

Question

A 12-year-old male intact English bulldog presents to your hospital for a drop of blood noted coming from the penis. The dog has no other prior medical history. On examination, both testicles are descended and palpate normal in size. A rectal exam reveals a large, but symmetrical prostate gland. You extrude the penis and note what is illustrated in the image below. What is your recommendation to the owner?



- This is a urethral prolapse and can be repaired by performing a urethropexy.
- There is a mass at the tip of the penis, which will likely respond to radiation therapy.
- There is a mass at the tip of the penis suspicious for a mast cell tumor. You should amputate the tip and submit it for histopathology.
- There is an abscess of the penile tip, likely of bacterial origin. We should begin antibiotic therapy once we obtain a culture.

Explanation - The image is classic for a urethral prolapse. This condition is almost exclusive to young English bulldogs. It is interesting that this patient was incidentally 12 years of age. The cause of urethral prolapse is not always determined but may be secondary to excessive masturbation, sexual excitement, or an infection. Treatment involves either urethropexy to replace the prolapse or amputation of the tip. The patient should be examined closely to ensure there is no evidence of concurrent neoplasia or infection.

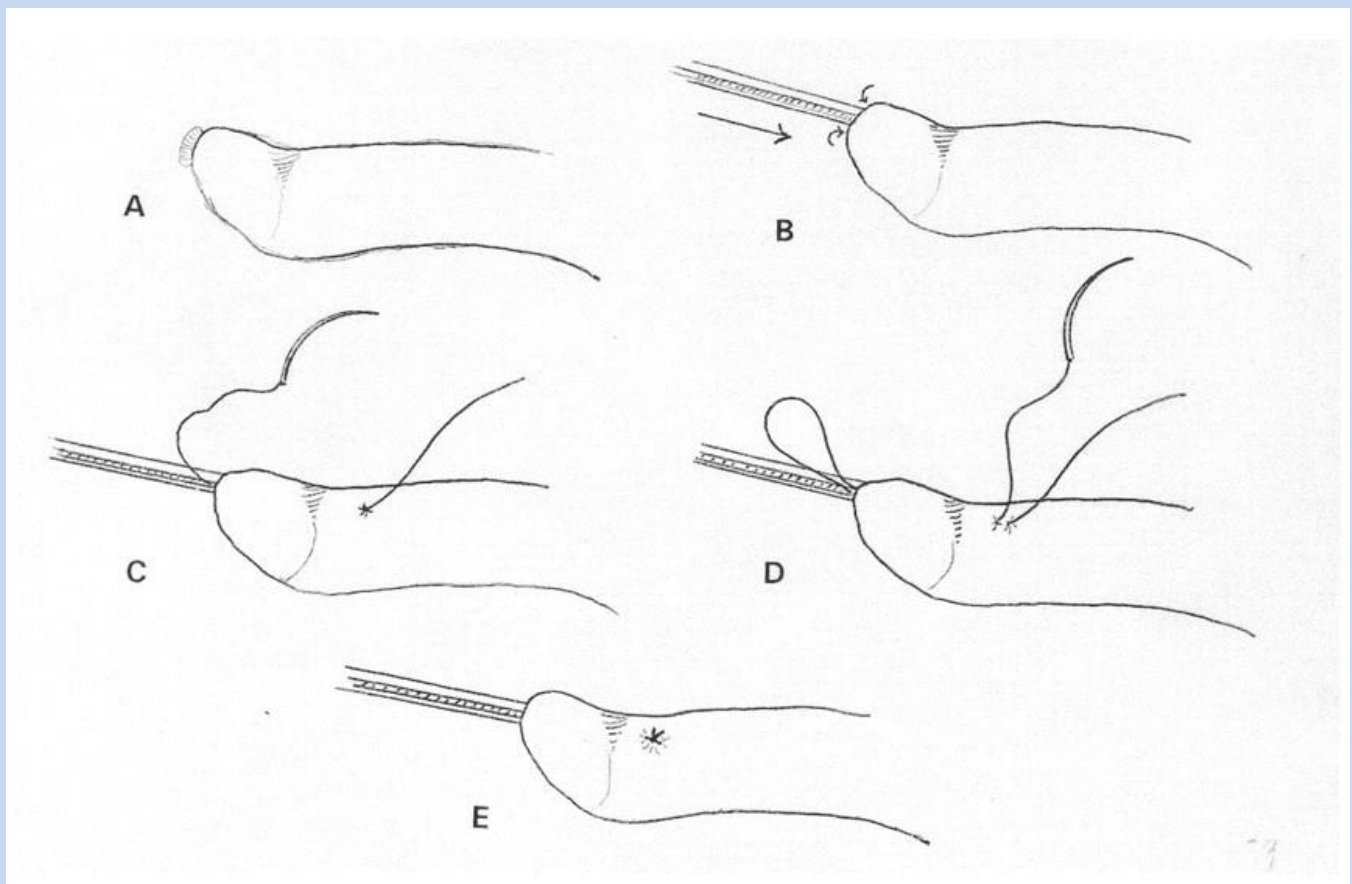
- The urethra is the tube that passes urine from the bladder to the outside of the body
- The tube runs through the penis
- Weakening of the tissue that normally holds the urethra in place results in prolapse of the urethra

Signalment

- Most dogs are younger when this condition occurs
- It only affects male dogs
- The most common breed affected is the Bull dog

Clinical signs

- Straining to urinate
- licking the penis
- Irritation of the penis
- Red mass protruding from the penis
- Note the mild prolapse in the photo below



Urethropexy technique for treatment of urethral prolapse in the dog

Question

The following image shows a 3-D CT reconstruction of a 7-year old mixed breed small dog with a history of pain on opening the mouth for the past 2 weeks. The patient initially received a dental prophylaxis and cleaning under the assumption that the pain was related to moderate dental disease. When the pain persisted skull radiographs were performed and showed evidence of a mixed proliferative and lytic mass at the proximal aspect of the vertical ramus. What muscle attaches to this region?

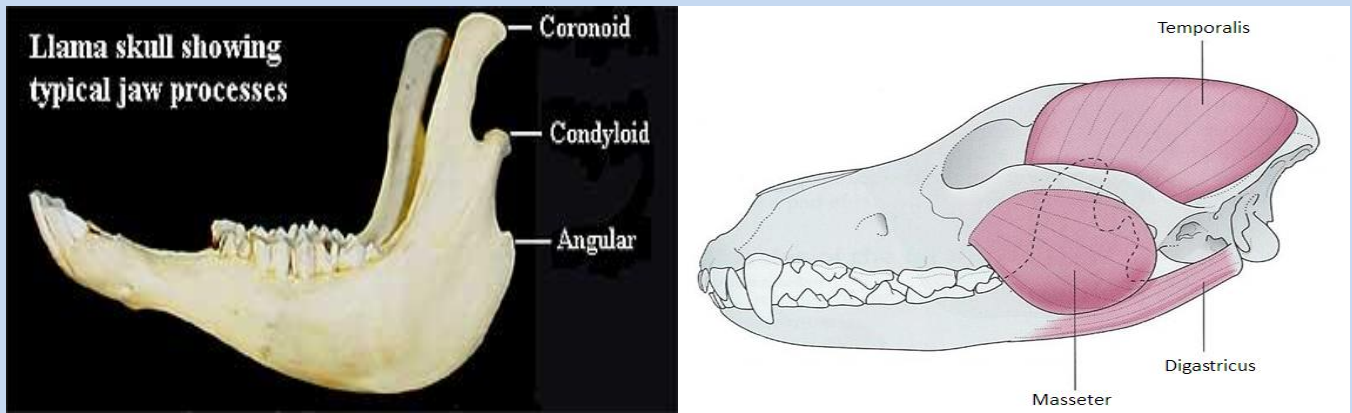


- Digastricus
- Masseter
- Pterygoid
- Temporalis

Explanation - The mass depicted in this three dimensional CT reconstruction involves the coronoid process. The ramus of the mandible consists of three distinct processes, the most dorsal being the coronoid process. It projects into the temporal fossa and provides an area for attachment of the temporalis muscle.

The condylar (or condyloid) process is just ventral and slightly caudal to the coronoid process. This process is a point of articulation between the maxilla (retroarticular process) and mandible. Disruption of this region will result in temporomandibular joint luxation.

