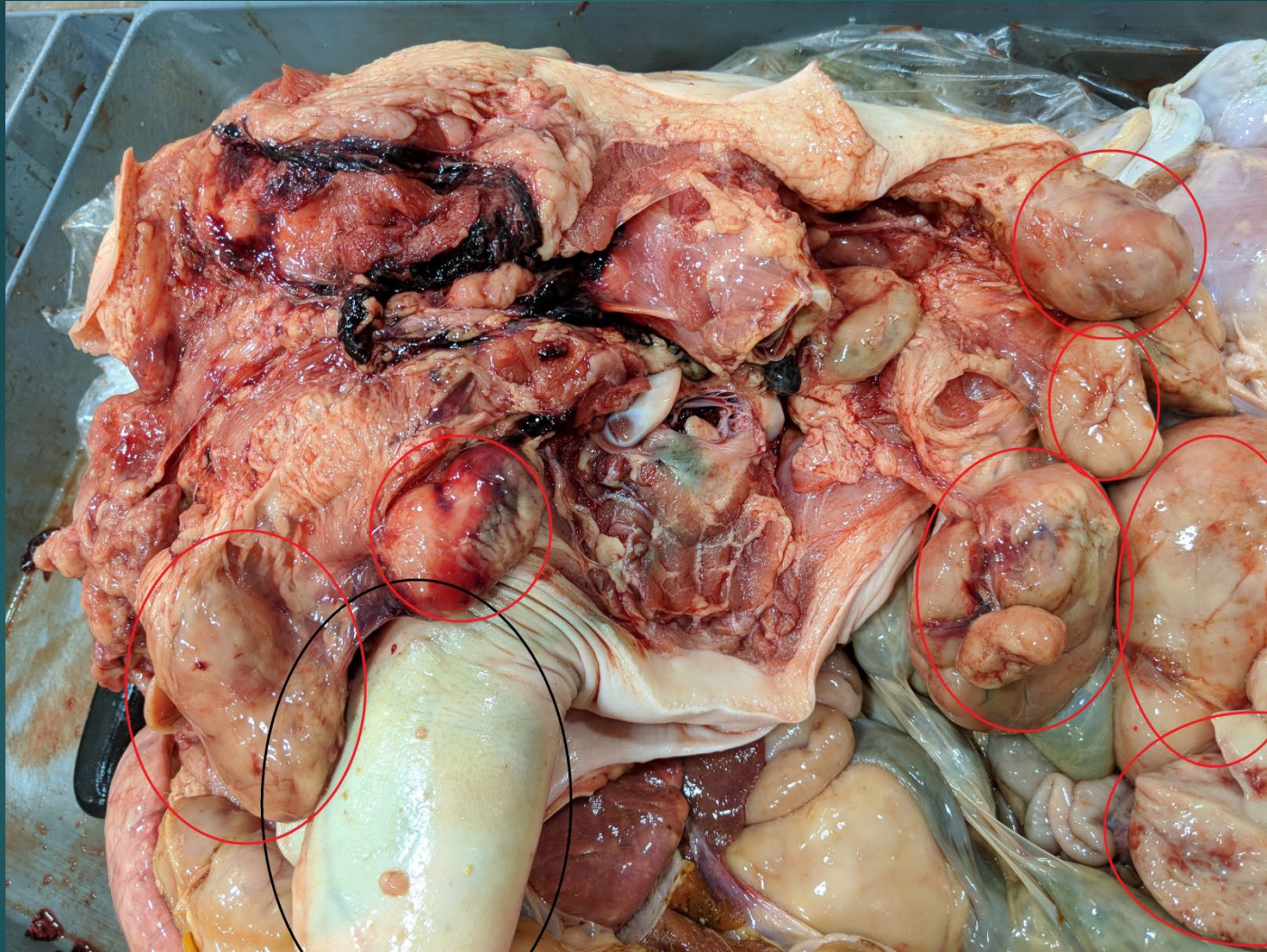


Lymphoma
As seen in the liver.



Lymphoma

Lymphoma



Left Mandible is at the top. Right ear circled in black. Lymph nodes circled in red.

Malignant Hyperthermia/Porcine Stress Syndrome (Pale Soft Exudative – PSE Pork)

- ▶ Inherited metabolic disorder
- ▶ Clinical signs are brought on by stress, transport, handling, exercise, or excitement.
- ▶ Often seen after transport and even in sudden death cases.
- ▶ Meat is light in color due to a rapid decline in muscle pH and degradation of muscle protein and structure.



Mastitis

9 CFR 311.16

- ▶ An inflammation of the udder tissue usually associated with a bacterial infection.
- ▶ Retain the carcass for veterinary disposition if there are generalized signs.



Melanoma

9 CFR 311.11(a)

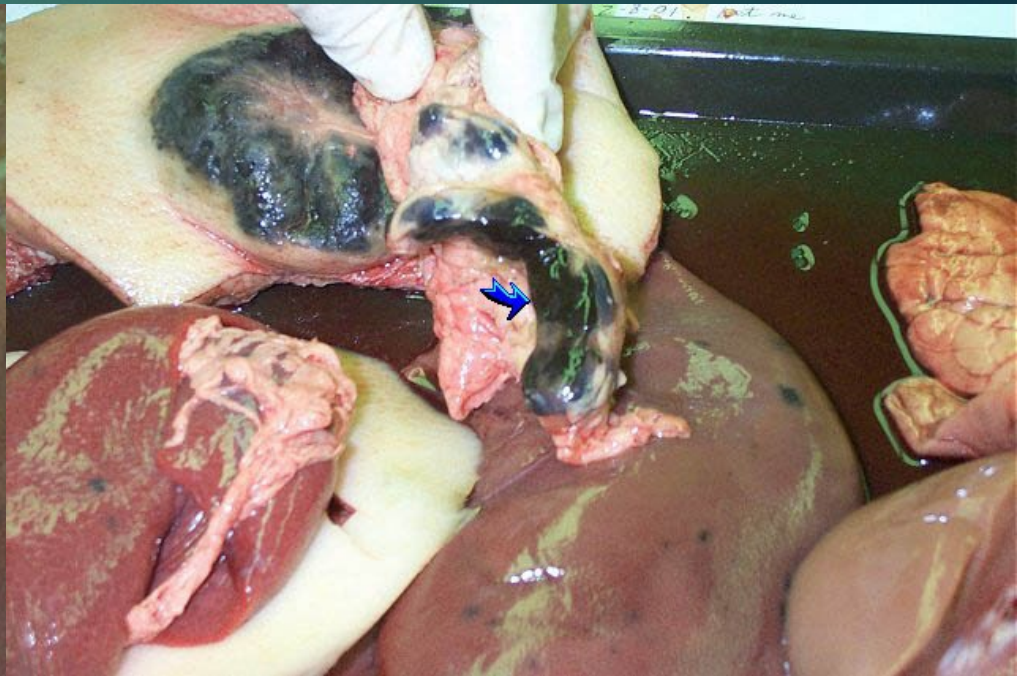
- ▶ Tumors that contain black pigment (melanin).
- ▶ Often difficult to differentiate between melanoma and melanosis without histopathology.
- ▶ Retain carcass and parts for veterinary disposition.



Melanoma



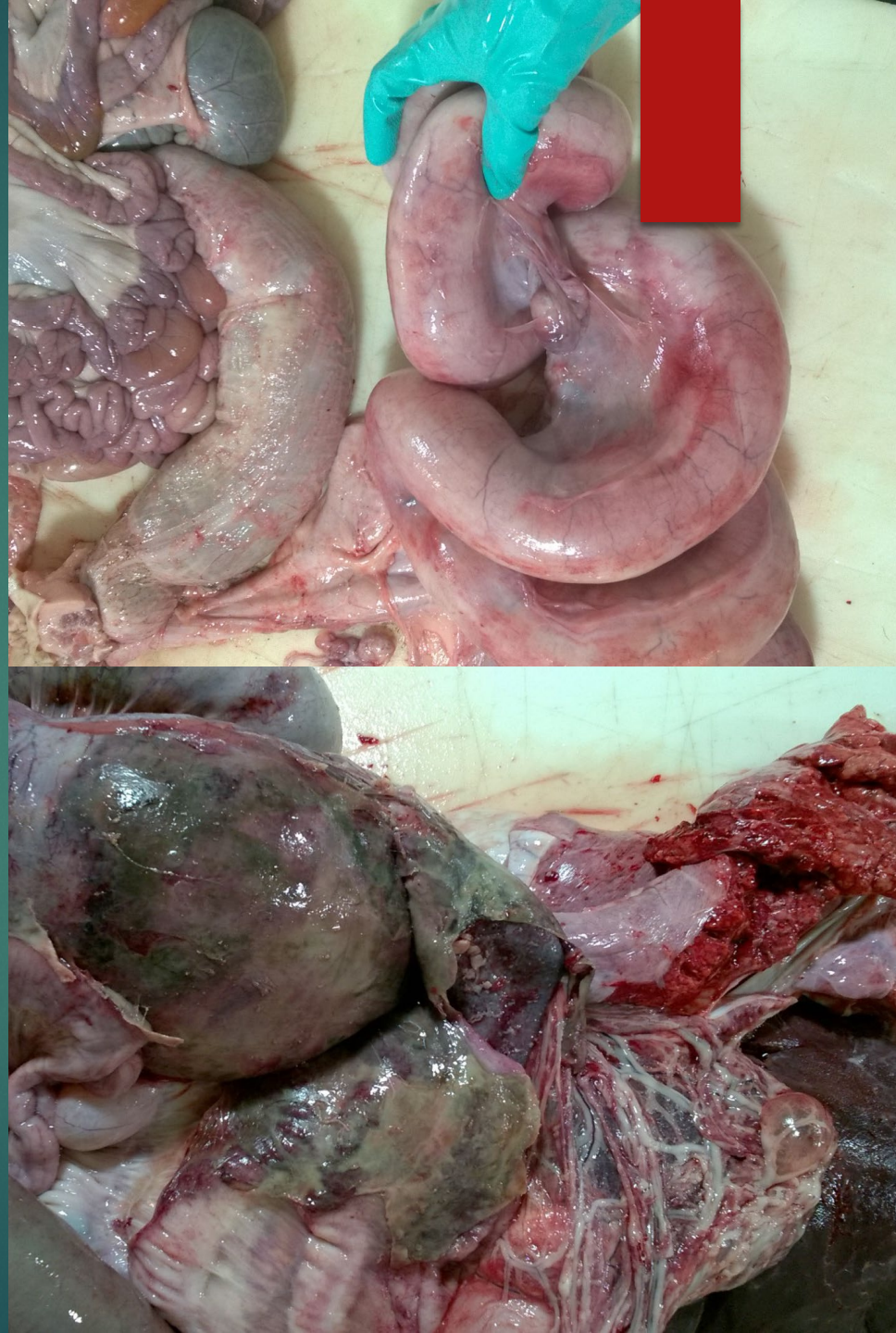
As seen on the skin (blue arrow). As seen on the liver (red arrow).



