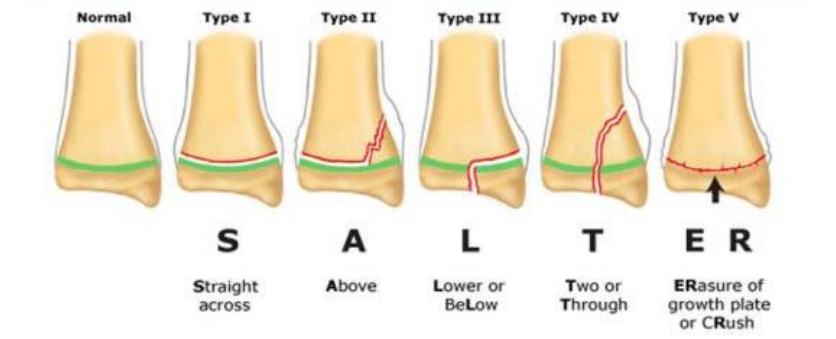
Question

A type III Salter Harris fracture involves what part of the bone?

- Metaphysis and epiphysis
- Metaphysis and physis
- Metaphysis, physis, and epiphysis
- Epiphysis and physis

Explanation - The correct answer is the epiphysis and physis. A type I Salter-Harris fracture is physeal only. Type II involves the physis and metaphysis, type III involves the physis and epiphysis, type IV involves physis, metaphysis, and epiphysis, and type V is a compression injury to the physis.



Question

A type I Salter-Harris fracture involves what part of the bone?

- Metaphysis and epiphysis
- Diaphysis
- Physis
- Epiphysis
- Metaphysis

Explanation - The correct answer is the physis. A type I Salter-Harris fracture is physeal only. Type II involves the physis and metaphysis, type III involves the physis and epiphysis, type IV involves physis, metaphysis, and epiphysis, and type V is a compression injury to the physis. [**SALTR**, **S**traight, **A**bove, **L**ow, **T**hrough, **R**ammed]

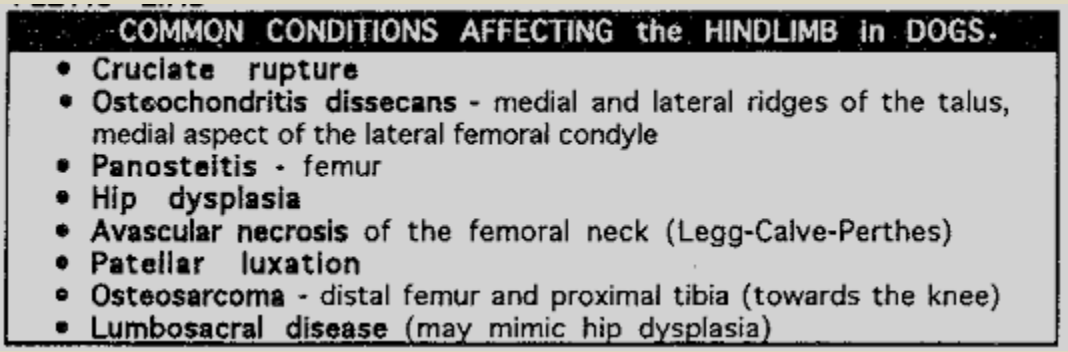
Question

A 2-year old male neutered German Shepherd presents with a history of intermittent lameness of the right pelvic limb. You do not appreciate any cranial drawer motion on exam and he has no pain in his long bones. On gait examination you notice a bunny-hopping type gait. What would you advise?

- Strict rest for 2 months and NSAID therapy for likely panosteitis
- Testing for tick-borne disease
- Radiographs of the right stifle due to a likely partial cranial cruciate rupture
- Pelvic radiographs to evaluate for evidence of dysplasia

Explanation - A bunny-hopping gait is most often seen in cases of hip dysplasia. Radiographs of the hips would be the next best step.

Since there is no cranial drawer movement, there is not likely a CCL rupture. Panosteitis can be seen in younger dogs which are growing and would cause pain in the long bones. Typically lameness from rickettsial disease is painful and may affect multiple joints or limbs.

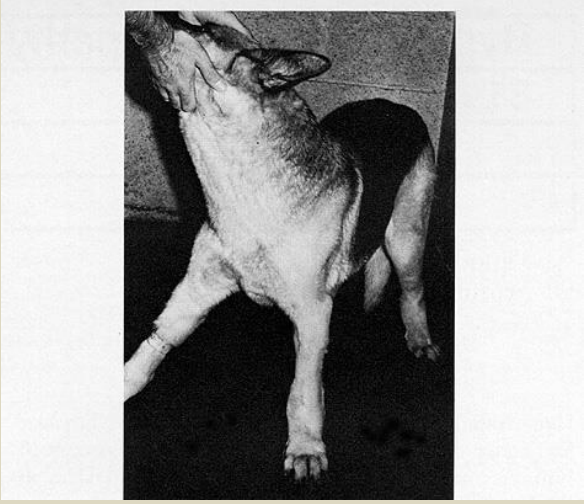


Question

You are examining a dog for lameness and on radiographs; you find hypertrophic osteopathy of the metacarpal bones. What is the likely cause of this lesion?

- Pulmonary neoplasia
- Vitamin D deficiency
- Trauma
- Bone tumor

Explanation - The correct answer is pulmonary neoplasia. **Hypertrophic osteopathy** is visible as **periosteal proliferation** in the diaphyses of affected bones. Usually the **metacarpal and metatarsal** bones are affected first, and it may progress to the long bones. **Lameness**, **pain**, and **swelling** are usually evident. Joints are unaffected. The cause is usually primary or metastatic **pulmonary neoplasia**, although other diseases in the thorax including bronchopneumonia, Spirocerca infection, or congestive heart failure, may also be associated. Less commonly, abdominal neoplasia may be seen with this condition.



Question

A 3-year-old male castrated golden retriever presents to your emergency clinic by a good samaritan. He reports finding the dog severely limping and bleeding while he was on a hike. On your examination, the dog has a large bleeding wound on the lateral aspect of the left elbow. The dog is alert with pink mucous membranes and normal vital parameters. He is non-weight bearing lame on the left forelimb. You start the dog on fluids and analgesics and apply a sterile bandage before taking a radiograph of the left elbow which is shown below. How would you interpret the radiograph?

- The dog has a penetrating wound from a sharp object
- The dog was attacked by an animal
- The dog was caught in an animal trap
- The dog has a gunshot wound

Explanation - The metal dense shrapnel and highly comminuted fracture of the distal humerus and proximal radius and ulna are indicative of a gunshot wound. The dog should be assessed for life threatening injuries including penetrating trauma to body cavities and for any evidence of hemorrhage. This fracture probably cannot be stabilized due to the degree of comminution. Arthrodesis could potentially be attempted but more likely, the dog will require an amputation.

Question

Which statement about hypertrophic osteopathy (HO), as depicted in the radiograph below, is true?

- HO is characterized by sclerosis of the subchondral bone of long bones
- HO usually starts in the proximal appendages and spreads distally
- HO occurs in young, large breed dogs
- HO occurs in association with a thoracic mass

Explanation - The correct answer is HO occurs in association with a thoracic mass. There is no breed or age predisposition for HO. The disease usually starts at the distal extremities and develops proximally. HO is characterized by periosteal proliferation near joints, not sclerosis of the subchondral bone.

Question

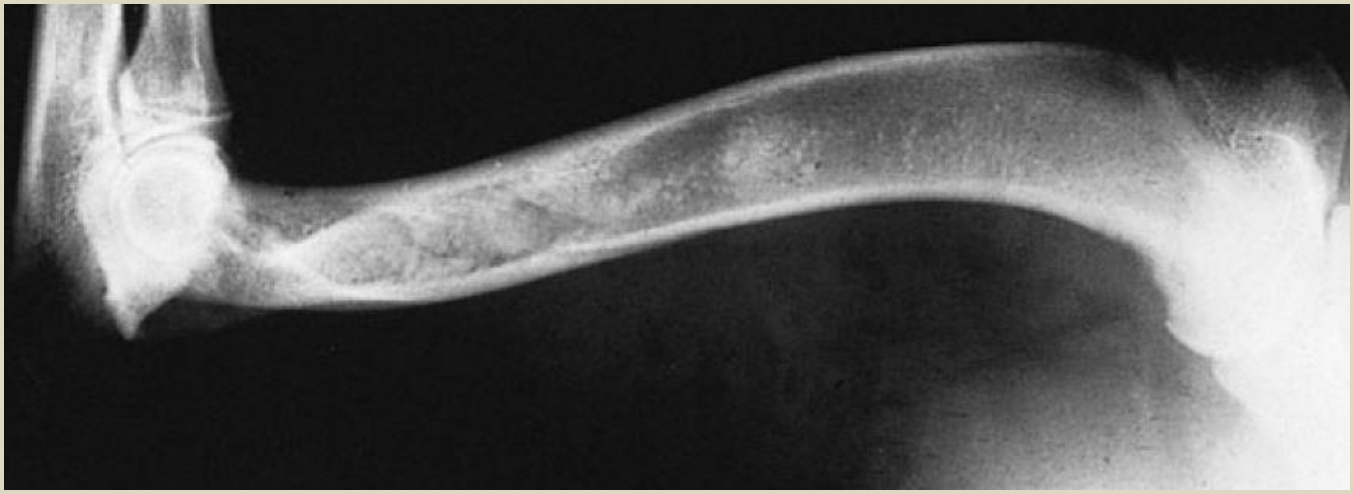
A dog presents for an acute onset of right hind limb lameness. On physical exam you note the limb to be slightly externally rotated and shorter than the contralateral limb. You suspect a coxofemoral luxation. What is the most likely direction of luxation?

- Craniodorsal
- Caudodorsal
- Cranioventral
- Caudoventral

Explanation - The correct answer is craniodorsal. Interestingly, over 80% of coxofemoral luxations occur in a craniodorsal direction in dogs. The key players in maintaining the femur in its socket are the ligament of the head of the femur, dorsal acetabular rim, and joint capsule. If any two of these are compromised, a luxation will most likely result.