The most ventral process is the angular process. This structure provides an area for attachment of the digastric muscle. The masseter muscle inserts laterally on the mandible, while the pterygoid muscle inserts medially. The masseter, pterygoid, and temporalis muscles function to close the mouth while the digastricus opens the mouth.



Question

The procedure performed on the patient's right hip is a triple pelvic osteotomy. On the patient's left hip a total hip replacement has been performed. Which one of the following statements is true?



- Triple pelvic osteotomies will eliminate progression of arthritis
- The most common complication associated with total hip replacements is caudoventral luxation
- Total hip replacements should only be done in dogs that are over 2 years of age
- Triple pelvic osteotomies should only be performed in dogs free of radiographic signs of degenerative joint disease

Explanation - The correct answer is Triple pelvic osteotomies should only be performed in dogs free of radiographic signs of degenerative joint disease. Triple pelvic osteotomies (TPO) are designed to increase the dorsal coverage of the femoral head. If there are degenerative changes at the time of surgery then the likelihood of achieving good results with the procedure is diminished. This is why this surgery is typically performed in dogs that are **6mo - 1yr of age**. TPOs will not eliminate the progression of arthritis; however, it is believed that the degree of arthritis will be less and that many patients are clinically sound despite have radiographic evidence of arthritis.

Total hip replacements (THR) can be performed as soon as the physes in the region have finished their growth. THRs have been performed in dogs as young as 1 year of age and sometimes even younger. A caudoventral luxation can occasionally occur with a total hip replacement; however, craniodorsal luxations are a much more common.

Question

Abby, a 5 year old female spayed Golden Retriever, presents with a foreign body obstruction. You perform an intestinal resection and anastomosis surgery due to the compromised appearance of the intestine at the foreign body site. Abby recovered well after surgery. Five days post-operatively, she presents again with a history of inappetance and has a 104.5 temperature. You are most concerned about which of the following complications?

- Septic peritonitis
- Aspiration pneumonia
- Intestinal stricture
- Acute renal failure

Explanation - The most common complication of this surgery is leakage at the surgery site, resulting in septic peritonitis. An abdominal tap and labwork should be performed. The dog should be stabilized immediately and will need to go back to surgery. While acute renal failure can be sequelae of sepsis, the most immediate concern is to find out if the bowel has leaked.

The most common time for anastomosis failure is 3-5 days postoperative. This is due to the timing of degradation of fibrin at the site prior to deposition of sufficient collagen.

Question

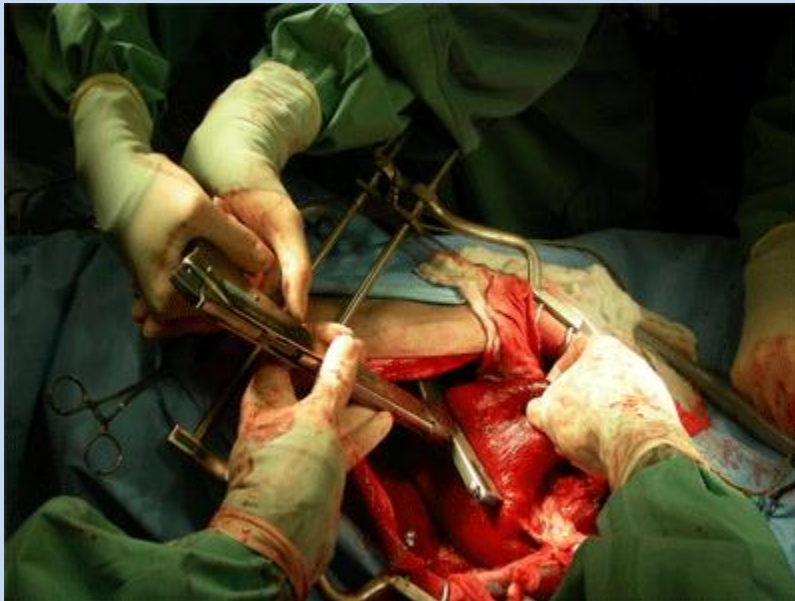
You have just diagnosed a pyometra in a bitch. What is the most commonly cultured culprit?

- Staphylococcus spp.
- Pasteurella multocida
- Proteus spp.
- Mycoplasma spp.
- Escherichia coli

Explanation - The correct answer is **Escherichia coli**. Pyometras are usually a surgical emergency and should not be treated medically unless the animal is truly stable or the owners refuse. Pyometras in cats usually occur 1-4 weeks after estrous and in dogs 4-8 weeks after estrous.

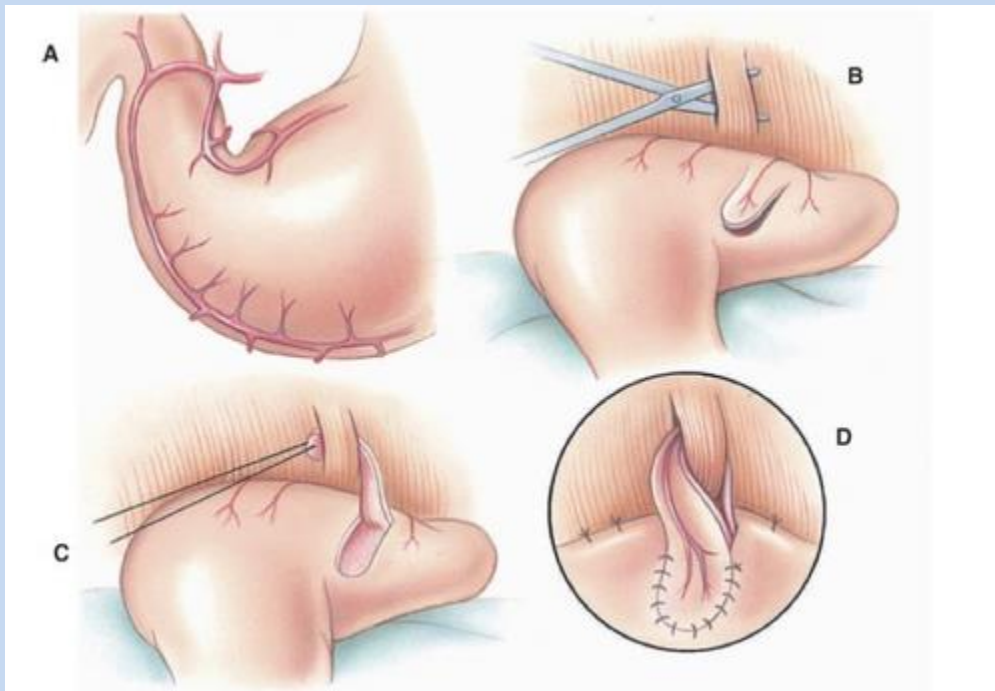
Question

This patient is having a gastric resection performed as a result of gastric necrosis. The patient had gastric dilatation and volvulus (GDV). Which of the following gastropexy techniques can result in an inadvertent incision into the stomach if the animal requires surgery later in life?