As seen in a lymph node (blue arrow).

Metritis

- ▶ Inflammation of the uterus.
- ▶ May vary from a slight redness or odor in the uterus or pyometra (metritis), to a retained placenta or fetus.
- ▶ In these instances, you should evaluate the degree of involvement, the remaining viscera condition, and the carcass condition.



Metritis with associated Acute **Peritonitis** and hemorrhagic Mesenteric Lymph Nodes



Megacolon

- ▶ An inflammation caused by *Salmonella*, along with other viruses or bacteria.
- ▶ The inflammation causes rectal stricture, which is the narrowing of the anal canal that would normally allow stool out of the body.
- ▶ The anal stricture doesn't allow the waste to properly leave the body, resulting in fecal build-up and enlarged colon.



Microphthalmia – Bilateral

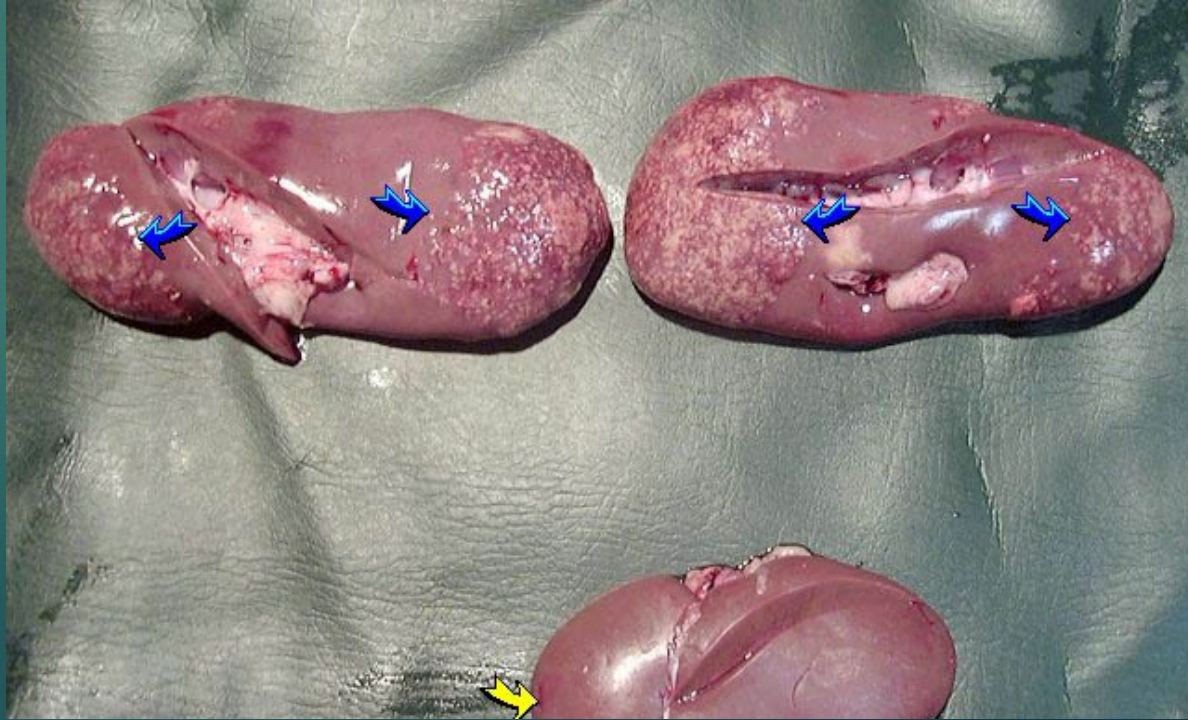


Both eyes are much smaller than normal size.

Nephritis

9 CFR 311.16(a)(7)

- ▶ An inflammation of the kidney and is usually characterized by swelling, off- color, or abscess.
- ▶ One or both kidneys may be affected.
- ▶ Localized conditions require the affected kidney(s) to be removed and condemned.
- ▶ If there is doubt as to whether the condition is localized to the kidney or if other pathology exists, the carcass and parts should be retained for veterinary disposition.



Perirenal Fat Necrosis

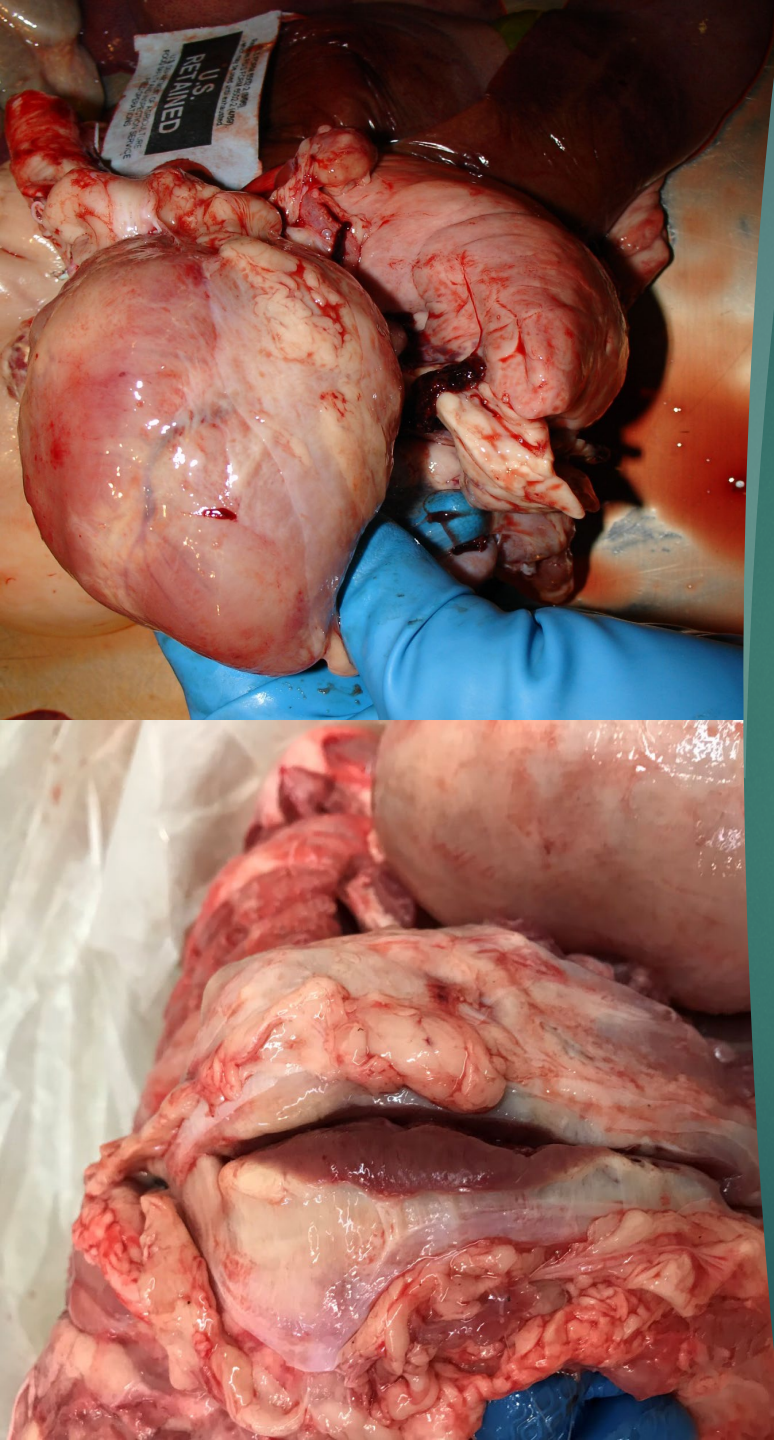
- ▶ Hard mass of necrotic fat.
- ▶ There may be a chalky white substance throughout the kidney fat and on up through the renal area. There are times when the necrosis may appear imbedded or inside the fat.



Fatty infiltration in LN.



Perirenal fat necrosis.



Pericarditis

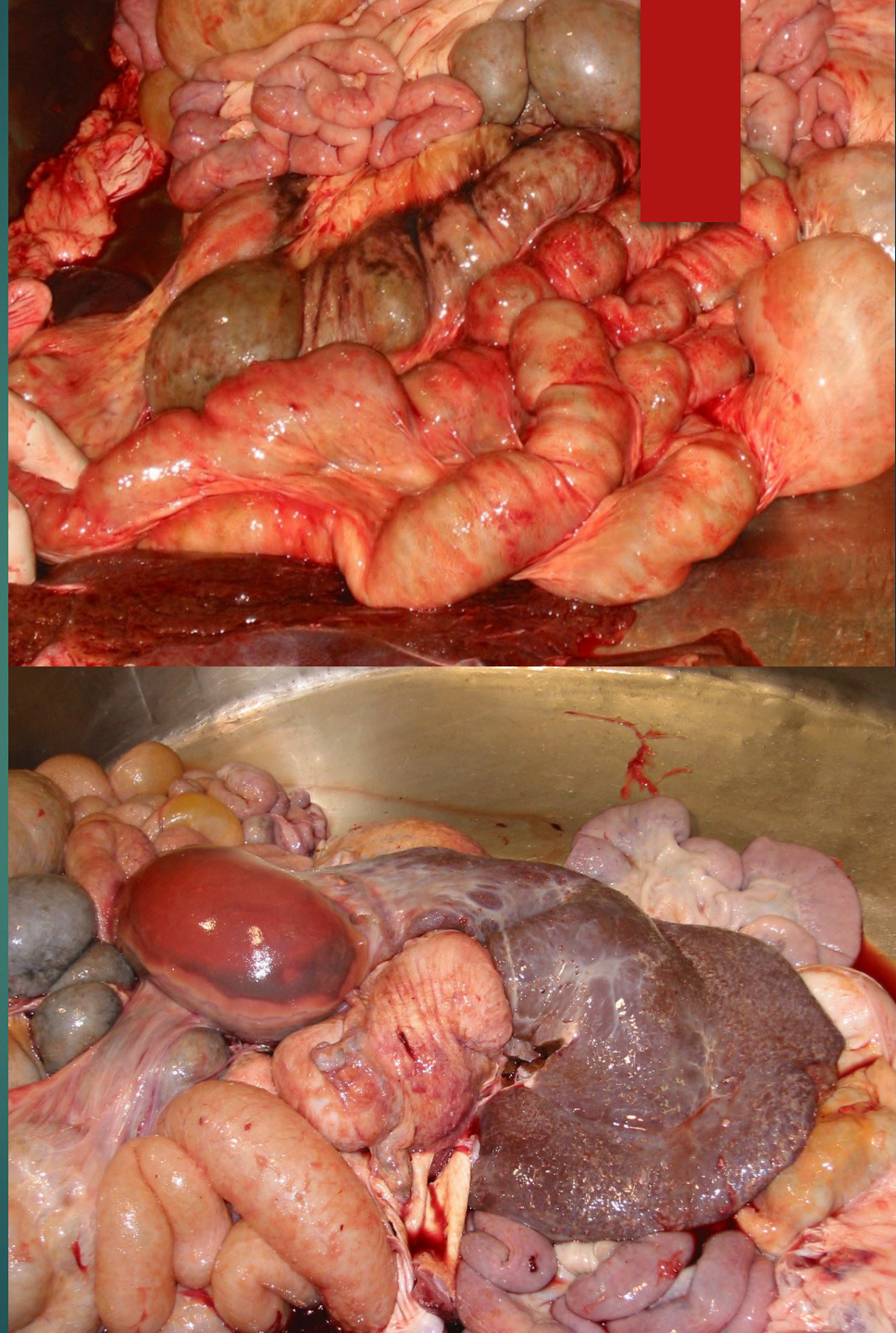
9 CFR 311.16(a)

- ▶ Inflammation of the pericardium (heart sac)
- ▶ If acute, extensive, or other pathology is detected, retain for veterinary disposition.
- ▶ If pericarditis is localized and chronic (adhesions of the pericardial sac to the wall of the heart), the heart and pericardium is condemned, but the carcass may be passed for food.