Question

A seven-month old male German Shepherd became acutely lame on the right forelimb 5 days ago. The dog presents on emergency due to acute exacerbation of lameness. On your exam, the dog has a temperature of 103.6 F and was toe touching lame on the right forelimb and reluctant to stand or walk. There was no evidence of external trauma. Deep palpation of the right humerus elicited pain and you take radiographs of the right humerus which are shown below (see image). Based on the most likely diagnosis, what is the prognosis for this condition with supportive treatment only?



- Good, 80-90% of dogs recover

- Grave, <5% of dogs recover
- Fair, 40-60% of dogs recover
- Poor, 10-20% of dogs recover
- Excellent, >95% of dogs recover

Explanation - Excellent, >95% of dogs recover. This is a case of panosteitis based on the **young age of the patient** and radiographic presence of **focal intramedullary densities** within the humeral diaphysis. Minor differentials could include osteomyelitis. Panosteitis is a **self-limiting**, **painful** condition characterized by limping and lameness. It typically affects the **long bones** of **young dogs**, usually between the ages of 5 to 18 months. It can occur with any breed, but it is more common in medium- to large-sized dog breeds.

Treatment is primarily supportive consisting of limiting activity and anti-inflammatory drugs. Pain lasts from weeks to months and resolves in nearly all cases. While these treatments reduce the pain associated with the condition, they may not alter the duration or course of the disease.

Question

A 3-year old male castrated Akita presents for a femoral fracture. Which fracture repair method is not an option?

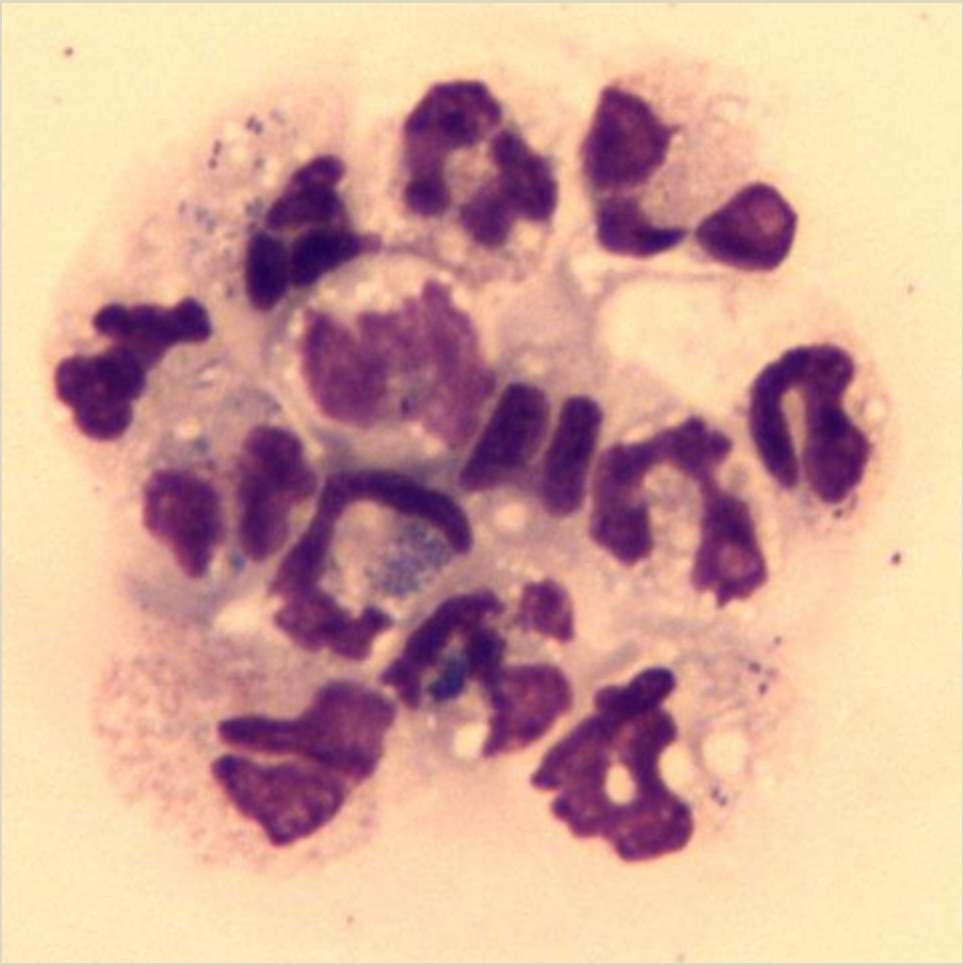
- Type I external fixator
- Bone plate
- Intramedullary pin with cerclage wires
- Type II external fixator

Explanation - The correct answer is **Type II external fixator**. A type I external fixator can be placed from the lateral aspect of the femur, but the medial aspect of the femur cannot be approached for a type II external fixator due to the bone being directly adjacent to the trunk of the animal.

Question

A 5-year old male neutered Pembroke Welsh Corgi presents to you with a complaint of mild lethargy and reluctance to play for about one week's duration. On your exam, the dog is quiet but alert and responsive. T-**102**.3 F, HR-112 bpm, RR-24 bpm. You note decreased weight bearing on the left pelvic limb and swelling of the stifle. You elect to perform radiographs of the left stifle which confirm the presence of effusion but no significant bony changes are appreciated. A complete blood count and biochemistry values are normal.

You sedate the dog to perform arthrocentesis of the left stifle and withdraw 1.0 ml of cloudy fluid. You view the fluid cytologically and a representative field is shown in the image below. What additional diagnostic test is most important?



- Echocardiogram
- Total protein of the fluid
- Urinalysis
- Culture of the fluid
- Arthroscopy

Explanation - This is a description of **septic arthritis** based primarily on the cytologic findings of neutrophils and bacteria in the joint fluid cytology. Note that the bacteria are within the neutrophils (intracellular bacteria), which assures that this is not contamination on your slide. There is no other likely explanation for such a finding. The dog's clinical presentation of nonspecific signs and mild lameness or decreased weight bearing is consistent with this diagnosis. There may be a history of trauma to the affected joint that allowed for entry of bacteria, but such an instance is not always identified. The bloodwork is within normal limits. Occasionally, systemic signs of inflammation or infection may be present with septic arthritis but if the infection is contained within the joint, it is common for bloodwork to be unremarkable.

All of the answer choices might be reasonable recommendations but the most important diagnostic test is to culture the joint fluid to determine the etiologic agent and its antibiotic susceptibility as

this will most directly impact your choice of therapy. The treatment of choice for septic arthritis is a **prolonged (at least one month)** course of an appropriate antibiotic. In some cases, drainage/lavage of the joint or surgery may be necessary. Total protein of the joint fluid can be helpful to classify it and monitor changes with treatment.

Urinalysis or echocardiogram might be indicated if you were suspicious that the septic joint was the result of hematogenous spread of bacteria from another site such as a subclinical urinary tract infection or valvular endocarditis. Arthroscopy might be useful to better examine and to flush the joint.

Question

This Italian Greyhound in the photograph presented after being stepped on by the owner. Radiographs show a transverse mid-diaphyseal fracture of the radius and ulna. What is the best treatment option?

- Amputation
- Cast for 8 weeks
- Internal fixation
- Splint

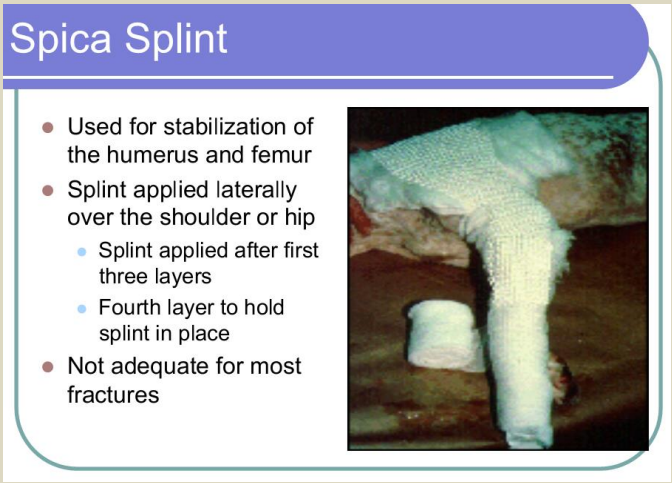
Explanation - The correct answer is internal fixation. Proper internal fixation will achieve the best reduction and thereby maximize the chances of adequate healing. Small breed dogs have a decreased blood supply to distal limbs, which results in a slower healing of fractures and a higher incidence of non-union when there is no surgical intervention.

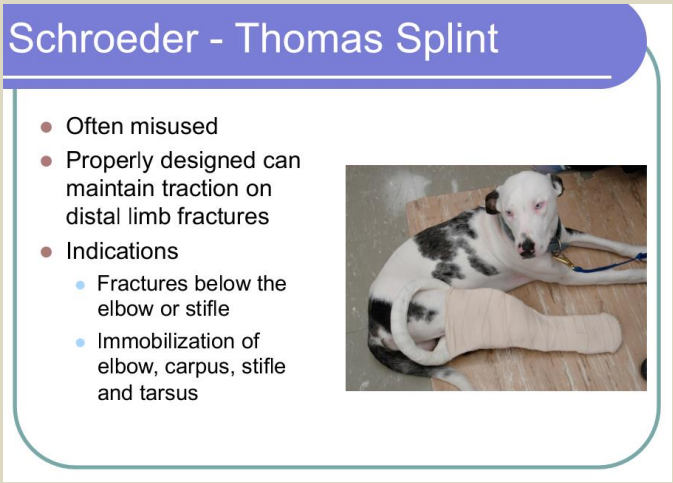
Question

You are presented with a 2-year old spayed female Chow Chow, who became acutely right hind limb lame after jumping out from the back of the owner's riding lawn mower. You diagnose a craniodorsal luxation of the right coxofemoral joint. Your plan is to perform a closed reduction and place a bandage. What type of bandage best fits this situation?