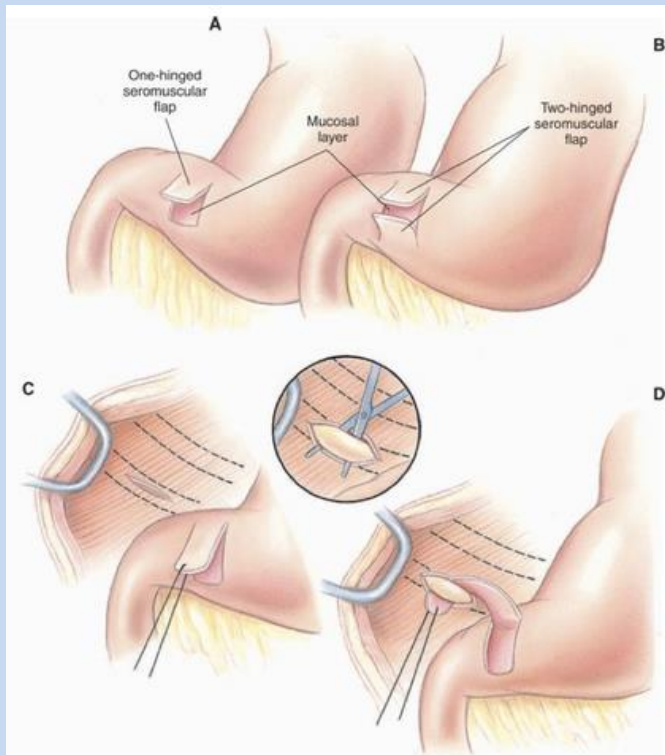


- Belt Loop gastropexy
- Endoscopically-assisted gastropexy
- Incisional gastropexy
- Incorporating gastropexy
- Circumcostal gastropexy

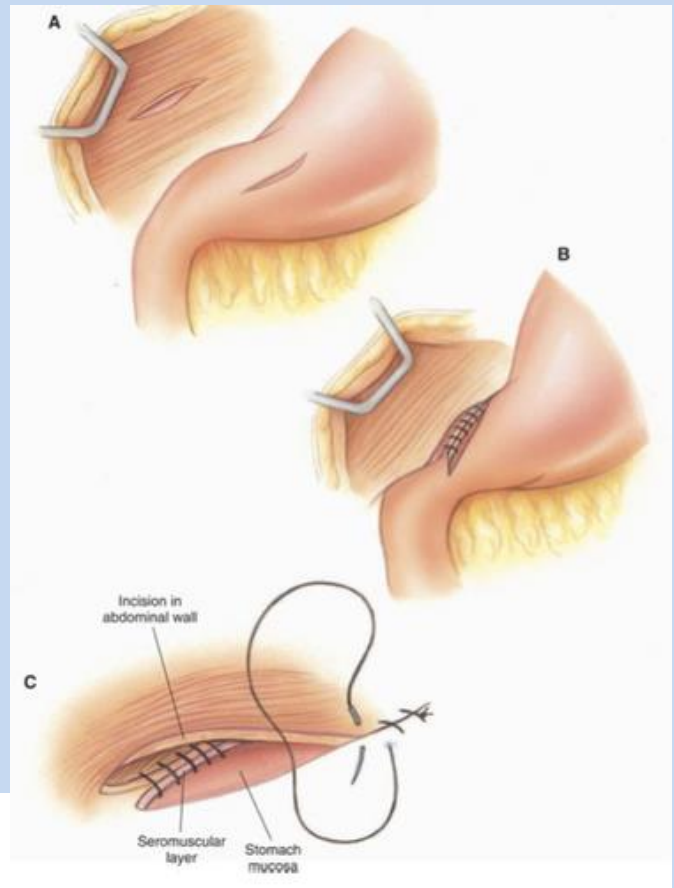
Explanation - The correct answer is incorporating gastropexy. This technique is easy and rapid to perform. It involves making an incision through the seromuscular layer of the stomach and then suturing it to the linea alba as you are closing your incision. As a result, if one ever goes back into the abdomen, there is a risk of cutting into the stomach since it will be adhered to the linea alba. For this reason, some surgeons will advise against this procedure. A circumcostal gastropexy involves wrapping a section of the seromuscular layer of the stomach around a rib and then suturing it back onto the stomach. An incisional gastropexy involves making an incision onto the abdominal wall and the seromuscular layer of the stomach, and then suturing them together so the stomach ends up sutured up against the body wall. A belt loop gastropexy involves making two parallel incisions into the abdominal wall musculature and then passing a section of seromuscular layer of the stomach through one incision, out the other, and then suturing it back onto the stomach. An endoscopically-assisted gastropexy is a method of performing a fast and relatively easy prophylactic gastropexy.



Belt-loop gastropexy



Circumcostal gastropexy



Incisional gastropexy

Question

A 1-year-old male neutered Chihuahua presents for a 3 month history of intermittent limping and non-weight bearing on the left hind limb. On physical exam, it is difficult to determine the source of pain as the patient seems to try to bite on any manipulation of the left hind limb. The patient was sedated and these radiographs were obtained. What is your diagnosis and treatment?

- Left patellar luxation. Perform trochlear wedge recession with tibial tuberosity transposition
- Left hip dysplasia. Perform femoral head and neck ostectomy or total hip replacement
- Avascular necrosis of the femoral head. Perform femoral head and neck ostectomy or total hip replacement
- Left hip septic arthritis. Perform joint culture and begin appropriate antibiotic therapy



Explanation - Based on the breed and age of the patient, avascular necrosis of the femoral head should immediately be the top differential. This condition is also known as Legg-Calves-Perthes disease and results in a collapse or fragmentation of the femoral epiphysis (as seen on the radiographs) because of a **disruption in blood flow**. The cause of blood flow interruption is unknown. The condition occurs in **young small-breed dogs prior to closure of the capital femoral physis**. The condition can be seen bilaterally in 10-17% of patients. Dogs are usually 6-7 months of age when they first start showing clinical signs but the age may range from 3-13 months. Treatment with a **femoral head and neck ostectomy** (FHO) generally yields excellent results. Alternatively, if owners demand perfect biomechanics, a total hip replacement may be considered, but most veterinarians tend to recommend an FHO.

Radiographs will typically show a shortening of the femoral neck as well as osteochondrosis with chronicity, as appreciated in this patient. Note the significant muscle atrophy of the patient's left limb as compared to the right. Patellar luxation should always be a differential in any small breed dog and this should be ruled out via palpation since the patient may not necessarily be luxated at the time the radiograph was taken. The patient's patellas are in a normal position in this radiograph.

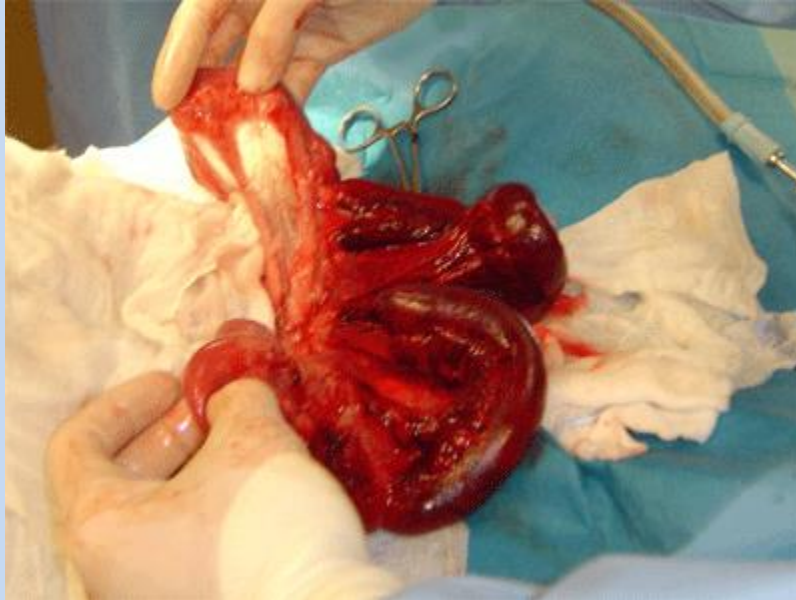
Septic arthritis of the femoral head is an uncommon condition which is more often seen in large-breed dogs with a history of degenerative joint disease of the hips. They present with acute lameness, severe hip pain, and are usually febrile. Radiographs usually show degenerative joint disease along with potentially lytic areas associated with the femoral head. Neoplasia should also be considered in these cases.

Small-breed dogs are less likely to have hip dysplasia as compared to large-breed dogs and should be kept as a lower differential.

Question

Charlie, a 4-year old female spayed Labrador has a history of getting into the garbage. She presented with a 3-day history of anorexia, vomiting, and lethargy. You perform radiographs and appreciate an empty stomach, significantly distended loops of bowel in the mid to cranial abdomen, and a radiopaque region consistent with a foreign body.

The patient is taken to surgery and these are your findings (see below). Clearly this patient will need an intestinal resection and anastomosis. When will you be able to tell Charlie's owners that you feel confident the resection/anastomosis procedure was successful?