Peritonitis

9 CFR 311.16(a)(1)

- ▶ Inflammation of the lining of the abdominal cavity.
- ▶ Localized, chronic inflammatory processes with adhesions may be "peeled out" with the remainder of the carcass passed for food.
- ▶ If acute, extensive, or other associated pathology is present, the carcass and its parts should be retained for veterinary examination



Peritonitis

- ▶ Peritonitis presenting as inflammation/redness on the abdominal cavity lining.



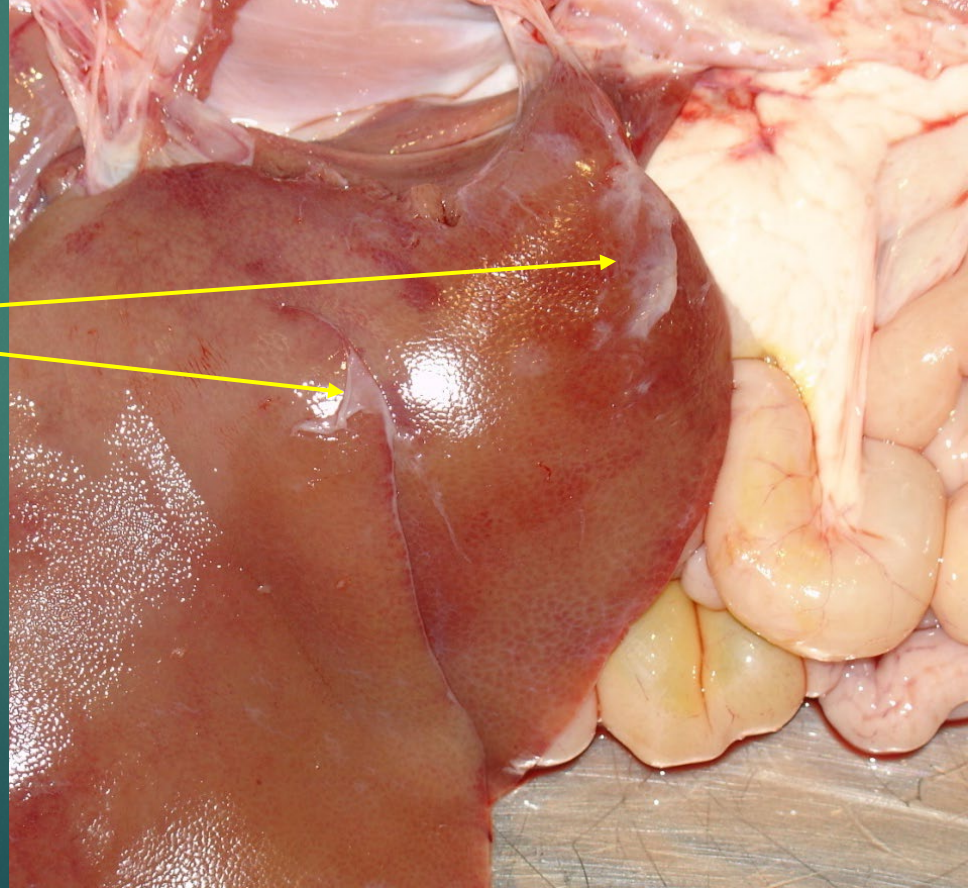
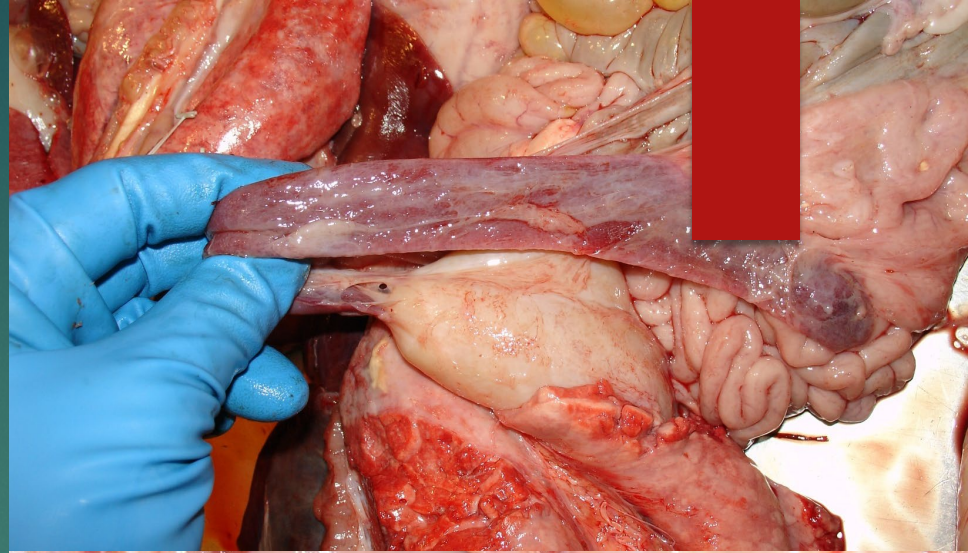
Peritonitis

- ▶ Top Photo: Acute peritonitis with hemorrhagic mesenteric lymph nodes.
- ▶ Bottom Photo: Megacolon shown with peritoneal adhesions.



Peritonitis

- ▶ Top Photo: Chronic adhesions seen on the spleen.
- ▶ Bottom Photo: Chronic adhesions seen on the liver.



Petechial Hemorrhages on the Kidneys

- ▶ Can be associated with septicemia.
- ▶ If a localized condition, condemn the kidneys and pass the carcass.
- ▶ If a generalized condition, retain the carcass and parts for veterinary disposition.

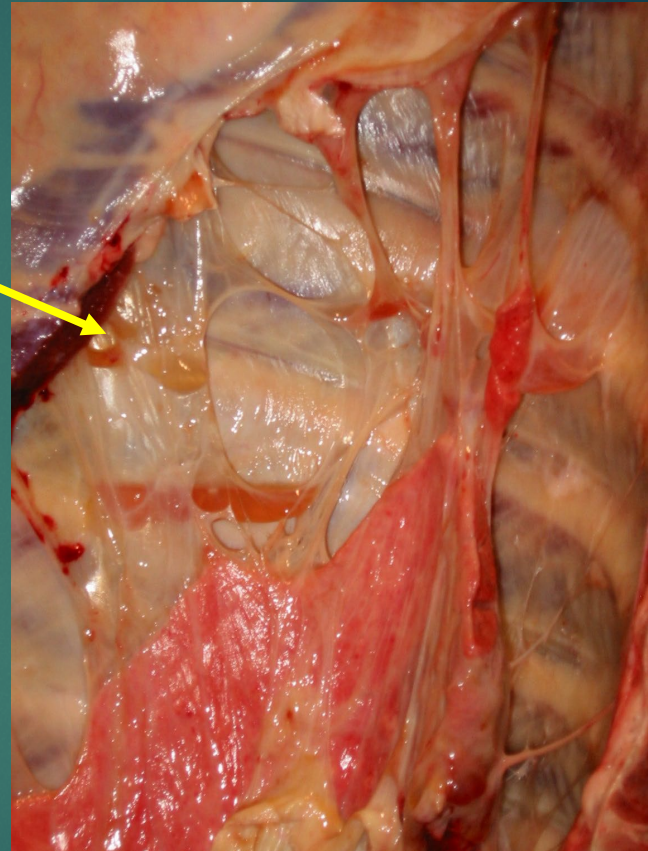
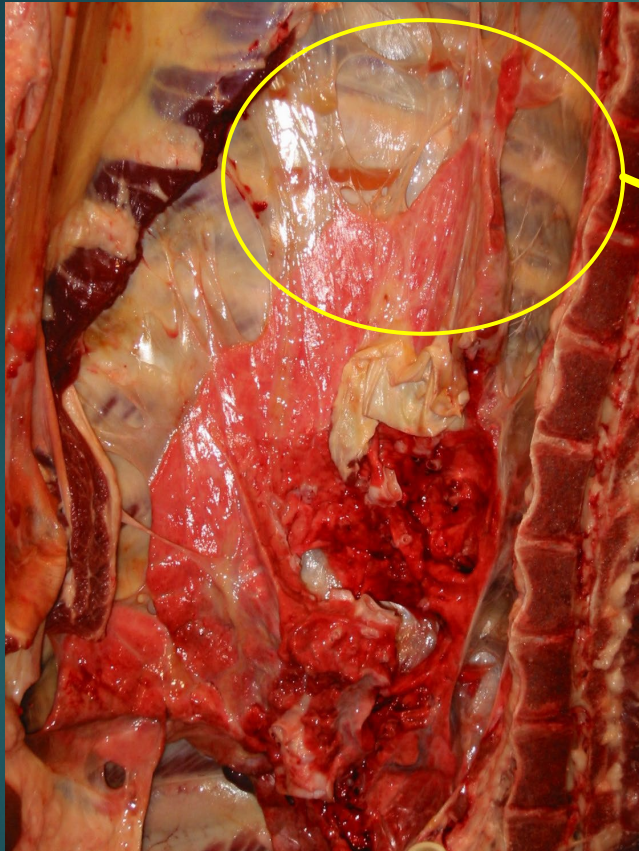


Pleuritis

9 CFR 311.16(a)(1)

- ▶ Localized, chronic inflammatory processes with adhesions may be "peeled out" with the remainder of the carcass passed for food.
- ▶ If acute, extensive, or other associated pathology is present, the carcass and its parts should be retained for veterinary disposition.

