School of Veterinary Medicine
UNIVERSITY OF WISCONSIN–MADISON

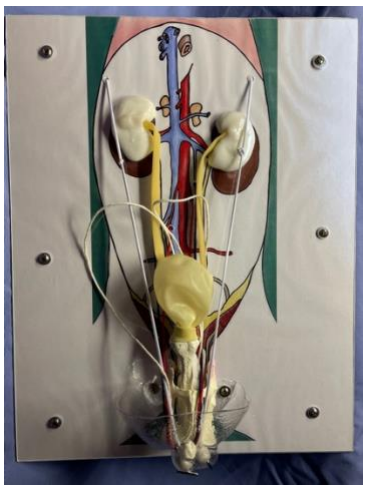
Primary author: Dr. McLean Gunderson
Collaborators: Dr. Tracy Baker
Dr. Karen Hershberger
Dr. Jessica Rippe
Dr. Masatoshi Suzuki

Descent of the testes

Context – Testicles originate in the abdominal cavity and are pulled into the scrotum by the gubernaculum. The serous membranes extend with the testicles forming the visceral vaginal tunic and parietal vaginal tunic. In the case of cryptorchidism, the testicle fails to descend fully into the scrotum. A cryptorchid testicle has a greatly increased chance of becoming cancerous and should be removed. You will use your knowledge of the relevant anatomy to identify the testicle in this abnormal location to remove it. Proper identification of the tissue layers you need to incise during either an open or closed castration also will also be crucial. Finally, you will need to explain the benefits and drawbacks of the open and closed castration procedures.

Learning Outcomes – By the end of this learning activity you should be able to:

1. Follow the arterial flow from the heart through the abdomen out into the testicles.
2. Follow the venous return from the testicle through the abdomen and into the heart.
3. Identify the vessels that must be occluded to provide hemostasis during a castration procedure.
4. Identify the structures of the urinary tract.
5. Follow the flow of urine from the kidneys to the tip of the penis, and then the reverse order, as when passing a urinary catheter into the bladder.
6. Follow the path spermatozoa follow through the genital tract.
7. Describe the orientation from dorsal to ventral of the descending colon and urogenital tract within the pelvic inlet, so that you can locate these organs during abdominal palpation, ultrasound or radiographs.
8. Describe the path the testicle takes from an intraabdominal to scrotal location in order to be able locate cryptorchid testicles during a castration.
9. Explain the layers from superficial to deep that you would incise through when performing an open castration.



Instructions

The model has movable testicles from where they begin in the abdominal cavity to where they should complete their journey in the scrotum.

The expectation is that you will carefully move the testicles back and forth naming the relevant structures and investigating their topographic relationships throughout their journey.

1. Identify the following structures on the model:
   - ☐ Kidneys
   - ☐ Ureters
   - ☐ Bladder
   - ☐ Prostate
   - ☐ Penis
   - ☐ Prepuce
   - ☐ Scrotum
   - ☐ Testicles
   - ☐ Ductus deferens
   - ☐ Adrenal glands
   - ☐ Caudal vena cava
   - ☐ Abdominal aorta
   - ☐ Renal arteries
   - ☐ Renal veins
   - ☐ Testicular arteries
   - ☐ Testicular veins
   - ☐ Os coxae
   - ☐ Diaphragm
   - ☐ Esophagus (cross section)
   - ☐ Caval foramen
   - ☐ Esophageal hiatus
   - ☐ Aortic hiatus
   - ☐ Gubernaculum (not present on model, so instead describe its location & function)

2. Complete thlearning objectives.
3. Examine the difference(s) between the left and right venous return.
4. Examine the position of the ductus deferens in relation to the ureters.
5. Use the transparent balloon provided to mimic serous membranes in the abdominal cavity by pressing it down upon the abdominal contents.

   Consider the following:
   a. What structures are retroperitoneal (normally)?
   b. What is the topographic relationship of the descending colon/rectum and urogenital tract in the male (dorsal versus ventral)?

6. Move the testicles into the scrotum.

   Consider the following:
   a. What has happened to the positioning of the testicular arteries and veins?
   b. What has happened to the positioning of the ductus deferens in relation to the ureters?
   c. Note: If you apply too much traction to the spermatic cord during surgical exposure you may tear the ureters.