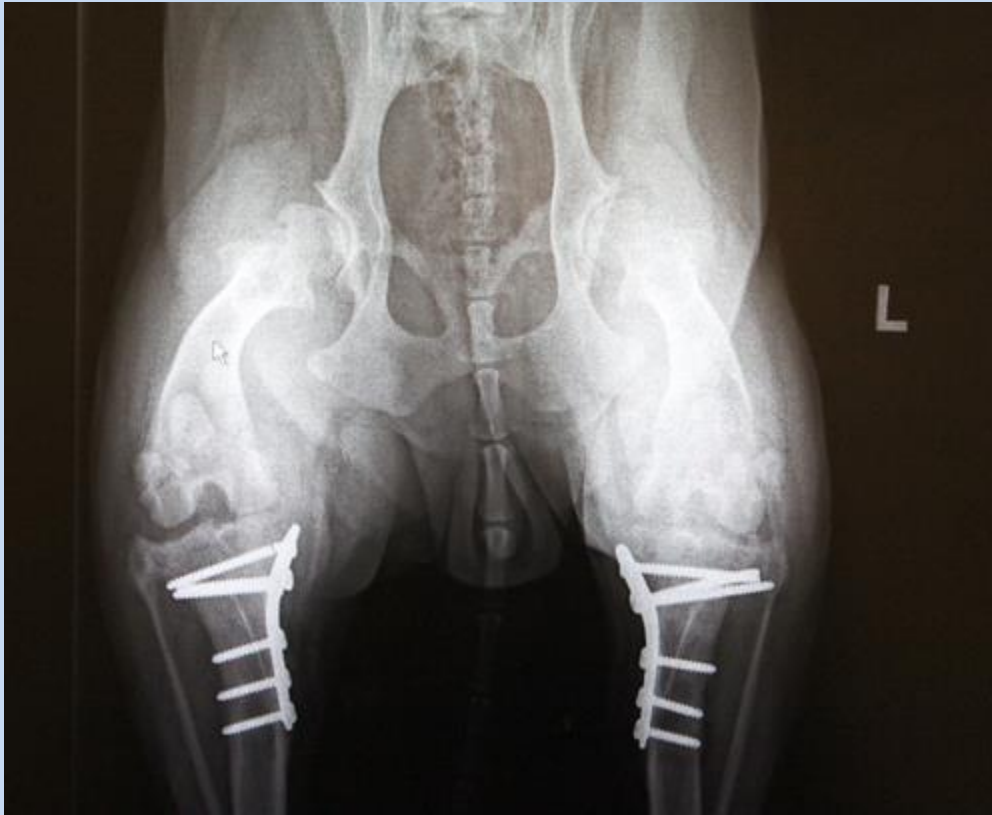
- After Charlie is eating and defecating
- As long as there were no complications and you are confident of your repair you can tell them immediately
- 7 days after Charlie's surgery
- 5 days after surgery
- At Charlie's suture removal in 10-14 days

Explanation - The correct answer is **5 days after surgery**. If you remember the principles of healing, 3-5 days corresponds to the end of the lag phase of intestinal healing. After that point, there is typically enough collagen that has been incorporated into the healing intestine such that dehiscence will not occur. The mortality rate for patients that have intestinal dehiscence is 73-80%.

Risk factors that have been associated with an increased chance of dehiscence include traumatic intestinal injuries, intestinal foreign bodies, peritonitis at the time of surgery, and serum albumin less than 2.5 g/dl.

Question

A 10 year old female spayed mixed breed dog presents for further evaluation of progressive lameness in the hind. The owner notes that she has begun intermittently scuffing her hind limbs, has somewhat of a weak or drunken gait in the hind as she walks, and is having trouble rising. Given the answer choices below, what is the best treatment?



- Dorsal laminectomy
- Total hip replacement bilaterally
- Removal of the right TPLO plate
- Prolonged antibiotic therapy with clindamycin

Explanation - This patient's clinical signs are consistent with neurological deficits. Although you do not have all of the information necessary to reach a definitive diagnosis, you should have been able to deduce that this patient probably needs a dorsal laminectomy to relieve disc compression.

In order to definitively diagnose the condition you would want to proceed with a complete exam, basic bloodwork, and a CT or MRI of the lumbosacral region. Although this patient does exhibit evidence of hip dysplasia radiographically, the clinical signs are not characteristic of a dog with pain secondary to hip dysplasia. There is no indication of osteomyelitis on these radiographs and the clinical signs are not necessarily suggestive of osteomyelitis. Removing the TPLO plate might be tempting if you identified a broken screw (proximal screw of the right tibia). However, this broken

screw is likely an incidental finding and does not cause the patient any discomfort since the TPLO site appears to be healed.

It is important not to skip ahead to image interpretation without carefully reading the question. Doing so in this case would likely lead you to select the incorrect answer.

Question

A 3-year old Miniature Poodle presents for an acute, painful swelling on the left ventral neck. You perform a fine needle aspirate and draw back a stringy, blood-tinged fluid with few cells. What is the most likely diagnosis?

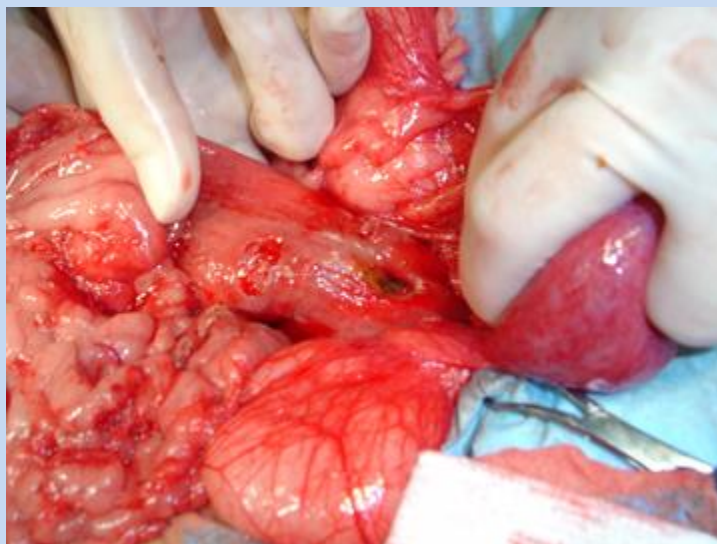
- Mucocele
- Reactive lymph node
- Mast cell tumor
- Abscess

Explanation - The correct answer is mucocele. **2-4 year old poodles** are the classic signalment for this condition. The usual presentation is a mass that may be painful and may produce saliva on aspiration. An abscess, mast cell tumor, or reactive lymph node would all be more cellular.

Question

Dutchess, a five year old female spayed Labrador Retriever, presents to the emergency clinic with a 2 day history of lethargy, inappetance, diarrhea, and vomiting. On physical exam, she is painful on abdominal palpation, 7% dehydrated, and febrile.

Abdominal radiographs were performed and showed evidence of ascites and gas distension in the small intestines. Preliminary blood work showed a PCV of 32%, TP 2.2 g/dL, glucose 57 mg/dL, Na 140 mEq/L, Cl 115 mEq/L, K 3.9mEq/L. Given the surgical findings (see image below) what is the likely abdominal fluid glucose level?

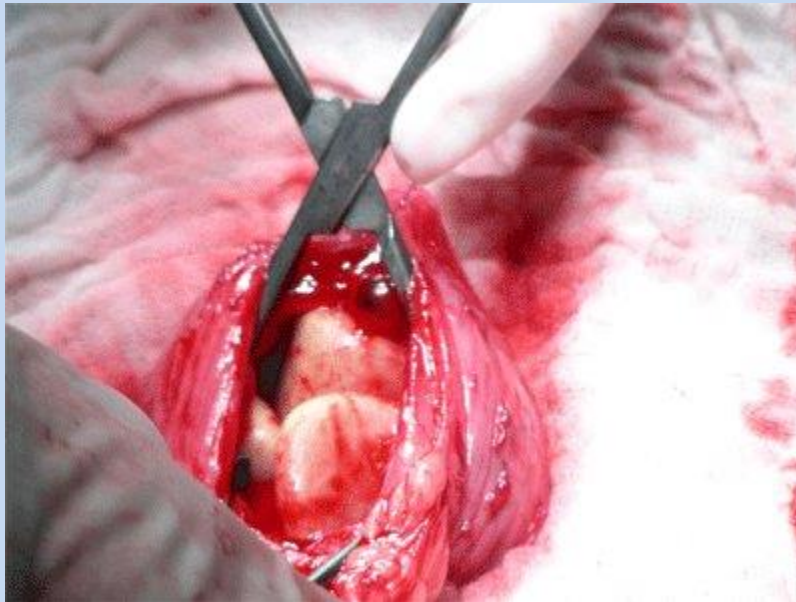


- At least 20 mg/dl less than the blood glucose
- At least 20 mg/dl greater than the blood glucose
- Approximately the same as the blood glucose

Explanation - The correct answer is at least **20 mg/dL less than the blood glucose**. The image depicts a perforated colon, which will result in a septic abdomen due to the normal colonic flora emptying into the abdomen. A concentration difference > 20 mg/dL between blood and peritoneal fluid glucose concentration provides a rapid and reliable means to differentiate a septic peritoneal effusion from a nonseptic peritoneal effusion in dogs and cats.