- Schroeder-Thomas splint
- Ehmer sling
- Velpeau sling
- Spica splint
- Robert-Jones splint

Explanation - Ehmer slings prevent weight-bearing. Additionally, they aid in maintaining some degree of abduction and internal rotation of the affected limb. In dogs, they are placed and maintained **for 7-10 days**. Velpeau slings are placed on the front limb to prevent weight-bearing. They are often placed after **medial shoulder instability surgery**. Spica splints are large padded bandages placed over the affected limb and torso, often in order to immobilize proximal fractures. Schroeder-Thomas splints represent another type of splint that has been used in the past for fracture immobilization.





Question

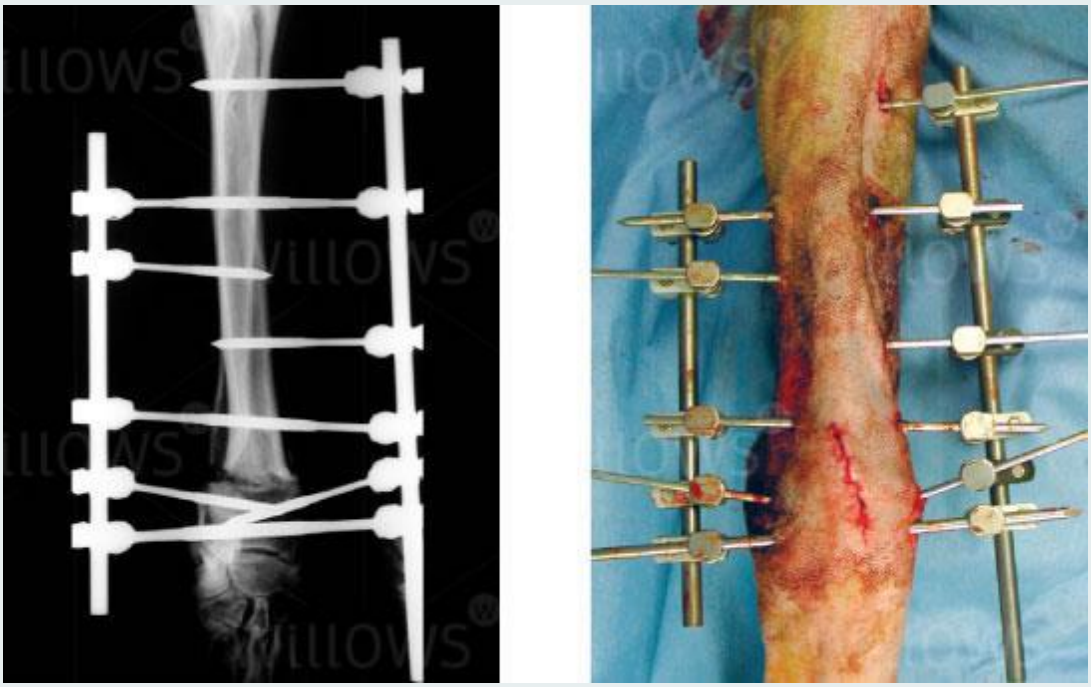
A 2-year old female spayed German shepherd presents for a right forelimb lameness and radial valgus in the right antebrachium. Which of the following is a possible therapeutic option for this dog?

- Corrective osteotomy
- Periosteal stripping of the concave aspect of the bone
- Arthrodesis of the elbow
- Casting the limb, activity restriction, and non-steroidal anti-inflammatory drugs

Explanation - The correct answer is corrective osteotomy. Corrective osteotomies of the radius and ulna are often performed to relieve pain and the functional abnormalities induced by angular limb deformities.

The fore limbs are more commonly affected than the hind limbs. This is partly because in the forearm (antebrachium) there are two bones that grow alongside each other (the radius and ulna). If one of these bones grows faster than the other, the limb will develop abnormally and become bent or twisted. Typically the paw will deviate outwards.

Photograph and X-ray of a German Shepherd Dog showing a deformed antebrachium (Valgus). The right paw deviates outwards.



X-ray and photograph following surgery showing the straightened limb. The cut bones have been stabilised with pins placed through the skin and connected to bars on the inside and outside of the limb (known as an external skeletal fixator type II).

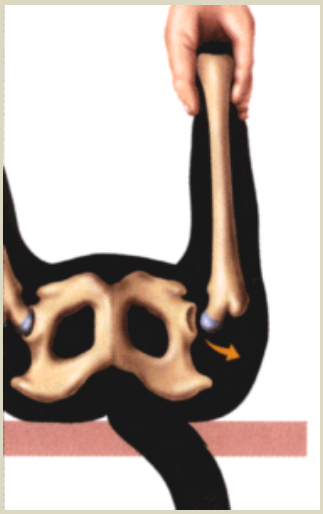
Question

A positive Ortolani sign occurs in affected dogs when manipulating this bone.

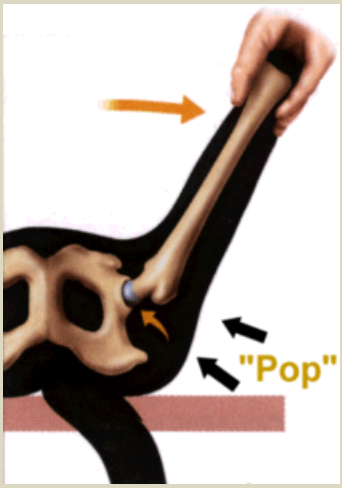
- Femur
- Radius
- Humerus
- Tibial

Explanation - The correct answer is femur. During manipulation of the femur one may hear/feel a "clunk" which is actually subluxation of the coxofemoral joint. This test is important to perform in puppies in order to assess for hip dysplasia. The positive **Ortolani sign indicates joint laxity**.

Tibial thrust is a finding associated with cranial cruciate rupture



In a dog suffering hip dysplasia, femoral head has moved away from acetabulum



Ortalani sign: an audible pop is heard as the femoral head slips back to the center of the acetabulum

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Question

A 4-year old male intact Rottweiler presents for right hindlimb lameness that has been progressive over the past 6 months. The dog was started on carprofen 3 months ago, which helped initially, but the lameness has acutely worsened more recently. You are able to localize the source of pain to the stifle, and you take radiographs of the site, which are shown below. What is the recommended treatment for this dog?

- Amputation of the affected leg with no adjunct therapy needed
- Amputation followed by chemotherapy
- Surgical correction of the abnormality
- Corticosteroids

Explanation - The correct answer is surgical correction of the abnormality. Although you cannot visualize ligaments on radiographs, this case is a classic example of a **cranial cruciate rupture** with the typical radiographic changes. Given the clinical history, it was probably initially a partial tear and progressed to a complete tear.

The radiographic findings of **joint effusion,** mild **degenerative changes to the bones,** and the **absence of a primary bone lesion** should lead you to this diagnosis. This should be confirmed with physical exam findings of stifle instability, **cranial drawer and/or tibial thrust** with medial buttress and pain on stifle extension.

Medical management of cruciate disease in dogs consists of strict rest for 6-8 weeks, NSAIDs, and often chondroprotective supplements such as glucosamine and chondroitin sulfate to delay progression of osteoarthritis.

This dog has failed NSAID therapy already, but strict rest might be a second option.

Surgery is preferable for a case this severe. There are many surgical options to repair this dog's stifle, ranging from lateral suture repair, tibial plateau leveling osteotomy, and several others.

Corticosteroids should not be used to treat cruciate ligament disease as they can actually lead to weakening of ligamentous structures.

This dog's history could also be consistent with a bone tumor such as osteosarcoma, which is typically managed with amputation and chemotherapy, but the radiographs in this case should lead you to a different diagnosis.

Question

A 5-month old male intact Doberman presents for forelimb lameness of 2 days duration. You localize the pain to the carpus on physical exam and take the following radiograph. What is your diagnosis?

- Hypertrophic osteodystrophy
- Septic arthritis
- Panosteitis
- Hypertrophic osteopathy

Explanation - The radiograph shows the classic signs of hypertrophic osteodystrophy. There is a double physeal line in the metaphysis and areas of bony proliferation. The metaphyses are flared as well.

Panosteitis has a patchy trabecular pattern.

Hypertrophic osteopathy is a disease of older animals generally associated with metastatic disease. The main radiographic finding is periosteal reaction around the metacarpals, tarsals and digits. More than one limb is usually affected and if seen, further diagnostics to look for a primary site of neoplasia is warranted.

Soft tissue swelling and joint effusion are seen with septic arthritis and bony changes can be seen with chronic disease.

Question

Which statement about hypertrophic osteodystrophy (HOD), as shown in the image below, is true in dogs?

- HOD can be extremely painful, causing lameness in dogs
- HOD usually occurs in dogs older than 7 years of age
- HOD occurs commonly in small breed dogs
- The treatment of choice for HOD is surgical
- HOD is unlikely to recur after one episode has resolved

Explanation - The correct answer is HOD can be extremely painful, causing lameness in dogs. HOD usually occurs in young, large breed dogs. It can recur after an episode resolves, and treatment usually involves analgesia and supportive care. Surgery is not a treatment option.

Radiographically, this condition appears as a line of lucency where the bone has been destroyed, typically parallel to the growth plates of the affected bones. This is sometimes referred to as a "double physis" sign.

Question

A 3-month old dog presents for acute lameness, and you diagnose a fracture based on the radiograph below. You contact a surgeon to repair the fracture and explain to him that the dog has what type of fracture?

- Type V Salter-Harris fracture of the distal femur
- Type I Salter-Harris fracture of the distal femur
- Type III Salter-Harris fracture of the distal femur
- Type IV Salter-Harris fracture of the distal femur
- Long oblique femoral fracture

Explanation - Physeal fractures are commonly described in Salter-Harris nomenclature. In this system, a type I is a fracture through the physis, a type II is fracture partway through the physis extending up into the metaphysis, a type III is a fracture partway through the physis extending down into the epiphysis, a type IV is a fracture through the metaphysis, physis, and epiphysis, and a type V is a crush injury to the physis

Question

What structure is often damaged in dogs with cranial cruciate ligament ruptures?