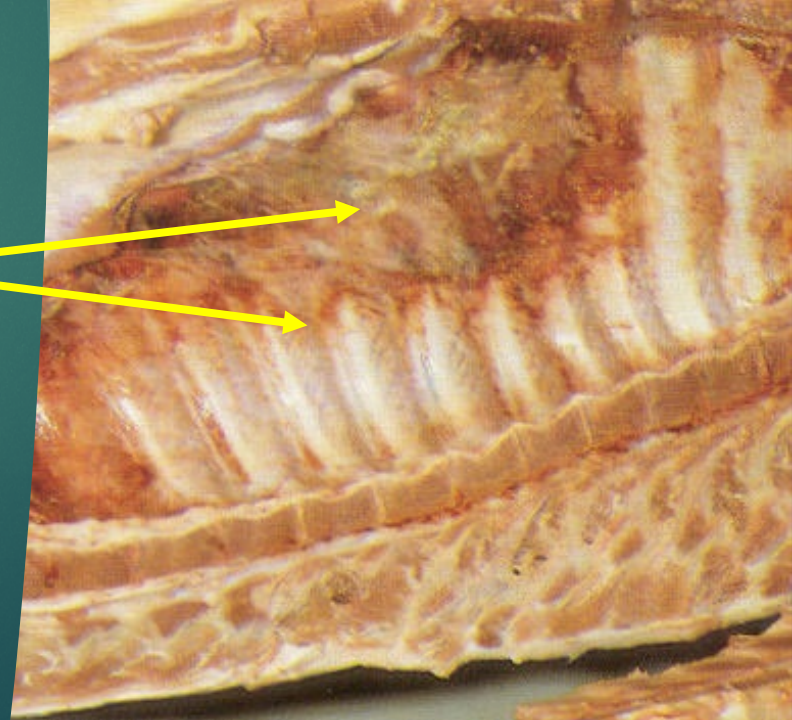
Pleuritis



Close-up of the photo on the left showing the fibrin attachments to the diaphragm, pleura and lung.

Pleuritis

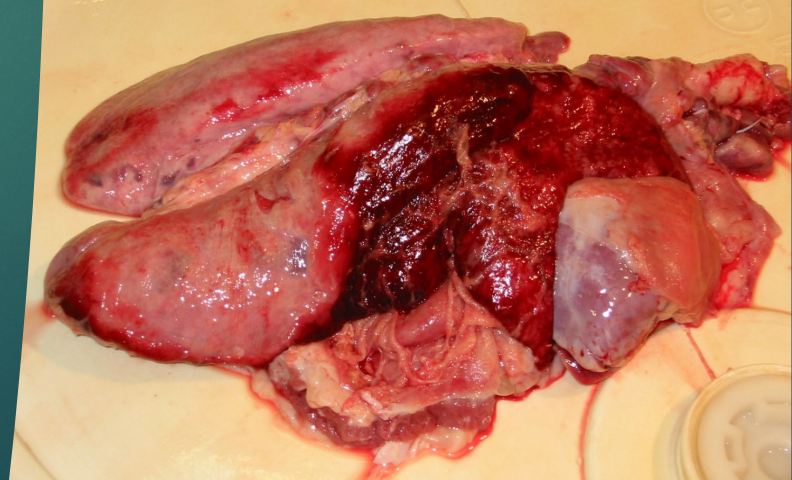
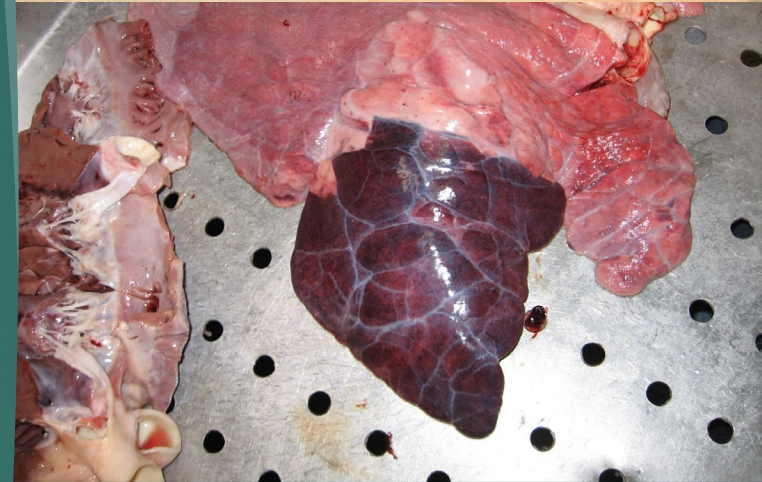
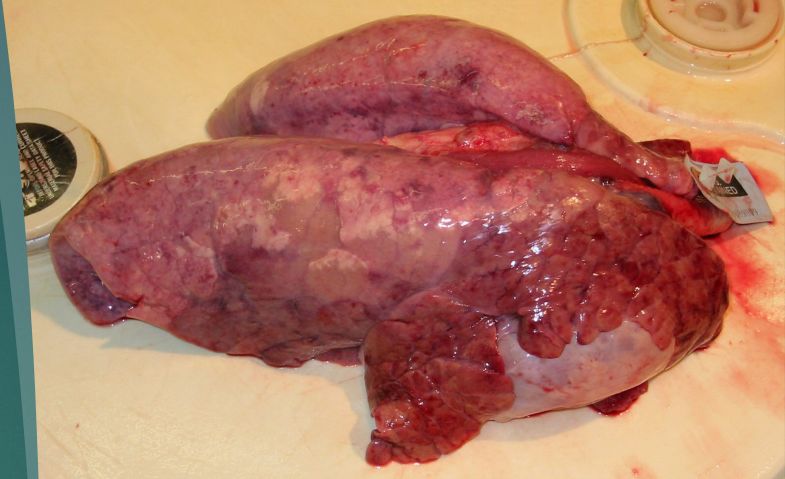
- ▶ Top Photo: Acute infection of the pleura as characterized by redness.
- ▶ Bottom Photo: Partially acute, but mostly chronic infection of the pleura as characterized by some redness (acute – bottom arrow) but showing signs of necrosis (chronic – top arrow).



Pneumonia

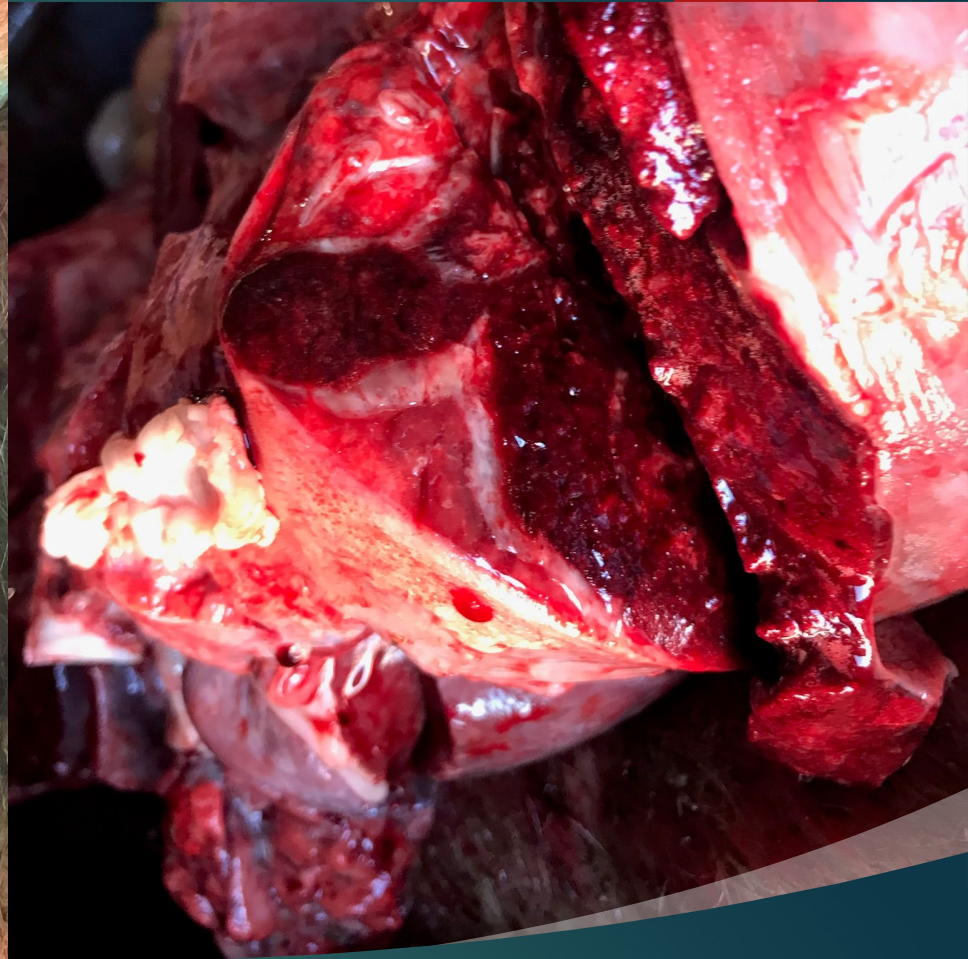
9 CFR 311.16(a)(1)

- ▶ An inflammatory disease in which the normal soft "foamy consistency" feel of the lungs and their normal "light-pinkish" color are changed.
- ▶ Lungs will have varying degrees of inflamed tissue which will usually have a red or purple coloration.
- ▶ Lungs will feel heavy or fluid-filled.
- ▶ If acute, extensive, or other associated pathology is present, the carcass and its parts should be retained for veterinary examination.





Close-up of the photo of the top of the lungs.



Cross-section/cut surface of the lungs shown on the left.

APP Pneumonia



Pneumonia

Left Photo:
Walled off abscess and evidence of pleuritis in the thoracic cavity.

Right Photo:
Evidence of peritonitis.

Porcine Dermatitis as seen by MPID Inspection Personnel!