Question

Of the options below, which would be the best material to close this incision?



- Catgut
- Polydioxanone
- Ethilon
- Vicryl

Explanation - The correct answer is polydioxanone. This suture material is absorbable and monofilament. Polydioxanone (PDS) is broken down by hydrolysis and will last longer than catgut, which is better when working with the bladder. On the other hand, you do not want a non-absorbable material as this predisposes the patient to urinary tract infections as a result of the permanent presence of foreign material. Vicryl is a multifilament suture which also has a higher likelihood of failing due to the ability of bacteria to lodge in between the filaments.

GENERIC NAME	TRADE NAME	FILAMENT	SOURCE
Absorbable			
Polyglactin 910	Vicryl [†]	Multi	Glycolic-lactic acid polymer
Polyglycolic acid	Dexon [†]	Multi	Glycolic acid
Polydioxanone	PDS II [†]	Mono	Polydioxanone polymer
Polyglyconate	Maxon [†]	Mono	Glycolic acid-polytrimethylene carbonate
Poliglecaprone 25	Monocryl [†]	Mono	Copolymers of epsilon-caprolactone and glycolide
Chromic catgut		Multi	Submucosa of ovine intestine or serosa of bovine intestine

Nonabsorbable			
Silk		Multi	Raw silk spun by silk worm
Polymerized caprolactum	Supramid or Braunamid	Multi	Polyamide strands enclosed in a polyamide sheath
Stainless steel		Mono	Chromium nickel molybdenum
Polyester	Mersilene [†]	Multi	Synthetic resin polymers (extruded)
Nylon	Ethilon [†]	Mono	Polyamide filament (extruded)
Polypropylene	Prolene [†]	Mono	Polymerized polyolefin hydrocarbons (extruded)

Question

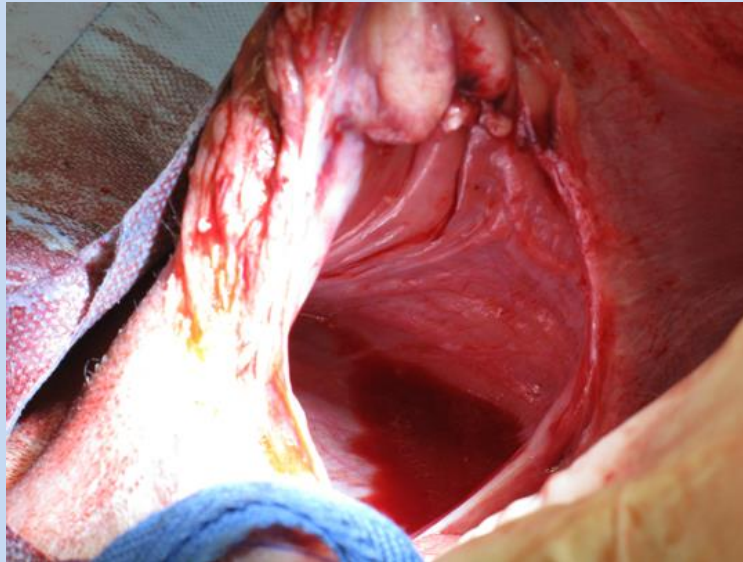
What is the recommended surgical treatment for canine patients with laryngeal paralysis?

- Partial laryngectomy
- Soft palate resection
- Unilateral arytenoid lateralization
- Resection of the laryngeal saccules

Explanation - The correct answer is **unilateral arytenoid lateralization**. Resection of the soft palate is performed when dogs have respiratory problems as a result of having an elongated soft palate. Resection of the laryngeal saccules is performed when they are everted and causing respiratory distress. A partial laryngectomy is performed in cases where there may be a mass or tumor to be removed.

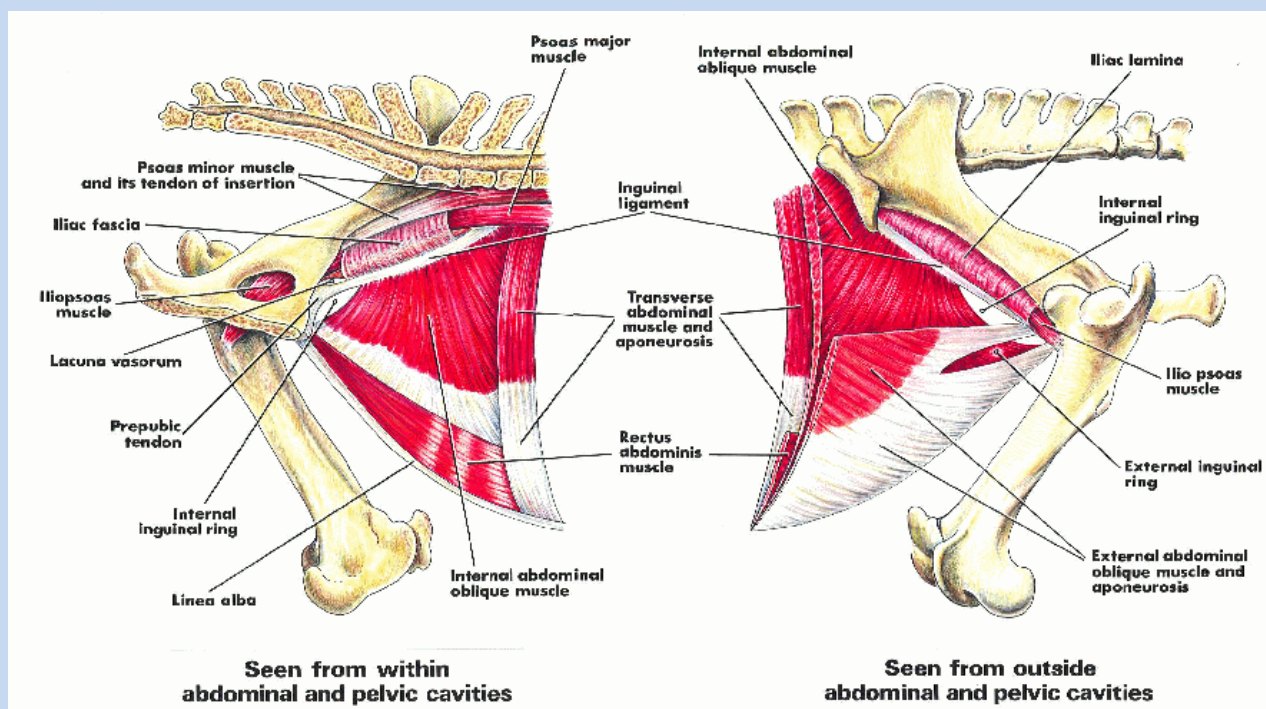
Question

Inguinal hernias occur more commonly in male dogs. They can be congenital or acquired. In order to understand the pathophysiology of these hernias, a clear understanding of anatomy is necessary. This patient sustained a severe inguinal hernia after being hit by a car. Which of the following is NOT a component of the internal inguinal ring?



- External abdominal oblique
- Rectus abdominis
- Internal abdominal oblique
- Inguinal ligament

Explanation - The external abdominal oblique is a component of the external inguinal ring. All others make up the internal inguinal ring. The rectus abdominis makes up the medial border. The inguinal ligament makes up the lateral and caudal border. Finally, the internal abdominal oblique makes up the cranial border.