- Medial meniscus
- Medial collateral ligament
- Lateral meniscus
- Lateral collateral ligament

Explanation - The correct answer is **medial meniscus**. The medial meniscus is commonly damaged in a dog with a CCL rupture because the meniscus is closely associated with the medial collateral ligament, which prevents the meniscus from moving around within the joint when the femoral condyle compresses and slides against it. The lateral meniscus is not associated with the collateral ligament and can freely move around when compressed by the femur.

Question

A 13-year-old, male neutered Labrador retriever patient presents for a quality of life consult. The owner is concerned that his dog has progressively become more painful in the hips. He was diagnosed with hip dysplasia at a young age and the owner elected to treat him conservatively by providing low impact exercise, maintaining a lean body weight, and administering non-steroidal anti-inflammatories as necessary for pain. There are several nutraceuticals available that have been touted as having some benefit in patients with osteoarthritis. Which of the following will result in an increased production of less inflammatory eicosanoids?

- Carnitine
- Chondroitin
- Glucosamine
- Omega-3 fatty acids

Explanation - Consuming a high concentration of omega-3 fatty acids (eicosapentaenoic acid and docosahexaenoic acid) has been shown to result in the preferential use of these compounds to form eicosanoids. Eicosanoids derive from either omega-3 or omega-6 fatty acids. Omega-6 eicosanoids are generally pro-inflammatory, while omega-3 eicosanoids are less inflammatory. Omega-3 fatty acid supplementation results in a decrease in pro-inflammatory omega-6 eicosanoids; providing potential benefit to patients with osteoarthritis.

Carnitine is thought to potentially aid in weight loss as it is involved in fat metabolism, but there are limited studies demonstrating significant clinical benefit to supplementation at this time.

Glucosamine is a precursor of glycosaminoglycans which is a major constituent of the joint and thought to be of great importance for joint health. **Chondroitin** is also an important constituent of cartilage and helps provide resistance to compressive force. It is commonly administered in conjunction with glucosamine. The amount of clinical benefit of glucosamine and chondroitin supplementation is not currently well established.

Question

What region of the bone is affected in hypertrophic osteodystrophy?

- Metaphysis
- Physis
- Diaphysis
- Epiphysis

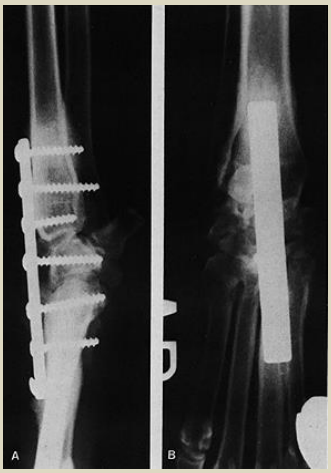
Explanation - The correct answer is the metaphysis. Hypertrophic osteodystrophy (HOD) is a condition seen in **young**, growing **large breed dogs**. It affects the metaphyses of all long bones and appears as an abnormal radiolucent line within the metaphysis. The disease is usually **self-limiting** but can cause limb deformities or systemic illness. The etiology is unknown but may be correlated with Ca/P levels and balance, vitamin C deficiency, and certain diseases including distemper.

Question

A 2-year old Golden Retriever presents to you after jumping from a height of 15 feet and sustaining a severe carpal hyperextension injury in his right carpus. The treatment of choice for this dog is _____.

- Carpal arthrodesis
- Cast for 6-8 weeks
- Splint and cage rest for 3 weeks
- Non-steroidal anti-inflammatory drugs and cage rest for 3 weeks

Explanation - The correct answer is carpal arthrodesis. Arthrodesis is the treatment of choice for severe hyperextension injuries to the carpus. This procedure is accomplished by debridement of the articular cartilage of the joints, implantation of a cancellous autograft into the debrided joint spaces, and fixing a bone plate across the injured joints.



Carpal Arthrodesis procedure is used to alleviate pain in a joint that has end-stage arthritis or other severe debilitating disease of a joint (hyperextension). The joint is permanently fused by removing the cartilage of the joint surfaces and placing bone graft in the joint; the joint is stabilized using metal implants so that the bone can heal together. Most dogs do well following surgery.

Question

An 11-year old Bloodhound presents to you for left hind limb lameness. On orthopedic examination, you detect pain on extension of the coxofemoral joint and extension of the stifle in both legs, more severe on the left. The owners do not have funds for surgical corrective procedures

and ask what they can use for pain relief of the dog's osteoarthritis at home. Which of the following is an appropriate recommendation?

- Recommend a bone scan and start the dog on tramadol until the procedure is complete
- Perform radiographs to rule out a bone tumor prior to prescribing glucosamine and chondroitin sulfate
- Perform bloodwork to assess baseline renal and hepatic function prior to prescribing carprofen
- Write a prescription for prednisone and advise that they can also give the dog over-the-counter ibuprofen

Explanation - Perform bloodwork to assess baseline renal and hepatic function prior to prescribing carprofen. This dog has classic clinical signs of osteoarthritis. If funds were unlimited, radiographs to confirm this would be acceptable, but in this situation, with multiple limbs and joints involved, they are probably unnecessary. Radiographic arthritis severity correlates poorly with severity of clinical signs. A bone scan is not indicated in this dog since you have already localized the source of pain.

NSAIDs are the mainstay of medical management for osteoarthritis. Additional options for management of osteoarthritis include glucosamine and analgesics such as tramadol or opioids. Corticosteroids are used occasionally but are not generally considered a treatment of choice; also they should never be combined with NSAIDs as this would be a very ulcerogenic recipe.

As many NSAIDs have the potential to adversely affect renal/liver function and/or are metabolized or excreted by those organs, it is important to assess their function before starting a dog on an NSAID, particularly in an older patient.

Key Points

- Progressive, chronic disease
- Seen in all animals but most importantly in dogs and horses
- Steroids are contraindicated
- Selective inhibition of Cox-2 receptors with NSAIDS is mainstay of medical management

- Common NSAIDs used in small animals:
  - All work via inhibition of either COX-2 alone or both COX-2 and COX-1. Inhibition of COX-1 is thought to be associated with unwanted side effects
    - Carprofen (Rimadyl®)
    - Firocoxib (Previcox®)
    - Deracoxib (Deramaxx®)
    - Meloxicam (Metacam®)
    - Feldene (Piroxicam®)
    - Etodolac (Etogesic®)
    - Tepoxalin (Zubrin®)

Question

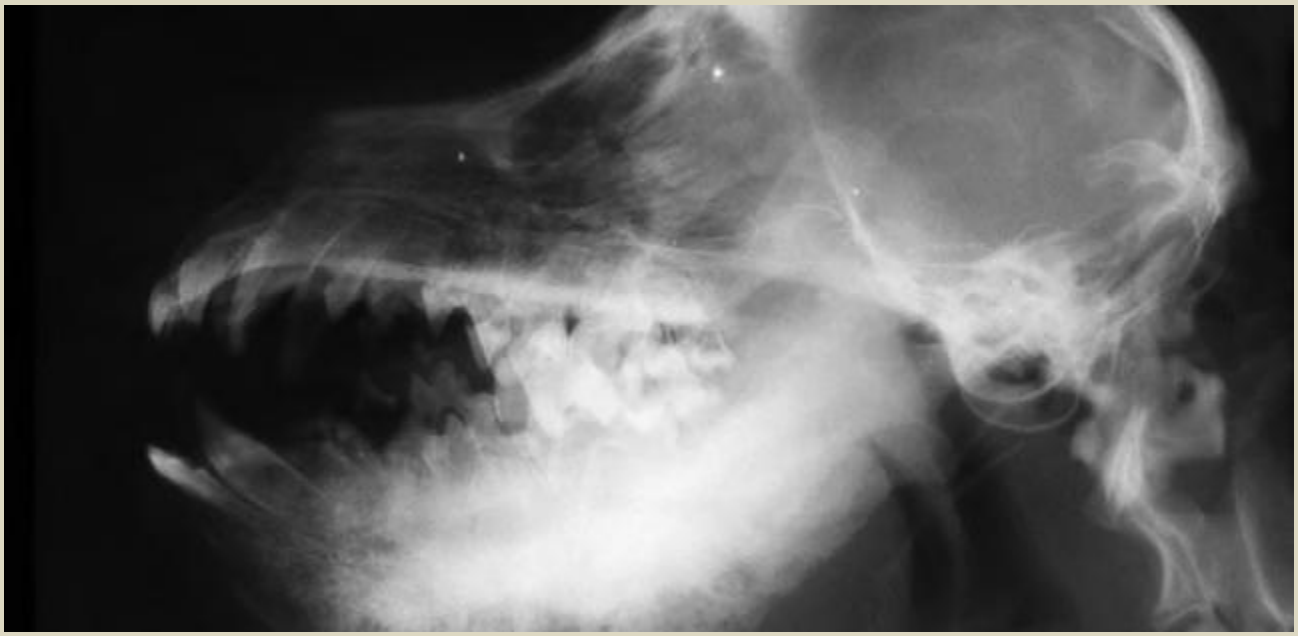
A 5-year old male castrated Mastiff presents for left pelvic limb lameness. The medial aspects of both stifles are thickened. Manipulation of the left stifle reveals cranial motion of the tibia relative to the femur and a clicking sound from the joint on flexion and extension. What is the most likely diagnosis?

- Left cranial cruciate ligament rupture with no meniscal cartilage tear
- Left caudal cruciate ligament rupture with no meniscal cartilage tear
- Left cranial cruciate ligament rupture with meniscal cartilage tear
- Left luxating patella

Explanation - The correct answer is left cranial cruciate ligament rupture with meniscal cartilage tear. The cranial motion of the tibia and medial thickening of the joint (also known as medial buttress) is consistent with the commonly torn cranial cruciate ligament. The clicking heard on flexion and extension is consistent with damaged medial meniscus cartilage found in the stifle.