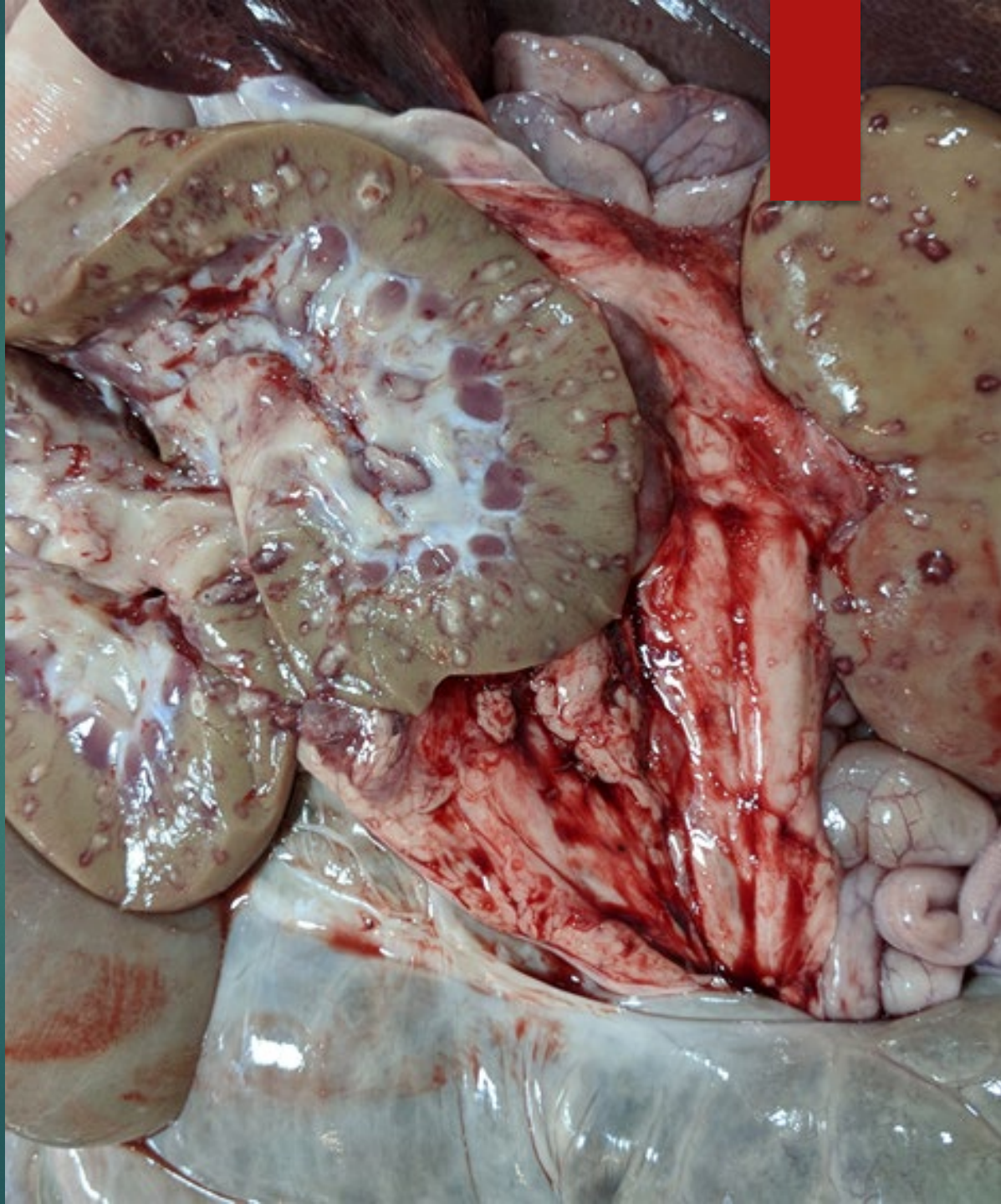
- ▶ Antemortem: No notable signs.
- ▶ Postmortem:
 - ▶ Red, splotchy lesions on exterior of carcass
- ▶ Retain for veterinary disposition



Porcine Dermatitis



Renal Abscesses



Septicemia

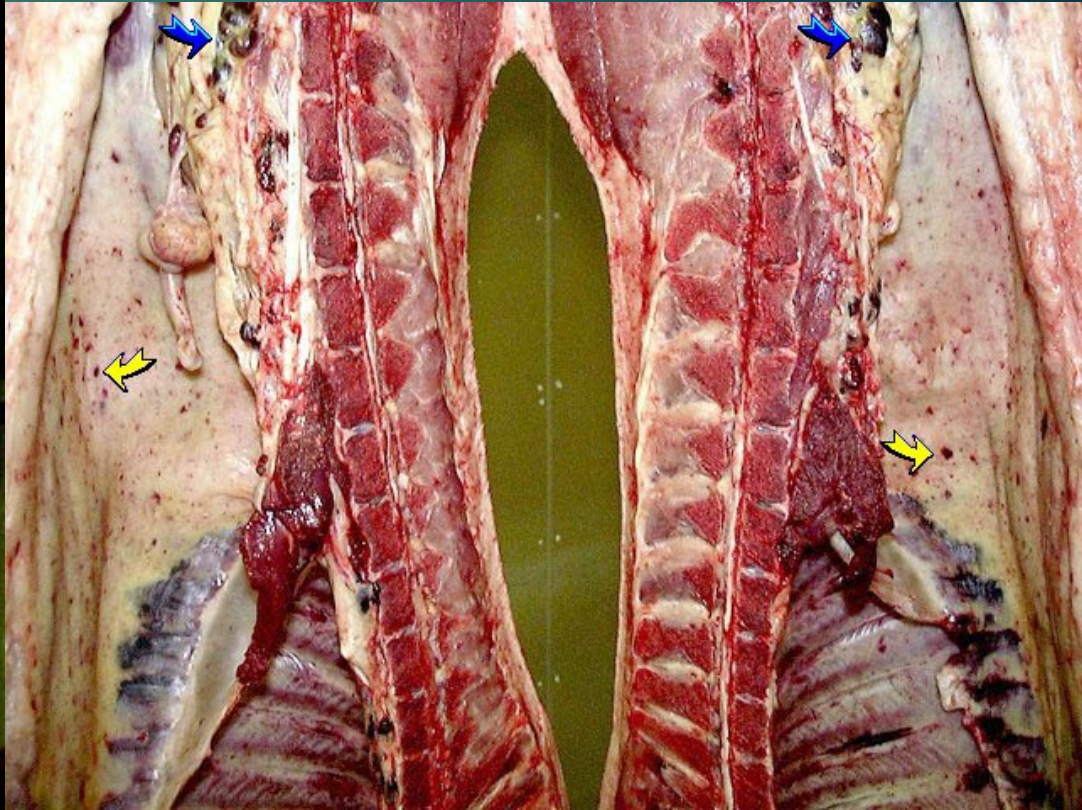
9 CFR 311.16(a)(2)

- ▶ A generalized inflammatory condition caused by pathogenic bacteria and associated toxins in the blood.
- ▶ Most, or all, of the body lymph nodes may be enlarged, hemorrhagic, and edematous.
- ▶ Kidneys may have petechiae (small pinpoint hemorrhages).
- ▶ Other pathology may be present.
- ▶ Retain the carcass and parts for veterinary disposition

Septicemia (Antemortem)



Septicemia



Hemorrhages can be seen on the skin (left photo) and cavity lining (right photo).

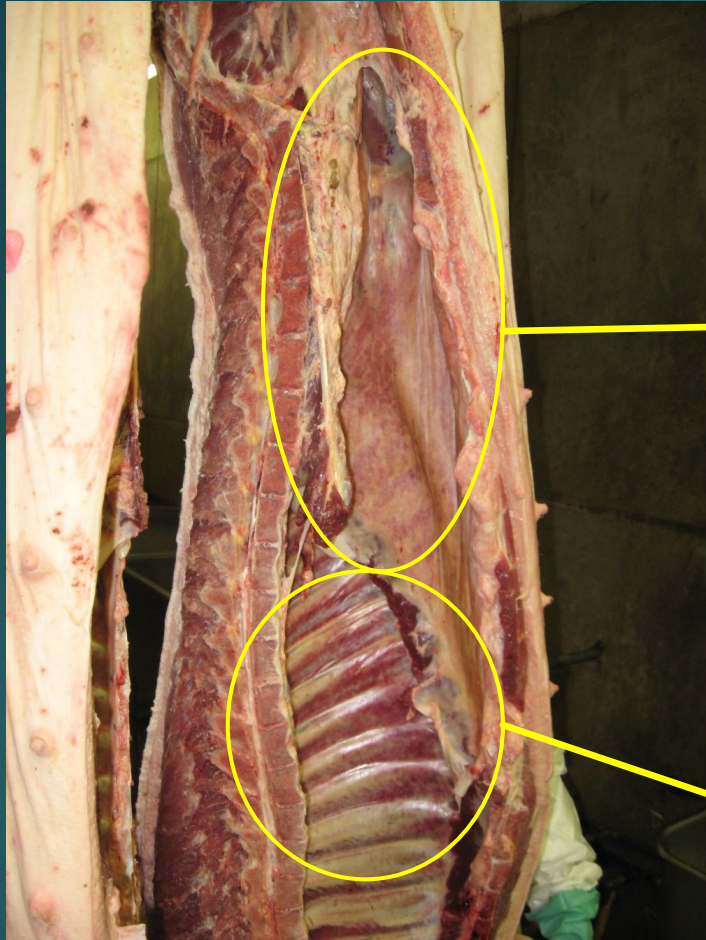
Septicemia



Diamond skin lesion on left ham (Above photo). Extensive hemorrhaging on right leg (right photo).