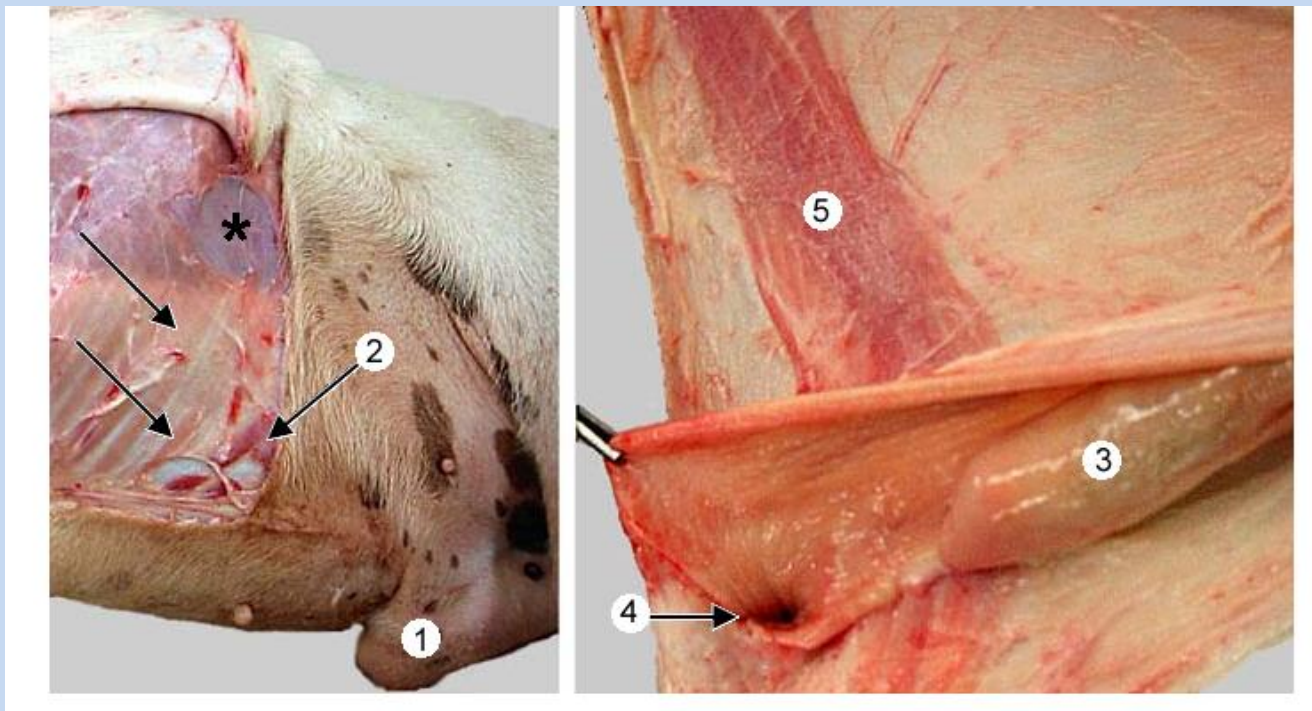


Question

A 2-year old male Rottweiler presented for an intestinal foreign body removal. The dog was taken to surgery for removal of the foreign body. What muscle should the surgeon incorporate in the closure of the abdominal incision?

- Gluteal muscle
- Gracilis muscle
- Pectineus muscle
- Preputialis muscle

Explanation - The correct answer is preputialis muscle. This muscle is usually cut when making a midline incision in male dogs and should be incorporated into the closure to avoid penile deviation.



The preputial muscle, which pulls the prepuce forward when the penis withdraws back into the prepuce, is derived from the cutaneous trunci muscle.

Left: **Cutaneous trunci m.**, in which a hole is torn (asterisk), is evident as flat muscle fascicle bands (arrows). In the vicinity of the prepuce (1), muscle fascicles are thickened to form **preputial m.** (2).

Right: Skin has been reflected and the prepuce was incised to reveal the penis (3) and preputial orifice (4). **Preputial muscle** (5) is prominent deep to the skin.

Question

A 5-year old female spayed Labrador Retriever presents for further evaluation after jumping out of the back of a pick-up truck. What are the most likely regions for a traumatic hernia to occur?

- Flank and prepubic region
- Perineal and diaphragmatic region
- Diaphragmatic and umbilical region
- Umbilical region and perineal region

Explanation - Traumatic injuries are more likely to cause a **flank or prepubic hernia** than any other type of reported hernia. **Umbilical hernias** are almost exclusively congenital in nature. Perineal hernias are seen in older male dogs and are thought to be secondary to excessive hormones that result in weakening of the pelvic diaphragm. Finally, diaphragmatic hernias can occur secondary to trauma but are not as commonly noted as flank and prepubic.

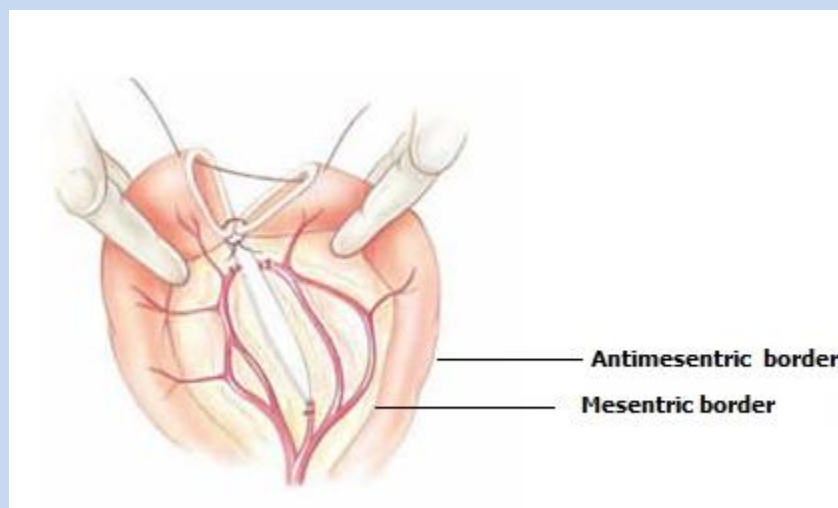
Whenever a patient presents with unknown trauma or after being hit by a car, it is appropriate to **take x-rays** as 20% of dogs with diaphragmatic hernias will present several weeks after injury as a result of missing the diagnosis on physical examination alone.

Question

When performing an enterotomy in a dog it is best to cut on the _____.

- Mesenteric border
- Antimesenteric border
- Lateral to mesenteric border
- Lateral to antimesenteric border

Explanation - The correct answer is antimesenteric border. Cutting on this part of the intestine will minimize the likelihood of hitting blood vessels and will thus decrease the chances of bleeding. This is true for most species, not just dogs.



Question

There are several procedures that are typically performed while correcting medial patellar luxation in dogs. Which one of the following is not performed while repairing a medially luxating patella?

- Block recession of the trochlear groove
- Lateral imbrication of the retinaculum
- Medial release of the soft tissues
- Medial transposition of the tibial tuberosity

Explanation - The correct answer is medial transposition of the tibial tuberosity. If you have a medially luxating patella, you need to transpose the tibial tuberosity laterally in order to line up the patellar tendon with the rest of the stifle in an effort to reduce the likelihood of patellar luxation. The two most important procedures that reduce the incidence of recurrence are lateral transposition of the tibial tuberosity and modifying the trochlear groove of the femur.

Which Dogs Need Correction?

Medial patellar luxations are graded to assess severity.

Grade I: The kneecap can be moved out of place manually but will fall back into its natural position once the manipulator lets go. Dogs with Grade I luxations do not require surgical repair.

Grade 2: Same thing except that the kneecap does not move back to its normal position when the manipulator lets go. These dogs are likely to progress to arthritis development and should be considered for surgery to prevent conformational damage. There is some controversy over whether grade 2 dogs should have surgery. Grade 2 dogs may benefit from surgery and most often the owner is called upon to judge how big a problem the lameness is.

Grade 3: The patella is out of place all the time but can be manipulated back into its normal position manually (though it will not stay there). Dogs with Grade 3 disease definitely should have surgery.

Grade 4: The patella is not only out of place all the time but cannot even be manipulated back into place by hand. Such a dog has extreme difficulty extending his knees and walks with his knees bent virtually all the time. Dogs with Grade 4 disease definitely should have surgery.