Question

A 4-month-old terrier cross present for inability to eat. The puppy is bright, alert, and responsive on exam. Heart rate is 148, respiratory rate is panting, and temperature is 101.8. The puppy is extremely painful when his lower jaw is palpated, and cries and pulls away when you attempt to open his mouth. Sedated oral exam is unremarkable. Radiographs are available for review (see image). What do you tell the owner about prognosis?



- This will regress within a year, and symptomatic support is needed for discomfort.
- Surgical removal of dentigerous cysts will likely be curative, however long term dental disease is common.
- Chemotherapy can prolong quality of life for a few of months, however prognosis is grave.

- This can be cured with antibiotics based on culture and sensitivity. NSAIDs can be used for discomfort.

Explanation - Craniomandibular osteopathy (CMO) is seen in young dogs and is exemplified in this radiograph. Terrier breeds predominate, but CMO can be seen in any breed. The disease is self-limiting and **regresses typically by 1 year old.** It is thought to be a type of hypertrophic osteodystrophy (HOD) and occurs mostly in the mandible but can also affect the tympanic bulla, temporal bones, and temporomandibular joints. Treatment is supportive with nonsteroidal anti-inflammatories to control pain, similar to HOD. Radiographic signs will also regress with time.

Question

Which of the following is not performed as part of the repair of medial patellar luxation in a dog?

- Transposition of the tibial tuberosity
- Wedge resection
- Partial meniscectomy
- Lateral imbrication

Explanation - The correct answer is partial meniscectomy. There is no reason to remove the menisci, as these are not involved with patellar luxation. A wedge resection involves making a deeper trochlear groove for the patella to slide in. Lateral imbrication and transposition of the tibial tuberosity will help pull the patella a little more laterally, as they are usually predisposed to luxating medially.

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 (also called Trochlear wedge resection)
The patella rides in a groove at the bottom of the femur (thigh bone). 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 (or leg bones) will have rotated. In particular, the crest on the tibia where the thigh muscle (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

Which of the following is not a treatment option for a ruptured cranial cruciate ligament for a dog?

- Weight reduction
- Leveling of the tibial plateau
- Recession trochleoplasty
- Cranial transposition of the fibular head

Explanation - The correct answer is recession trochleoplasty. This technique is part of a surgical repair method for luxating patellas. Weight reduction is nearly always a therapeutic component to managing orthopedic disease. Leveling of the tibial plateau and cranial transposition of the fibular head are two surgical options for correcting a torn cranial cruciate ligament.

Question

A 4-month old male intact Great Dane presents for lethargy and reluctance to stand. He is non-weight bearing on his left forelimb. You localize pain and swelling to the distal radius and ulna and take the following radiograph. What do you tell the owner about recovery and prognosis?

- Prognosis is guarded. Recovery includes antibiotics and joint lavage.
- Prognosis is poor. Amputation is recommended and there is a high rate of metastasis to the lungs. Survival time is less than 1 year even with chemotherapy.
- Prognosis is usually good but angular limb deformity is a possible complication. Recovery relies on supportive care and can take days to weeks. Most dogs with this disease will have 1 or 2 episodes and recover.
- Prognosis is good but angular limb deformity is a possible complication as the physis is involved. Coaptation is recommended and healing should occur rapidly as he is still young.

Explanation - Hypertrophic osteodystrophy (HOD) is a disease of large, rapidly growing dogs. The distal metaphyses of the forelimbs are more commonly affected and can be swollen. Radiographic findings include metaphyseal flaring and the classic "double physeal line." Treatment is supportive with anti-inflammatories or steroids, pain medications, and activity restriction.

Septic arthritis can cause lameness, joint pain and swelling. Radiographs can show bone destruction and osteolysis with chronic disease as well as irregularities in the joint space.

Osteosarcoma causes bony lysis and proliferation at the metaphyseal region of long bones. These are commonly in the distal radius/ulna, proximal humerus, proximal tibia, and distal femur ("away from the elbow and towards the knee"). Age does not rule out this disease as it has been diagnosed in animals as young as 6 months.

Question

Which of the following is an appropriate objective in the repair of an articular fracture in a dog?

- 6-8 weeks of strict post-operative rest
- Avoid rigid fixation of the fracture
- Early return to function
- 50% or greater alignment

Explanation - The correct answer is early return to function. With articular fractures, the 3 major goals of the clinician are:

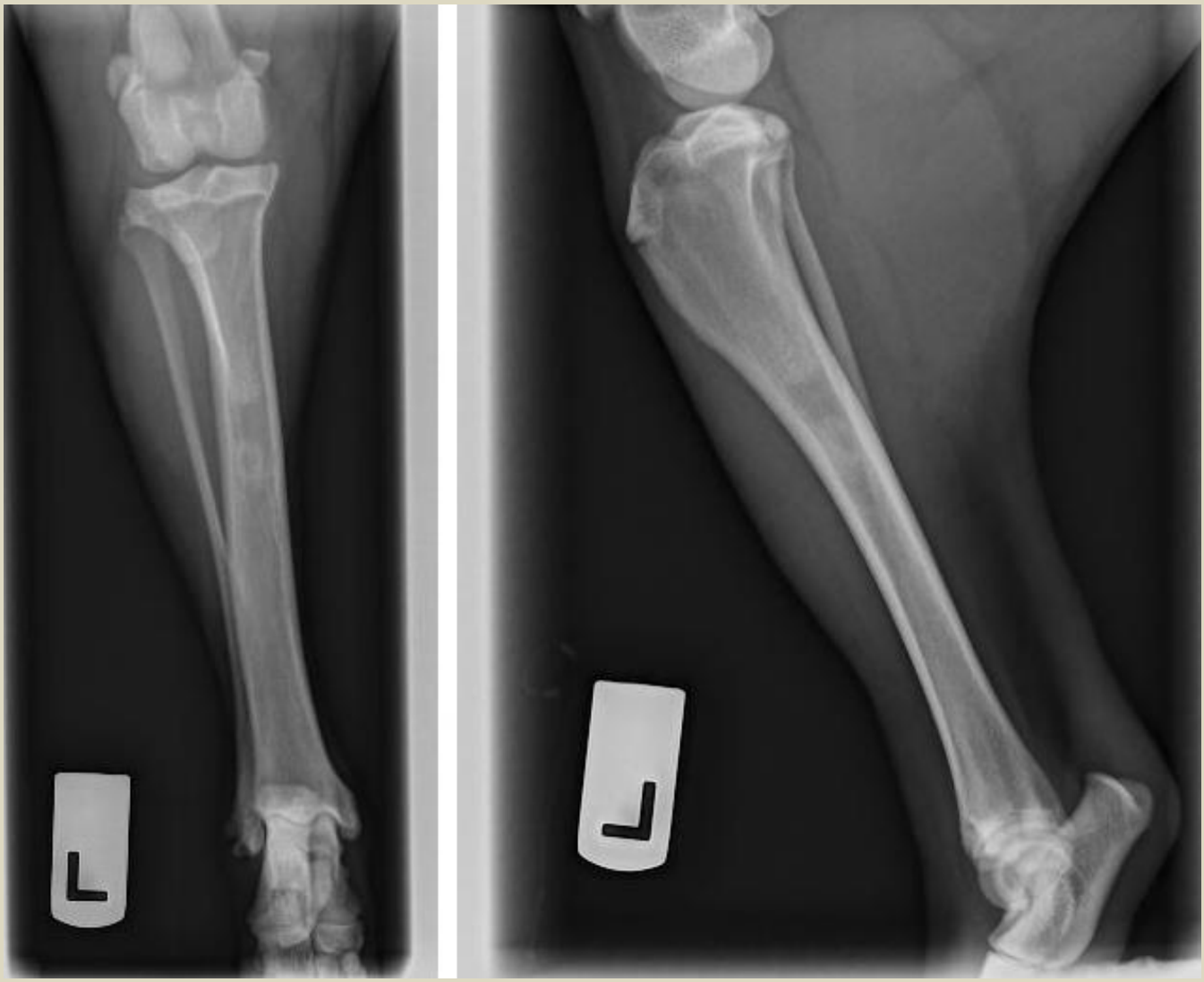
1) **Rigid fixation of the fracture fragments**; neglecting to do this will result in loose fracture fragments within the joints that will promote osteoarthritis.

2) **Anatomic realignment** (50% or even 75% is not adequate with articular fractures, in contrast to long bone fractures)

3) **Early return to function**. With long bone fractures, extended rest is recommended to promote stability and healing of the bone. The opposite is true in articular fractures where prolonged rest after repair will promote fibrosis, causing decreased range of motion in the joint.

Question

A 9-month old male pitbull presents to you for hindlimb lameness that developed suddenly several days ago and has gotten worse. On your examination, the dog is painful on palpation of the left tibia. You take radiographs of the tibia which are shown below. Which of the following is the most appropriate treatment for the suspected condition?



- Ampicillin
- Fluconazole
- Splint stabilization
- Carprofen

Explanation - This is a case of panosteitis based on the young age of the patient and radiographic presence of **focal intramedullary densities within the tibial diaphysis**. Minor differentials could include osteomyelitis. Panosteitis is a **self-limiting**, painful condition characterized by limping and lameness. It typically affects the **long bones of young dogs**, usually between the ages of 5 to 18 months. It can occur with any breed, but it is more common in medium- to large-sized dog breeds.

Treatment is primarily supportive consisting of **limiting activity and anti-inflammatory drugs**. Therefore, carprofen is the best answer choice listed. Pain lasts from weeks to months and resolves

in nearly all cases. While these treatments reduce the pain associated with the condition, they may not alter the duration or course of the disease.

Question

A 6-month old male intact Weimaraner presents for the right forelimb swelling seen in the picture. He is also pyrexic at 104 F and reluctant to walk. His litter-mate had the same clinical signs which resolved with a course of prednisone. What should you ask the owners to support the diagnosis you suspect?

- Does the dog have a travel history?
- Was the dog vaccinated recently?
- Has the dog been in contact with snakes, spiders or other wildlife?
- Is there a history of trauma?