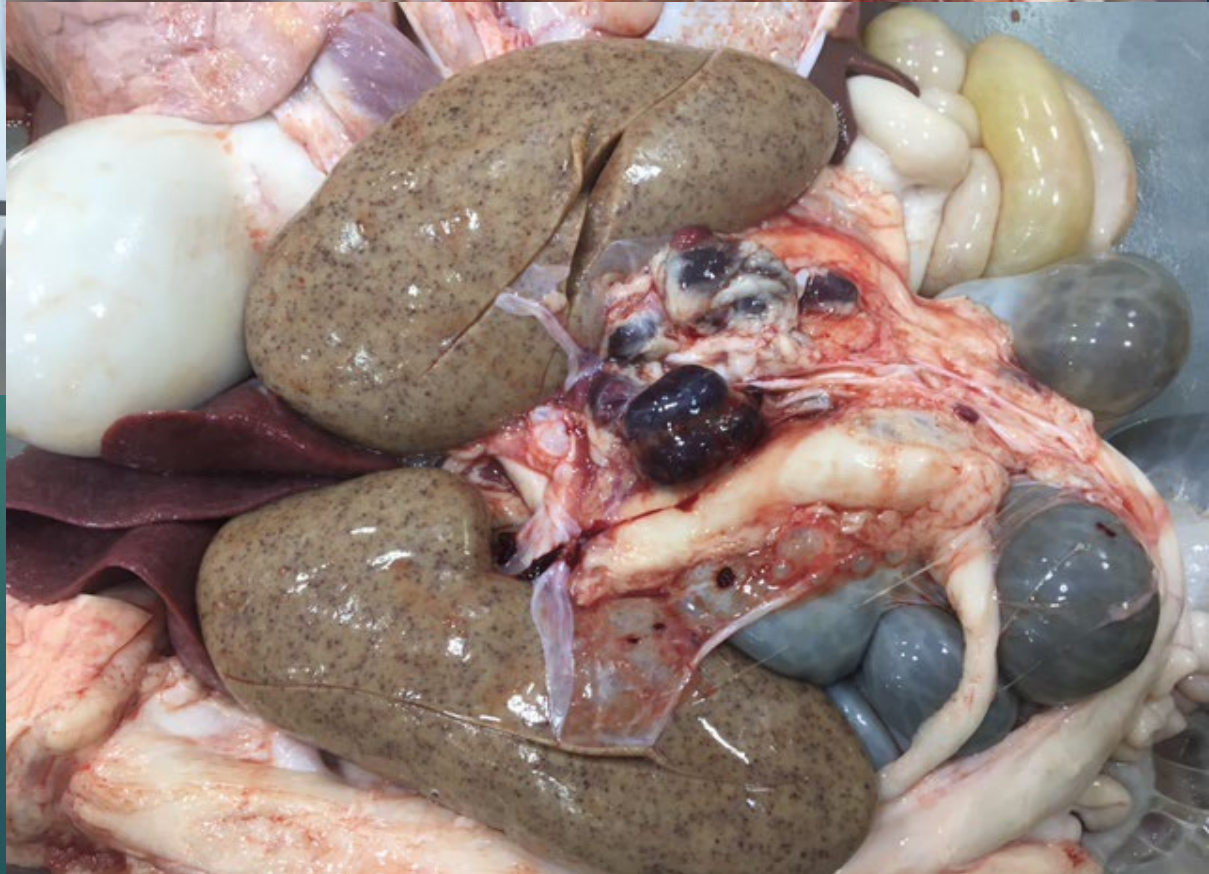
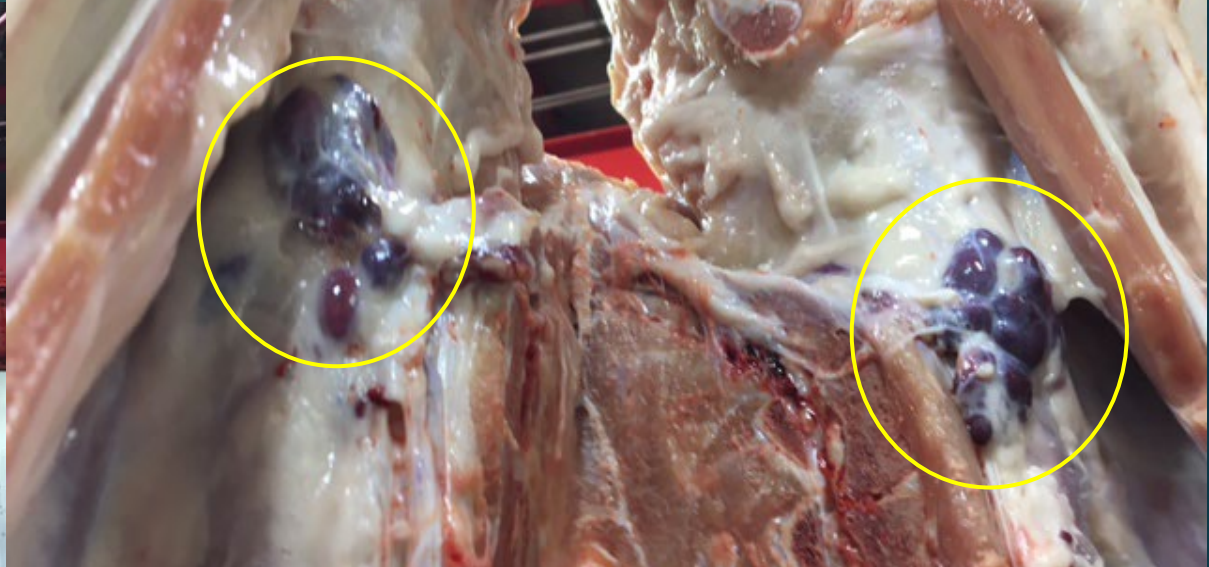
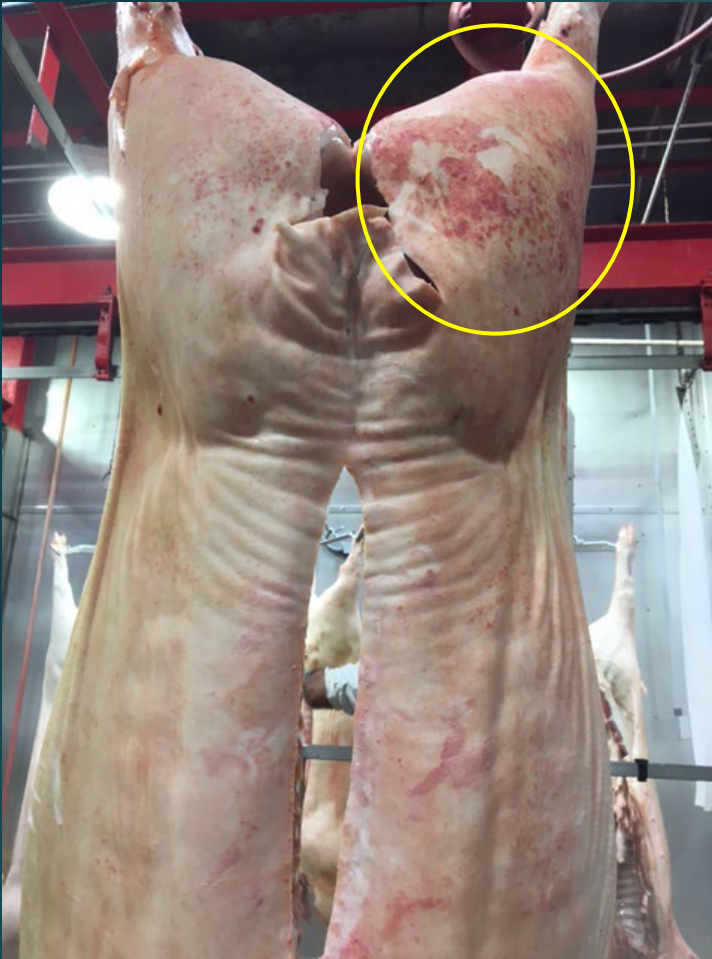
Septicemia



Notice the redness of the cavity lining and pleura.

Septicemia





Septicemia presenting with:

Top Left Photo

- Reddened skin w/ hemorrhages

Top Right Photo

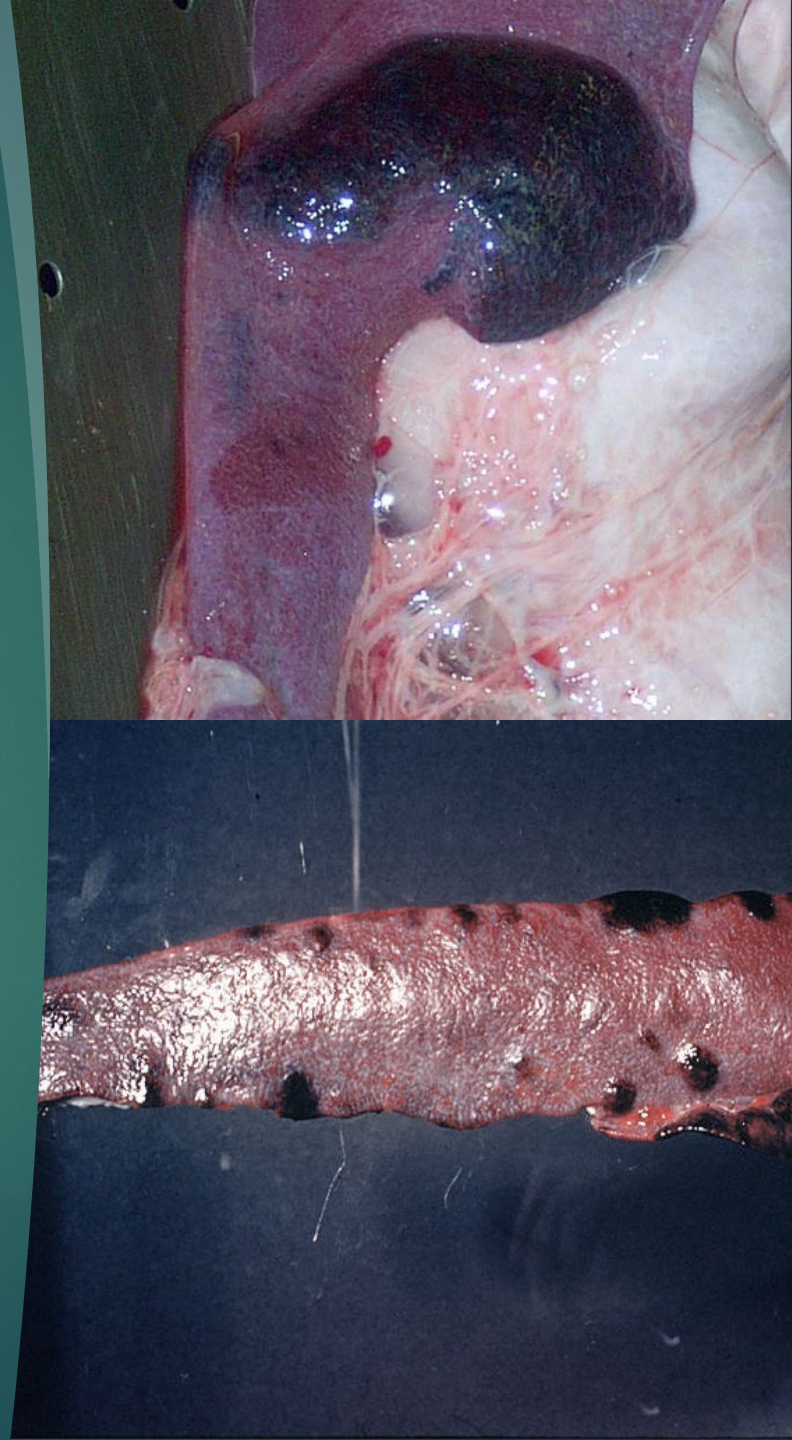
- Hemorrhagic and enlarged internal iliac lymph nodes

Bottom Right Photo

- Petechiated kidneys

Spleen Infarct

- ▶ Infarcts can occur in multiple organs and are usually caused by occlusion or damage to the normal blood supply.
- ▶ Commonly, certain types of bacteria can plug up arteries causing such lesion.
- ▶ Infarcts can be acute (red/purple) or chronic (pale, tan colored).