It is not a good thing to have one's knee cap out of place; the entire weight-bearing stress of the rear leg is altered which, in time, leads to changes in the hips, long bones, and ultimately arthritis. How severe the changes are depends on how severe the luxation is (i.e., the grade as described above) and how long that degree of luxation has been going on. In time, the legs will actually turn outward with its muscles turning inward, making the dog bow-legged. The luxation is not considered a painful condition but after enough time and conformational change, arthritis sets in, which is indeed painful.

What Surgical Procedures are Available?

Lateral Imbrication (also called Lateral Reinforcement)

This procedure alone may be adequate for a mild case but is often used as an adjunctive procedure to supplement one of the other surgeries. When the patella slips out of its groove, the joint capsule surrounding it is stretched to allow this motion. Imbrication simply involves taking a tuck in the joint capsule. The tightened joint capsule does not allow for the slipping of the kneecap and the kneecap is confined to its proper groove.

Trochlear Modification

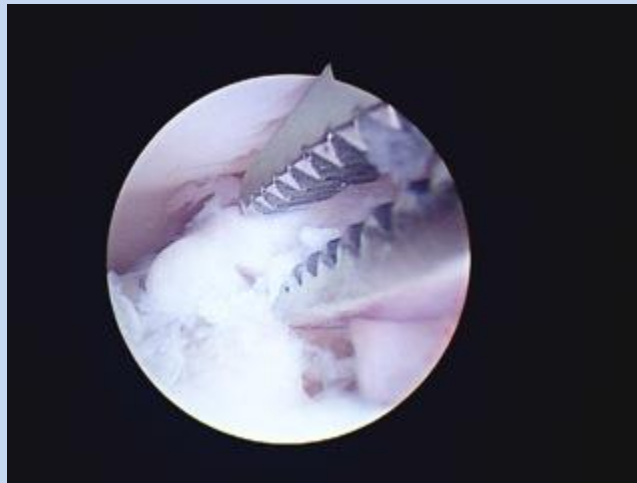
The patella rides in a groove at the bottom of the femur. In toy breed dogs this groove is shallow, which allows the patella to slip. If the groove is deepened, the patella stays where it belongs. The normal groove in the femur is lined by slippery lubricated cartilage, called hyaline cartilage. This cartilage is peeled or cut away, the bone underneath is sliced out to form a deeper groove, and the cartilage is replaced. Techniques that do not preserve the original cartilage are no longer recommended.

Tibial Crest Transposition

If the knock-kneed conformation has already started to set in, the tibias will have rotated. In particular, the crest on the tibia where the quadriceps femoris attaches may have migrated inward. If this is the case, the crest will have to be removed and pinned back where it belongs to straighten out the leg. Severe rotation of the tibias may involve actually cutting through the entire bone and de-rotating it back into place.

Question

A 1.5-year-old male castrated German shepherd presented to the veterinarian for intermittent lameness of the left forelimb. Radiographs were performed of the elbow and shoulder but were unremarkable. The patient was referred to a specialist and was subsequently diagnosed with elbow dysplasia. Below is an image during this patient's arthroscopic procedure. What is the surgeon most likely doing?



- Removing a fragment from the medial aspect of the ulna
- Debriding an osteochondrosis dissecans lesion associated with the coronoid process
- Removing a fragment from the medial aspect of the radial head
- Removing a fragment which fractured off the lateral humeral condyle

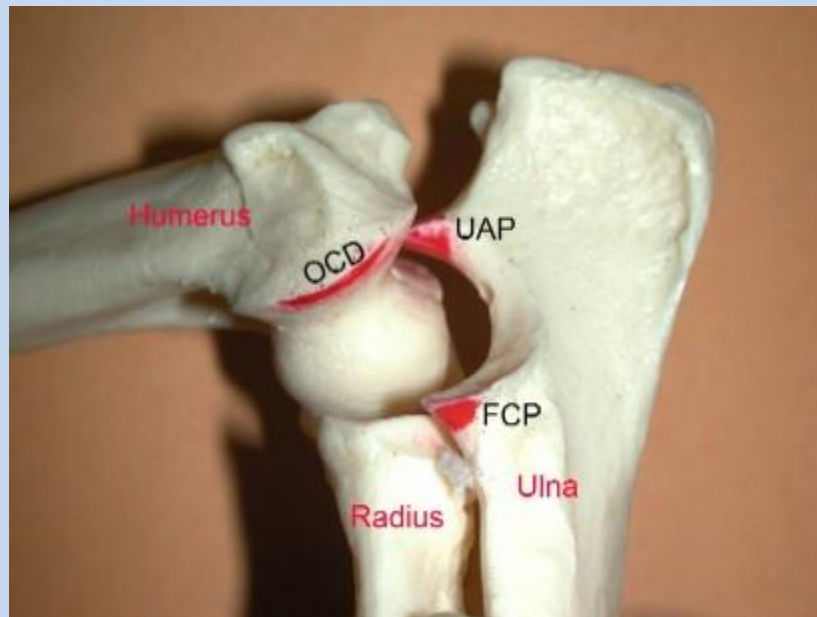
Explanation – The correct answer is removing a fragment from the medial aspect of the ulna. Elbow dysplasia is a global term for **several congenital conditions** which can occur. These include an **united anconeal process**, **osteochondrosis of the humeral condyle**, **elbow incongruity**, and a **fragmented medial coronoid process**.

The fragmented medial coronoid process tends to be the most commonly encountered condition. Left untreated, the abnormal region may not only be fragmented and painful, but can also result in eventual cartilage eburnation of the apposing humeral head.

The coronoid process is located on the ulna. In elbow dysplasia, osteochondrosis dissecans is always associated with the medial humeral condyle. Osteochondrosis dissecans does not occur at the level of the medial coronoid process of the ulna. One theory of why dogs develop a fragmented medial coronoid process is that excessive stress along the medial aspect of the limb results in overloading of the medial coronoid process, which leads to its eventual fragmentation.

Elbow Dysplasia

- Elbow dysplasia can cause lameness in young large-breed dogs and is commonly found in both elbows.
- Elbow dysplasia is a generic term meaning arthritis in the elbow joint.
- There are four developmental causes of elbow arthritis in dogs:
 - Osteochondrosis dissecans
 - Ununited anconeal process
 - Fragmented coronoid process
 - Elbow incongruity.



- **OCD** is a condition in which a piece of cartilage becomes partially or fully detached from the surface of the elbow joint. This results in inflammation of the lining of the joint and pain.
 - **Fragmented medial coronoid process** is a condition in which a small piece of bone on the inner side of the joint has broken off of the ulna bone. This piece of bone irritates the lining of the joint and grinds off the cartilage of the adjacent humerus.
 - **Ununited anconeal process** is a condition in which a fragment of bone on the back side of the joint has failed to unite with the ulna bone during growth. Normally this bony process fuses with the ulna bone by 20 weeks of age.
 - **Elbow incongruity** is a condition in which the joint does not have perfect conformation, and the cartilage of the joint wears out rapidly. In simple terms the joint does not fit together well and the final result is progressive arthritis.
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Question

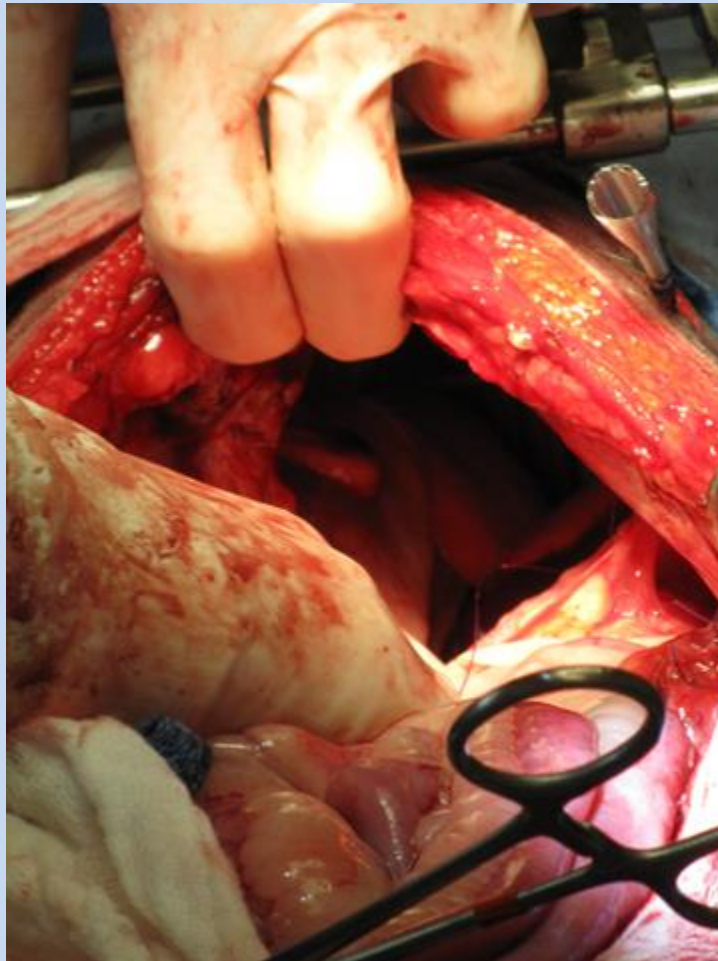
What is the holding layer of the esophagus?