Explanation - This puppy likely has **hypertrophic osteodystrophy** (HOD). Weimaraners are predisposed and litter-mates will commonly be affected. Although the exact cause is unknown, the leading hypothesis is **recent vaccination** leading to hyper-reactivity of the immune system. In a study of 53 Weimaraners with HOD, all had been vaccinated within the past 30 days.

Trauma resulting in a fracture or septic arthritis is untreatable with steroids. A snake or spider bite can cause a large amount of swelling but resolution with oral steroids alone may not be enough. Fungal disease can cause bony changes as well but if the litter-mate was affected by the same disease process, steroids should have worsened the disease.

Question

What is the most common site of the bone for primary osteosarcoma to occur in dogs?

- Epiphysis
- Diaphysis
- Cortex

- Metaphysis

Explanation - The correct answer is metaphysis. Osteosarcoma usually occurs at the metaphysis, probably because most cell division occurs there. This is in contrast to metastatic bone tumors which usually occur in the diaphysis, likely because the blood supply comes in there.

Question

A 4-year old female spayed Australian Shepherd presents for recurrence of left thoracic limb lameness. The dog has a history of a left radial fracture 12 weeks ago, which was repaired with a bone plate and has since fully healed. Over the past three days, the dog started limping on the left thoracic limb and has developed a draining tract over the site of the previous fracture repair. Radiographs of the limb show soft tissue swelling and lucencies around the bone plate and several of the screws. What should be done next?

- Remove the bone plate and start antibiotics
- Remove one of the screws with lucent surroundings for culture and sensitivity, and start antibiotics after sensitivity results come back
- Remove the screws with surrounding lucencies, replace them with new screws, and start antibiotics
- Start antibiotics

Explanation - The correct answer is remove the bone plate and start antibiotics. Implants such as bone plates and screws can often be a nidus for infection. The lucencies around the bone plate and screws suggest instability of the implants, and the draining tract is suggestive of infection. Since the bone is already fully healed, the best treatment for this dog would be to remove the bone plate and screws and start antibiotics.

Question

A 2-month old male mixed breed puppy is diagnosed with a urinary tract infection. Culture and sensitivity of the urine show the bacteria to be susceptible to enrofloxacin. Why should a different antibiotic be chosen over enrofloxacin?

- Enrofloxacin causes enamel hypoplasia and teeth staining in young animals
- The half-life of enrofloxacin is greatly reduced in puppies
- Enrofloxacin causes cartilage abnormalities in growing puppies
- Enrofloxacin does not reach therapeutic levels in the urinary tract

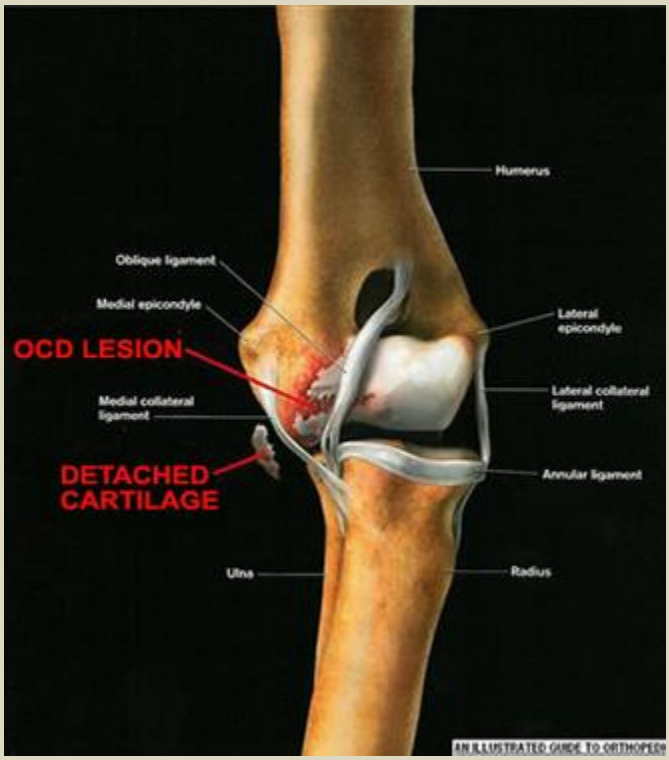
Explanation - The correct answer is enrofloxacin causes cartilage abnormalities in growing puppies. Bubble-like changes to articular cartilage can be seen when given to dogs from 2- to 8-months of age. Enamel hypoplasia and teeth staining is caused by tetracycline antibiotics given to young animals. With enrofloxacin, therapeutic levels are reached throughout most of the body except CSF.

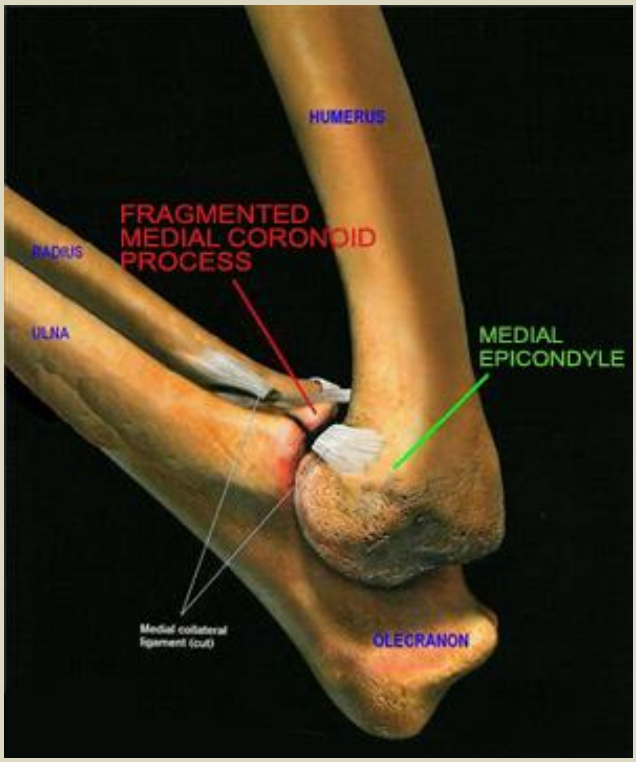
Question

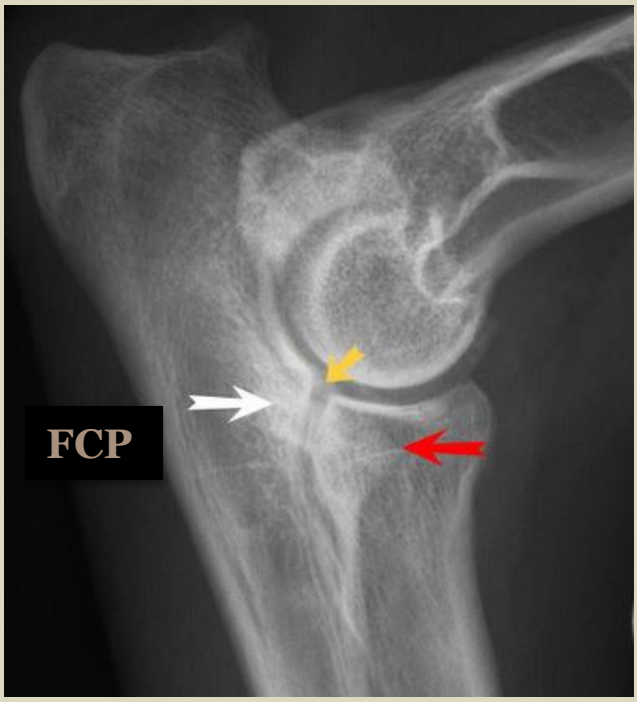
An 8-month old female Newfoundland presents for further evaluation as a result of a recent onset of intermittent lameness in the right forelimb. On physical examination, there is pain on flexion and extension of the elbow joint. Radiographs of the elbow show a blunted medial coronoid process, sclerosis of the subchondral bone along the trochlear notch of the ulna and mild degenerative joint disease. What recommendations will you make to the owners?

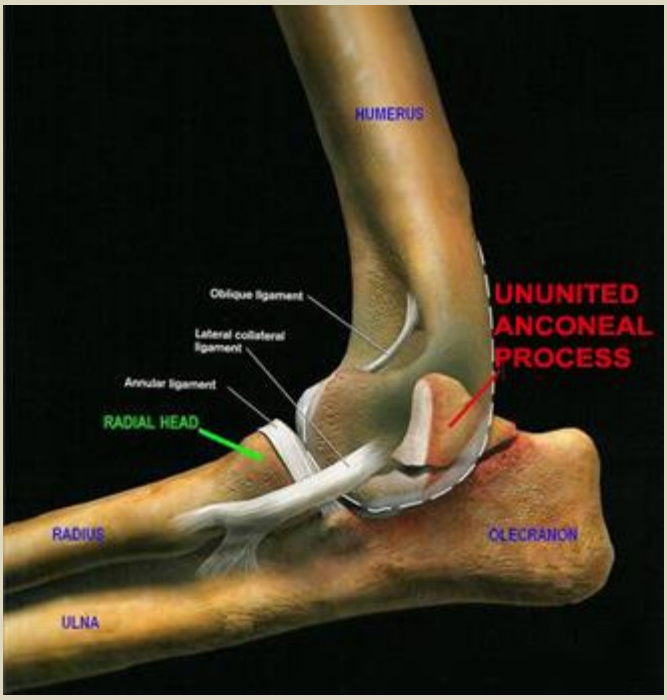
- Obtain joint cultures and start doxycycline immediately
- Arthroscopy for evaluation and treatment of fragmented medial coronoid process
- Place a lateral splint and immobilize the limb for six weeks
- Begin strict exercise restriction and anti-inflammatory therapy

Explanation - The correct answer is Arthroscopy for evaluation and treatment of fragmented medial coronoid process. The radiographic findings are consistent with a fragmented medial coronoid process. A CT scan may be recommended to help evaluate the joint prior to arthroscopy; however, this was not offered as a choice. During arthroscopy the surgeon will be able to carefully evaluate the joint for other components of elbow dysplasia such as OCD and elbow incongruency. In addition to evaluation, the surgeon will also be able to treat the condition by performing a sub-total coronoidectomy and removing any diseased cartilage if OCD is present.