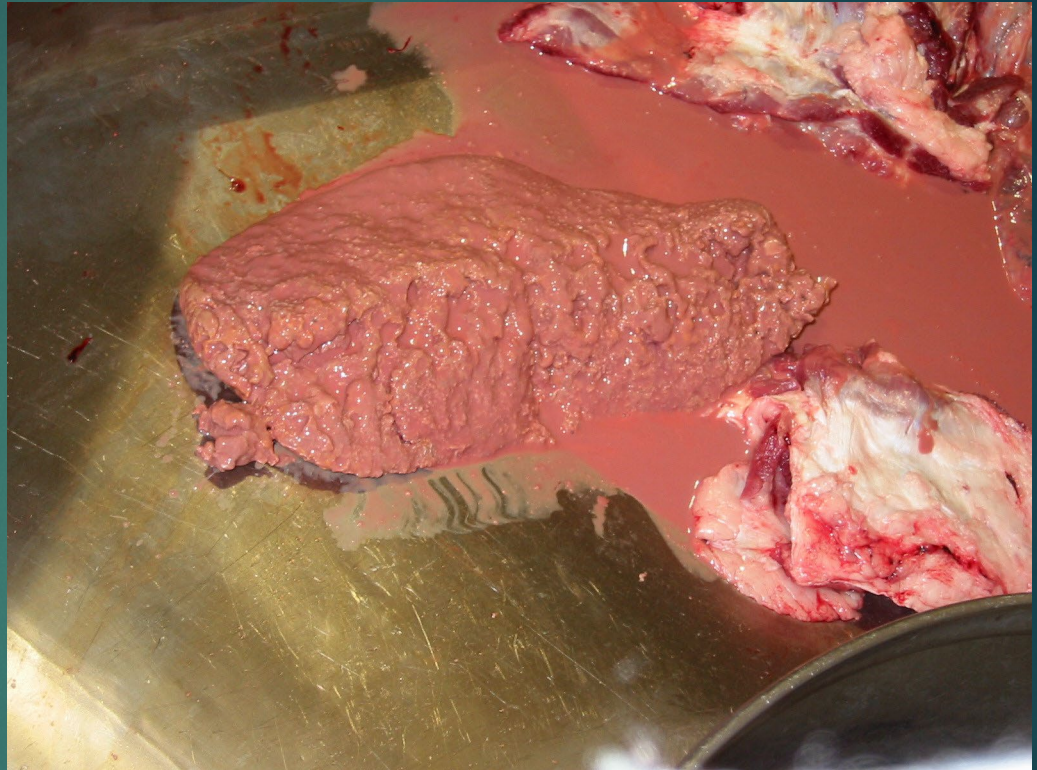
Spleen Lesion

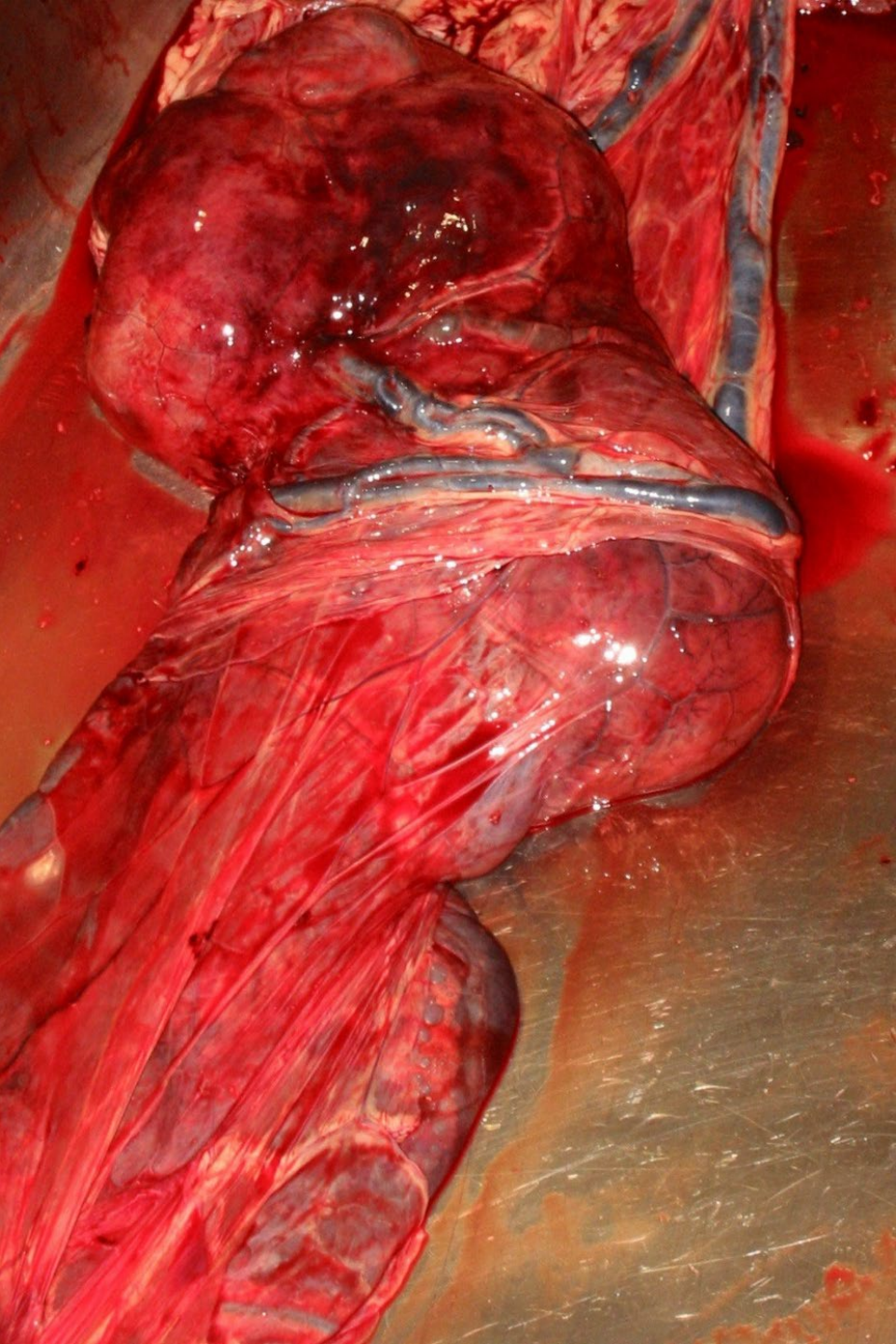
- ▶ Top Photo: Swelling can be seen in the abdominal viscera with associated peritonitis. The swelling occurred in the spleen.
- ▶ Bottom Photo: Once the swollen area was cut, liquid contents leached out into the gut buggy.



Spleen Lesion

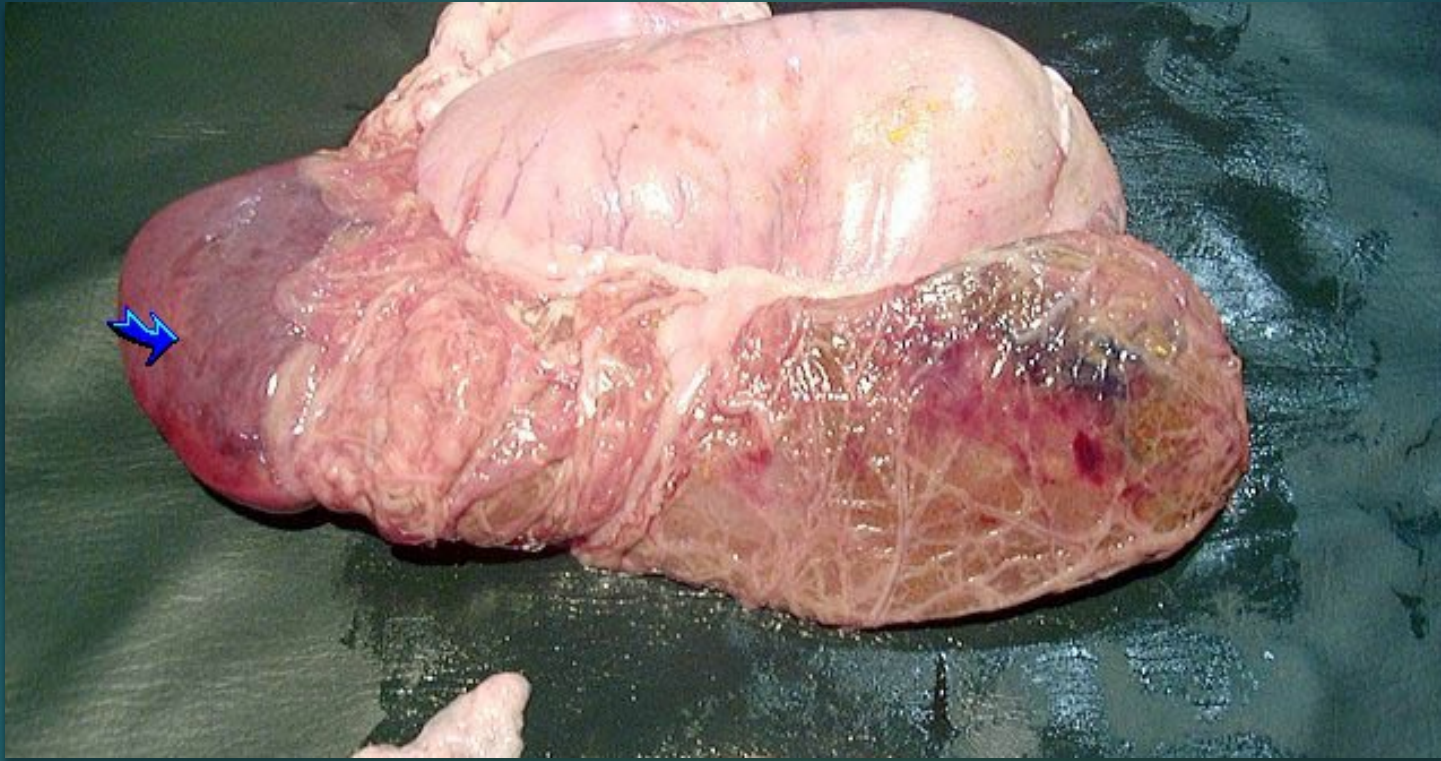
- ▶ Once the swollen area was cut, pus was also seen in the gut buggy.