- Mucosa
- Submucosa
- Serosa
- Muscularis

Explanation - The correct answer is the submucosa. At one time, it was thought that the mucosa was the holding layer, but it has now been shown that it is the submucosa. The submucosa is essentially the holding layer for all hollow viscera.

Question

15-25% of diaphragmatic hernias are not diagnosed until several weeks after trauma; therefore, it is important to perform thoracic radiographs in all animals that undergo significant trauma to avoid having an animal later go into respiratory distress and die. How should you treat a diaphragmatic hernia as shown below?



- Simple continuous pattern of an absorbable suture such as polydioxanone
- This hernia is too large and has exceeded the repair limits; the patient should be humanely euthanized
- Fascia lata graft using a simple interrupted pattern
- Mesh graft using porcine small intestinal submucosa

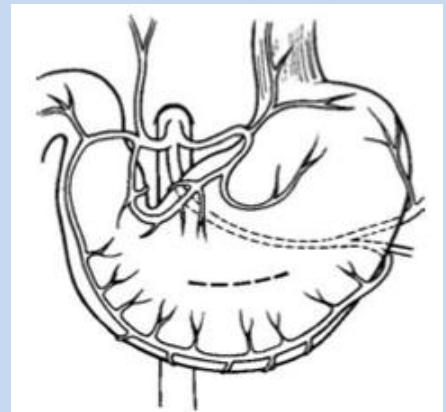
Explanation – The correct answer is simple continuous pattern of an absorbable suture such as polydioxanone. Acute, traumatic, diaphragmatic hernias should be repaired primarily without the use of any "substitute" material for the diaphragm to reduce the risk of complications. It is very rare to have insufficient tissue/muscle to close an acute defect to the diaphragm. Using the native diaphragmatic wall decreases the risk of failure because this technique involves tissue with a direct blood supply as opposed to a mesh type material that is foreign to the body.

Question

What is the ideal incision site for a foreign body gastrotomy?

- There is no preferred site
- Halfway between the greater and lesser curvature of the stomach
- Along the greater curvature
- Along the lesser curvature
- Just proximal to the pylorus

Explanation - The correct answer is **halfway between the greater and lesser curvature**. At this site, you avoid any major bleeding and retain good blood supply from both sides to help with the healing of your incision. Cutting along the greater and lesser curvature is not recommended due to the need to avoid blood vessels. Cutting along the pylorus has a risk of disturbing the sphincter and causing the formation of a pyloric stricture. Additionally, this does not provide a good view inside the stomach.



Question

A 6-year old female Saint Bernard presents for an acute onset of restlessness, retching, and hypersalivation. On physical exam you notice abdominal distension, tachycardia, a prolonged capillary refill time, and pale mucous membranes. What is your most likely diagnosis?

- Parvovirus
- Pancreatitis
- Gastric foreign body

- Gastric dilatation and volvulus

Explanation - The correct answer is gastric dilatation and volvulus. To answer this question correctly, you need to pay attention to the signalment. In this case, you have a **deep-chested large breed dog**. These dogs are predisposed to GDVs. Additionally, the history of **acute onset** and clinical signs are consistent with GDV. You can immediately eliminate parvovirus by looking at the age of the dog. For the most part, parvovirus is a disease of puppies. Gastric foreign body and pancreatitis are good differentials; however, the **abdominal distension** seen on physical exam should help you lean towards GDV. Surgical treatment would involve a gastropexy to anchor the stomach in place so that a GDV does not recur.

Question

A 3-year old female intact Doberman presents to your clinic for a routine spay. The owner states she has not recently been in heat and has been healthy her entire life. Aside from a thorough physical examination and routine blood work, what additional diagnostic test should be performed prior to surgery?

- Chest radiographs
- Buccal mucosal bleeding test
- Abdominal ultrasound
- Activated clotting time

Explanation - Doberman Pinschers are predisposed to having von Willebrand's Disease (vWD). Specifically, Dobermans have increased incidence of have Type 1 vWD. In this type, there is a reduced presence of functional von Willebrand factor. This factor is crucial in initial clot formation and attracts platelets and allows them to bind to exposed subendothelium after injury. A buccal mucosal bleeding test should result in a clot in less than **4 minutes** in normal dogs. An abnormal result warrants further investigation to confirm the presence of vWD in order to take the appropriate measures prior to surgery.

Chest radiographs are not necessary prior to anesthetizing this patient for an elective procedure unless there are physical examination findings which indicate radiographs of the chest. An abdominal ultrasound is a potentially good choice if there is concern that the uterus is enlarged or the animal is pregnant; however, there is no history presented that would make you believe that is the case, and it is impractical to perform an abdominal ultrasound for a routine procedure unless there is a clear indication. The activated clotting test evaluates the intrinsic and common coagulation pathways, and there is no concern with dysfunction in these.

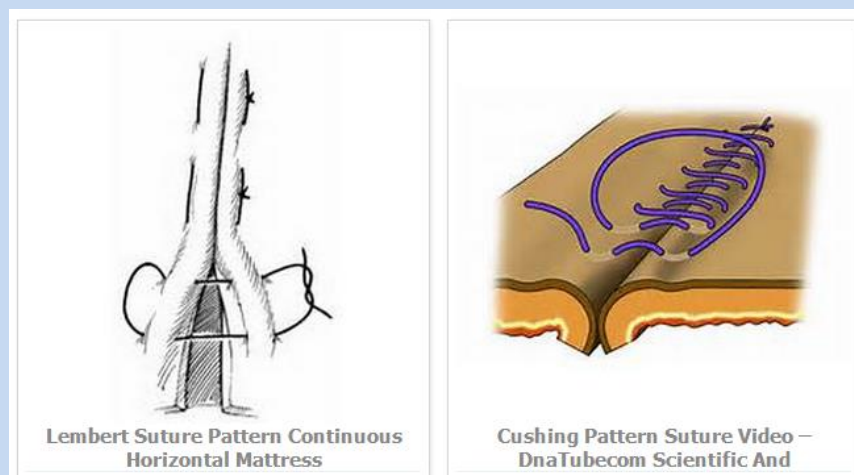
Question

Which of the following suture patterns results in an inversion of sutured edges?

- Bunnell pattern
- Horizontal mattress pattern
- Lembert pattern
- Ford interlocking pattern

Explanation - The correct answer is Lembert pattern. The Lembert pattern is a variation of a vertical mattress pattern. It is often used to close hollow viscera.

The Bunnell pattern is a suture that is used to appose severed tendons. The Ford interlocking pattern is used to help appose tissues that have increased tension. The horizontal mattress pattern results in eversion of tissues.



Question

You are closing an abdominal incision after completing a spay surgery on a cat. What is the holding layer of the abdomen?

- Transversus abdominis
- External rectus sheath
- Submucosa
- External abdominal oblique
- Muscularis
- Rectus abdominis

Explanation - The correct answer is external rectus sheath. This is true for most species, not just cats. The submucosa is the holding layer for most of the gastrointestinal tract (esophagus, intestines)