Question

Which of the following is most likely to have caused all of the abnormalities seen in this radiograph of a Labrador Retriever?

- Metastatic neoplasia
- Trauma
- Nutritional deficiency
- Fungal disease
- Congenital disease

Explanation - The abnormalities that you hopefully identified in this film are:
1) There is a right-sided pubic fracture
2) There is a left-sided pubic fracture
3) The ischium on the left side is fractured
4) There is a right-sided sacroiliac subluxation
5) The left ilial wing is fractured
6) There is increased opacity in the retroperitoneal space.

The only possible cause for all of these abnormalities is severe trauma, such as being hit by a car. This caused the fractures and luxation, and the increased retroperitoneal opacity is most likely hemorrhage, although urine from a torn ureter is possible (however, the bladder appears normal).

Question

A 1-year old male Shar Pei presents with the clinical signs shown in the photo below. Recognizing that this sign is classic for Familial Shar Pei Fever (FSF), what other finding is LEAST likely to be present?

- Normal synovial fluid cytology
- Body temperature between 105 and 107 degrees F
- Proteinuria
- Panosteitis

Explanation - Familial Shar Pei Fever (FSF) is characterized by high fever and unilateral or bilateral tarsal swelling as seen in the photo. This swelling affects tissues around the joint, rather than within the tarsus itself. FSF may be a distinct entity from amyoloidosis but animals with FSF are predisposed to amyoloidosis, resulting in proteinuria. Panosteitis is not associated with FSF.

Question

A 12-year old pit bull mix presents for limping on the left hind leg off and on for a 3-month duration. The dog has never traveled out of Washington, and is on flea and tick preventative. The dog is current on vaccines and heartworm preventative. On physical exam, the dog resists flexion and extension of the left limb and cries and attempts to bite when the leg is palpated. No abnormalities are palpated. A III-IV/IV lameness is noted when the dog walks. CBC shows a moderate leukocytosis with neutrophilia and monocytopenia. The chemistry panel is unremarkable. T4 and UA are pending. The rest of the physical exam is unremarkable. Based on the radiographic results (see image) what is the most appropriate next step?

- Thoracic radiographs and fungal serology
- Hind limb amputation
- Anti-inflammatories and rest
- Antibiotics and steroids

Explanation - Osteolytic lesions along the distal femur are highly suspicious of osteosarcoma (OSA). Given the age and clinical history it should be your first differential. The other differential would be fungal disease such as coccidioidomycosis (Valley Fever). This fungal infection is seen predominantly in the southwestern United States, but should not be excluded without full testing. The appropriate next step to differentiate OSA from Valley Fever would be thoracic radiographs to look for metastases and fungal serology to determine exposure and antibody levels to fungal diseases. Chest films are available for review below which show metastatic disease. Of note, coccidioidomycosis can also affect the lungs, leading to an interstitial, bronchiolar, multifocal, or alveolar pattern as well.

Gold standards for diagnosis of OSA are biopsy of the affected boney lesion. Remember OSA should

not cross the joint. Elevations in alkaline phosphatase and/or gross visible metastatic lesions give a worse prognosis with shorter longevity, even with aggressive treatments.

Question

A 6-year old male neutered Springer Spaniel presents for lethargy and difficulty walking. The owner reports that over the past week, the dog has become increasingly listless with decreased appetite and seems stiff as though he is "walking on eggs". You examine the dog and find joint pain and effusion bilaterally affecting the carpi, tarsi, stifle, and elbow. The dog also appears uncomfortable on firm spinal palpation. T-103.1 F, HR-118 bpm, RR-30 bpm with intermittent panting. The remainder of your physical exam is within normal limits. You perform a complete blood count and chemistry panel revealing the following:

Hematocrit - 32% (Normal 36%-50%)
White Blood Cell Count - 14,500/ul (Normal 7,000-17,000/ul)
Thrombocytes - 195,000/ul (Normal 200,000-900,000/ul)

Calcium - 10.8 mg/dl (Normal 8-11 mg/dl)
Phosphorus - 2.9 mg/dl (Normal 2.4-4.9 mg/dl)
Total Protein - 6.9 g/dl (Normal 5.5-7.3 g/dl)
Alkaline Phosphatase - 78 IU/l (Normal 10-80 IU/l)
Alanine Aminotransferase - 18 IU/l (Normal 3-33 IU/l)
Blood Urea Nitrogen - 17 mg/dl (Normal 10-22 mg/dl)
Creatinine - 1.1 mg/dl (Normal 0.5-2.2 mg/dl)
Glucose - 91 mg/dl (Normal 60-125 mg/dl)

Urinalysis was within normal limits and urine culture was negative. Radiographs of the affected joints show joint effusion to no bony abnormalities. You perform arthrocentesis of each carpus, the left elbow and right tarsus. You are able to aspirate up to about 0.3ml from each joint; the fluid is thin and turbid; you submit the fluid for analysis. The protein level in the joint fluid ranges from 3.2-3.5 g/dl and the nucleated cell counts are 12,000-18,000 cells/ul consisting primarily of neutrophils, approximately 90% of which are nondegenerate. Smaller numbers of mononuclear cells are present. Culture of the synovial fluid is negative and a panel for tick titers is all negative.

Which of the following treatments is most appropriate based on the presumptive diagnosis?

- Plasma transfusion and intravenous fluids

- Doxycycline and enrofloxacin
- Arthroscopy and amoxicillin
- Enalapril and furosemide
- Prednisone and azathioprine

Explanation - This case is most consistent with immune-mediated polyarthritis (IMPA). IMPA is often classified as being erosive or nonerosive. This case is an example of the nonerosive form based on the lack of radiographic evidence of cartilage or subchondral bone destruction. The erosive form is rare and is thought to account for <1% of the cases of IMPA.

Nonerosive IMPA can be associated with a variety of systemic diseases or precipitating factors including systemic infectious, inflammatory or neoplastic disease or reactions to drugs or vaccines but it is most commonly idiopathic with no association to another disease process. In the described case, no risk factors or signs of concurrent disease were mentioned. Tick-borne arthropathy is less likely with the negative tick titers obtained, but since not every type of tick can be tested for, some clinicians may opt to treat with an antibiotic like doxycycline concurrently with the immunosuppressive drugs.

The clinical signs associated with IMPA are anorexia, weight loss, fever, lethargy, and lymphadenopathy. Up to 25% of dogs present with only nonspecific signs of systemic illness and without apparent gait abnormality or joint effusion. It is an important consideration for dogs with fever of unknown origin and may be the cause up to 20% of the time. IMPA is diagnosed by synovial fluid analysis although additional baseline diagnostics are indicated to screen for potential systemic or infectious causes. Normal synovial fluid is clear and viscous with <2.5 g/dl protein and <3,000 cells/ul with predominantly mononuclear cells. Joint fluid in IMPA may be thin, turbid, and increased in volume with higher amounts of protein and cells, often primarily nondegenerate neutrophils.

Treatment of idiopathic IMPA centers on immunosuppressive therapy, often starting with prednisone and sometimes including an additional immunosuppressive drug such as azathioprine or cyclophosphamide. About 80% of dogs will respond to immunosuppressive doses of prednisone; however, about one half of dogs require long-term or additional drug therapy to maintain remission.

Question

A 4-year old female spayed Doberman pinscher presents for lethargy and decreased appetite. The owner reports that over the past week, the dog has become increasingly listless and reluctant to go for walks You examine the dog and find mild joint effusion of the tarsi. T-104.3 F, HR-102 bpm, RR-32 bpm. The remainder of your physical exam is unremarkable. Complete blood count and chemistry panel show:

Hematocrit - 28% (Normal 36%-50%)
White Blood Cell Count - 15,500/ul (Normal 7,000-17,000/ul)
Thrombocytes - 246,000/ul (Normal 200,000-900,000/ul)

Calcium - 9.8 mg/dl (Normal 8-11 mg/dl)
Phosphorus - 3.4 mg/dl (Normal 2.4-4.9 mg/dl)
Total Protein - 5.8 g/dl (Normal 5.5-7.3 g/dl)
Alkaline Phosphatase - 68 IU/l (Normal 10-80 IU/l)
Alanine Aminotransferase - 14 IU/l (Normal 3-33 IU/l)
Blood Urea Nitrogen - 20 mg/dl (Normal 10-22 mg/dl)
Creatinine - 1.6 mg/dl (Normal 0.5-2.2 mg/dl)
Glucose - 104 mg/dl (Normal 60-125 mg/dl)

Urinalysis is within normal limits and urine culture was negative. Radiographs of the tarsal joints show joint effusion to no bony abnormalities. You perform arthrocentesis of each tarsal joint. You are able to aspirate about 0.15 ml from each joint; the fluid is thin and turbid. You do not have enough joint fluid to submit for analysis and culture so you make a slide for cytology which shows 3-4 nondegenerate neutrophils per high power field and occasional mononuclear cells. You are suspicious that the dog may have immune-mediated polyarthritis (IMPA). Which of the following are all known potential inciting causes or predisposing factors for this condition?

- Hemangiosarcoma, fungal osteomyelitis, cruciate ligament disease
- Synovial cell sarcoma, renal insufficiency, hyperthyroidism
- Penetrating joint trauma, gastric dilatation-volvulus, ingestion of onions
- Hypothyroidism, anal sac carcinoma, leptospirosis vaccination
- Systemic lupus erythematosus, sulfonamide exposure, mammary adenocarcinoma

Explanation - IMPA is often classified as being erosive or nonerosive. This case is an example of the nonerosive form based on the lack of radiographic evidence of cartilage or subchondral bone destruction. The erosive form is rare and is thought to account for <1% of the cases of IMPA.