Splenic Torsion

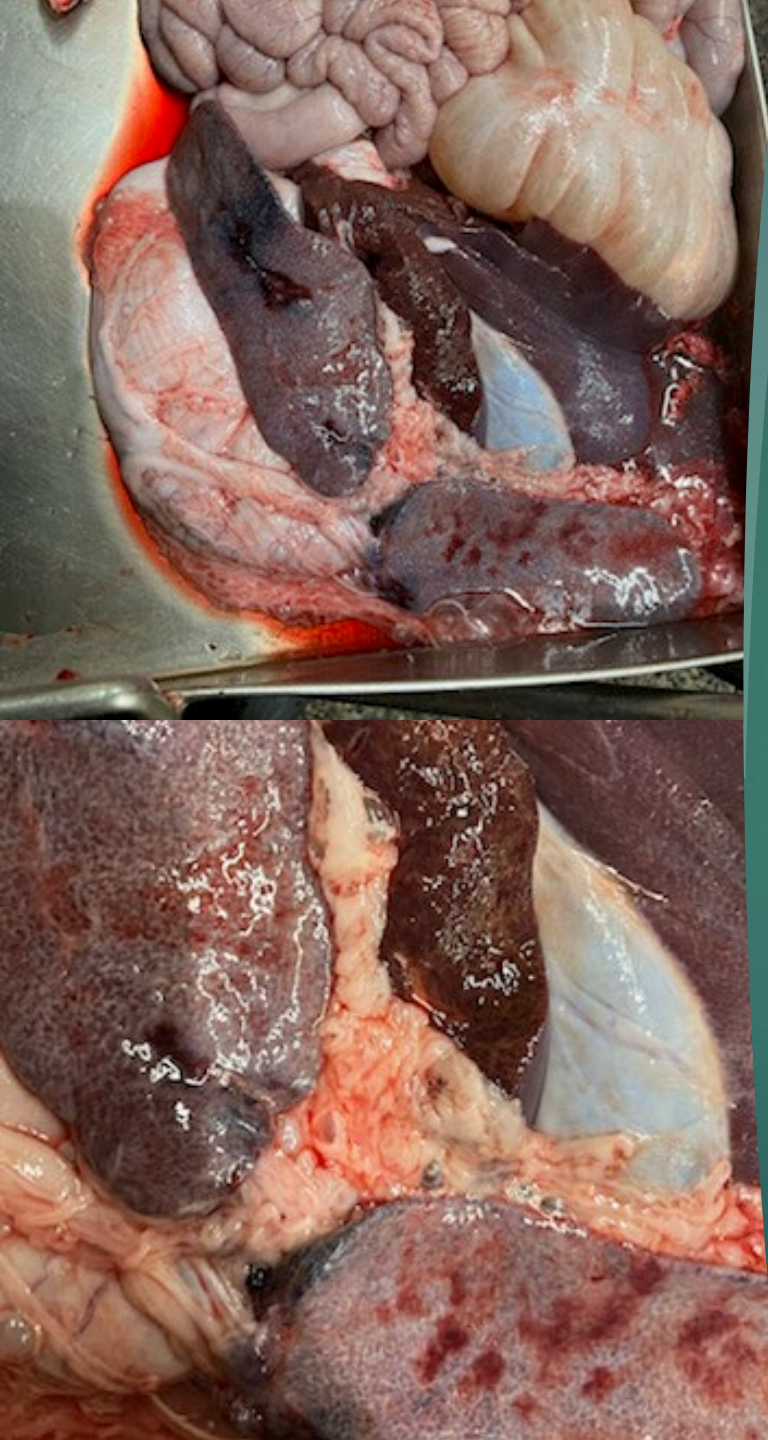
- ▶ A twisting, folding, and unfolding of the spleen.
- ▶ This prevents proper blood drainage, therefore swelling of the spleen can be seen.



Splenic Torsion

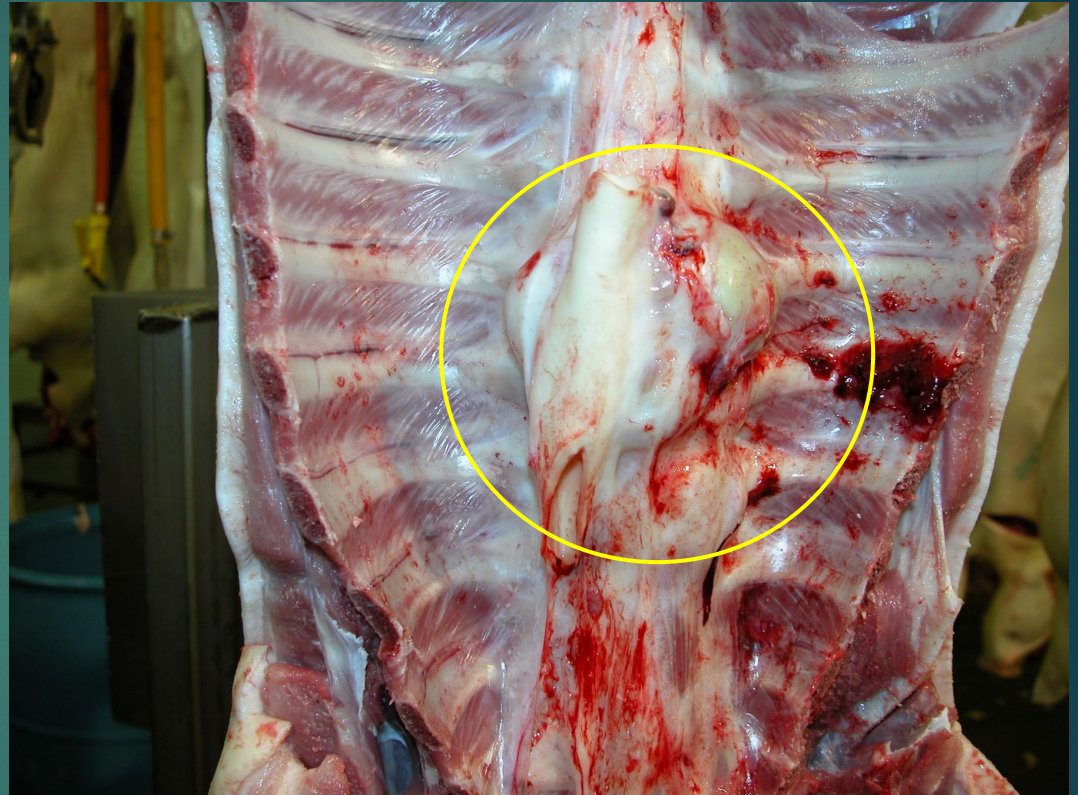
Splenic Torsion

- ▶ Top Photo: Splenic torsion occurred in the middle of the spleen, leading to a separation of the organ.
- ▶ Bottom Photo: Close-up of the separated spleen from the top photo.

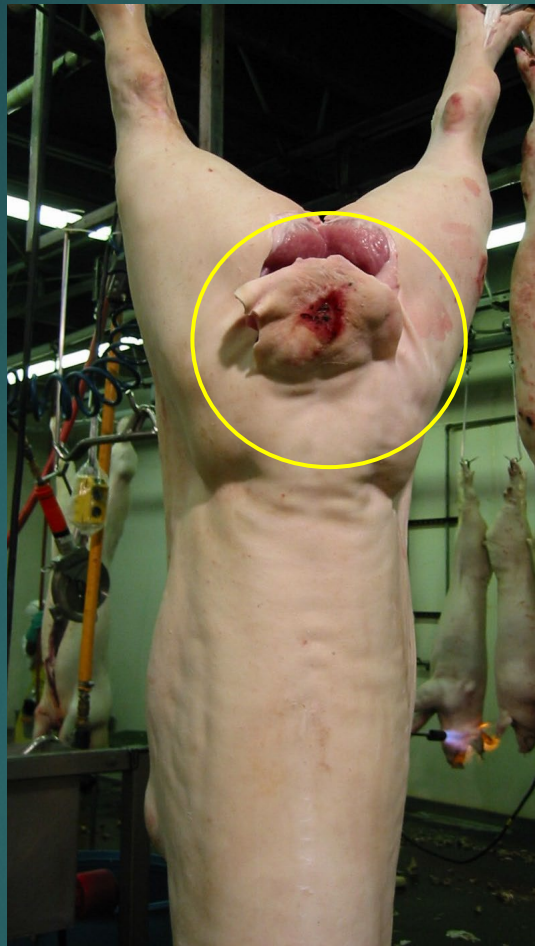


Tail Bite Abscesses

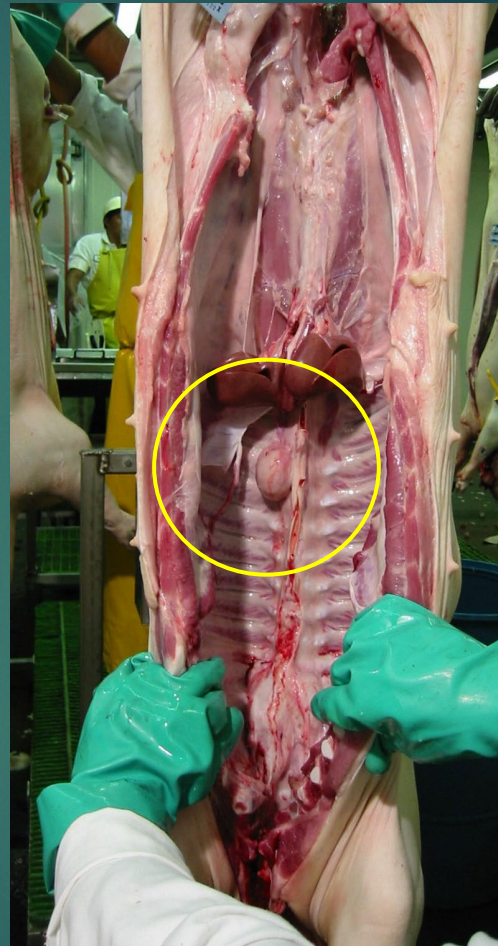
- ▶ Caused by pigs biting each others' tails. Bacteria then migrates down the spinal cord.
- ▶ If localized, you would have the affected tissues, including any exudate, removed and the carcass passed.
- ▶ If you suspect the condition may be generalized, retain it for veterinary disposition.



Tail Bite Abscesses



Evidence of tail bite
on exterior.



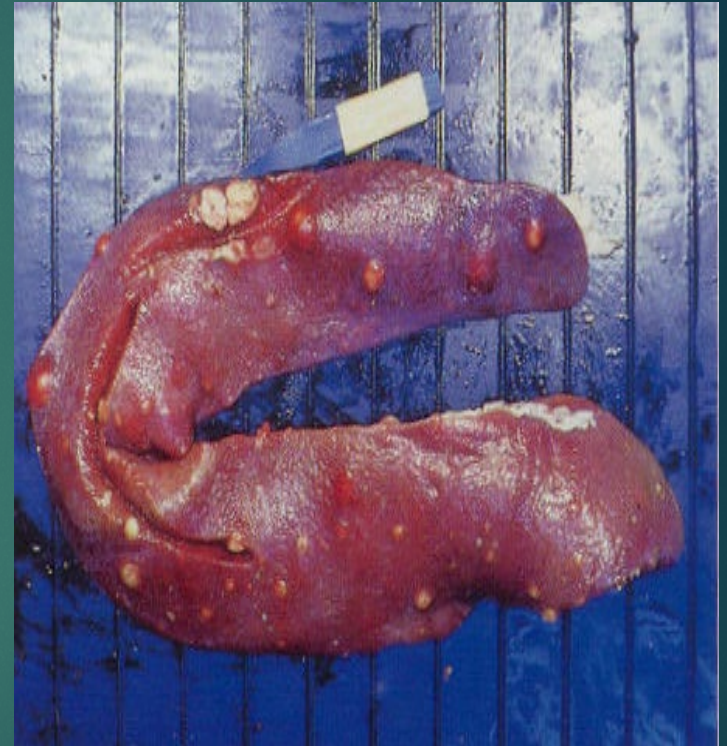
Evidence of tail bite
on interior.



Tuberculosis 9 CFR 311.2

GRANULOMATOUS
LESIONS IN MESENTERIC
LYMPH NODES.

Tuberculosis



Granulomatous lesions in the liver (left) and spleen (above).