IMPA can be associated with a variety of systemic diseases or precipitating factors including systemic infectious, inflammatory or neoplastic disease or reactions to drugs or vaccines. Systemic lupus erythematosus is a progressive multiorgan autoimmune disease which frequently manifests with polyarthritis and may also cause concurrent hemolytic anemia, thrombocytopenia, glomerulonephritis, skin lesions, and lymphadenopathy. Drug induced IMPA has been associated with a variety of medications including sulfonamides, lincomycin, erythromycin, cephalosporins, phenobarbital, and penicillins. Vaccine associated polyarthritis has been suggested but association has been difficult to prove. Some breeds of dogs have particular predispositions to IMPA including Akitas (in association with meningitis) and Shar-Peis (in association with "Shar-Pei fever"). IMPA can also be associated with chronic infectious or inflammatory diseases including pyoderma, urinary tract infections, pneumonia, endocarditis, mastitis, heartworm, fungal infection, and severe periodontal disease. Chronic inflammatory bowel disease, intestinal overgrowth, and ulcerative colitis have been associated with IMPA. Distant neoplasia has also been associated with IMPA including squamous cell carcinoma, mammary adenocarcinoma, leiomyoma, heart based tumors, and seminoma.

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Treatment of idiopathic IMPA centers on immunosuppressive therapy, often starting with prednisone and sometimes including an additional immunosuppressive drug such as azathioprine or cyclophosphamide. About 80% of dogs will respond to immunosuppressive doses of prednisone; however, half of dogs require long-term or additional drug therapy to maintain remission.

Question

You are looking at Diff-quick stained slides of joint fluid from a 7-year old Labrador with shifting-leg lameness and fever. You see a moderate to large number of nondegenerate neutrophils, accounting for 95% of the cell population, and scattered small mononuclear cells (accounting for 5% of the cell population). How would you describe this joint fluid?

- Pyogranulomatous inflammation
- Suggestive of osteoarthritis
- Granulomatous inflammation
- Suppurative, nonseptic inflammation
- This is a normal cell population for joint fluid
- Suggestive of neoplasia

Explanation - The marked predominance of nondegenerate neutrophils without apparent intracellular organisms makes this suppurative, nonseptic inflammation. Primary differentials include immune-mediated polyarthritis and polyarthritis due to rickettsial disease.

A small mononuclear cell population is normally present in joint fluid, but neutrophils are not. "Granulomatous" describes a predominantly mononuclear cell population (lymphocytes, macrophages, plasma cells), and "pyogranulomatous" describes a mixed population of neutrophils and mononuclear cells. Osteoarthritis may result in a mild increase in mononuclear cells with a few neutrophils, but should not produce markedly inflammatory joint fluid.

Question

An 8-week old male kitten has just presented to your clinic after having one of his paws crushed by the owner who accidentally closed one of the household doors on his foot. The cat is very vocal on presentation and non-weight bearing. A general examination found no overt health problems and the only injury localized is that of the metacarpal region. Radiographs are performed and a fracture of metacarpal II and IV are diagnosed. Both fractures are noted to have about 50% overlap with their respective fragment. What is the best treatment option for this kitten.

- Dynamic compression plate stabilization of metacarpal II and IV
- Spoon splint bandage changes every 2 weeks for a total of 8 weeks

- Dowel pin fixation of metacarpal II will result in sufficient stability for healing
- Spoon splint bandage with bandage changes every 5 days for a total of 2 weeks

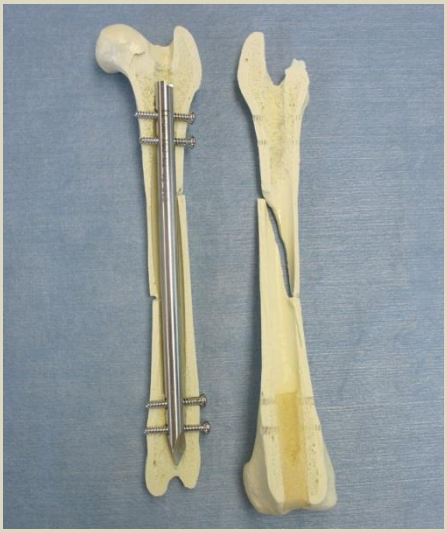
Explanation - There are several aspects to consider when determining the best treatment. The age of this cat provides an enormous advantage to bone healing. This is a kitten and bone plating and dowel pinning will be exceptionally challenging in a patient this small. A cat this young will likely achieve complete healing in approximately 2 weeks. Metacarpal bone fragments that have decent apposition and less than 50% displacement will usually heal with conservative management and proper stabilization. Adult cats with fractures involving both weight bearing metacarpals or severely displaced fractures are considered good candidates for surgery. Therefore, the best answer is to place a spoon splint for 2 weeks. Note that the bandage is changed every 5 days to prevent any restriction of growth and development secondary to the splint. In adult animals, bone healing typically will occur in 8-12 weeks.

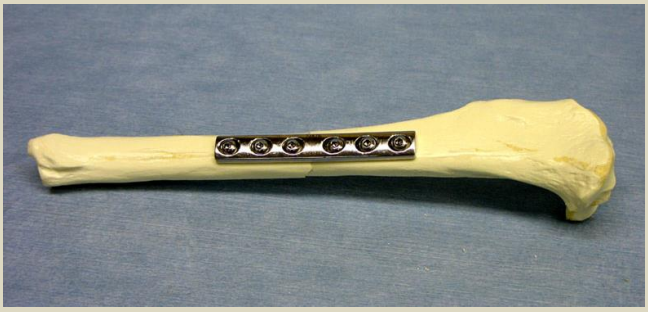
Question

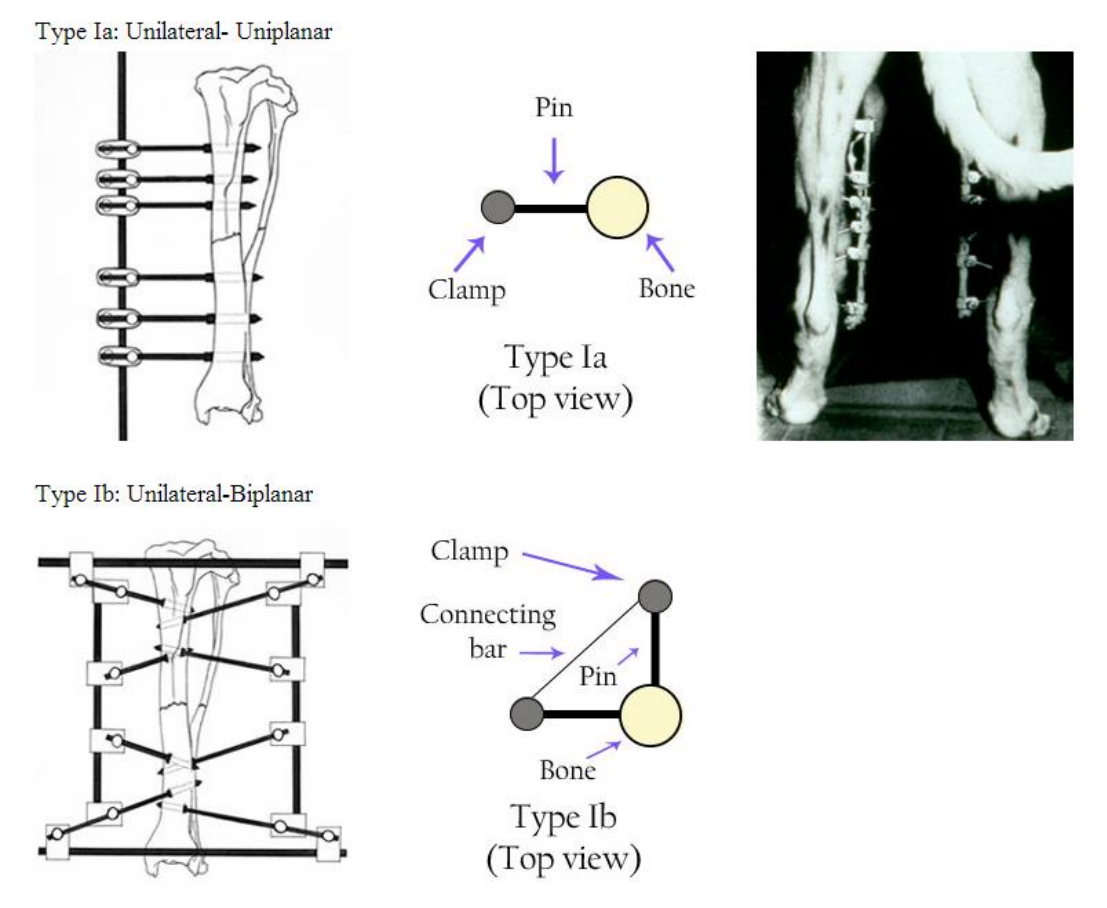
A cat presents with a mid diaphyseal femoral fracture. The cat lives both indoors and outdoors and the owner is unsure of how the fracture occurred. Which repair method will result in the highest likelihood of failure?

- Intramedullary pin
- Type I External Fixation
- Interlocking nail
- Limited contact dynamic compression plate with 6 cortices engaged in each fragment

Explanation - The least effective repair method of the choices listed is to place an intramedullary pin in a femoral fracture. Intramedullary pins are strongest in bending but do not provide enough stability by themselves. They are great as an adjunct to a bone plate. Placing a Type I external fixator on a femur is acceptable, however many feel that the fixator pins result in substantial morbidity when going through the large musculature of the femur. A limited contact dynamic compression plate is an acceptable method of repair as well as an interlocking nail which would provide great strength in bending, limit axial motion, and limit rotational motion.







External Fixation Type 1

Question

A stray cat has been dropped off by a good samaritan after having witnessed the cat jump from a 3-story abandoned warehouse. On physical examination the cat has an avulsed lower lip and is very lame on the front left forelimb. Thankfully the cat had a microchip and the owners are eventually located. However, they refuse to spend any money on additional diagnostics. What is the best treatment option for the injuries likely sustained to the left forelimb.

- Cage rest for the scapular luxation sustained
- Dynamic compression plating of the distal radial fracture
- Reduction of traumatic elbow luxation
- Carpal arthrodesis

Explanation - It is instinctive for cats to always try to land on their feet and as a result they are predisposed to sustaining hyperextension injuries to the carpal joints when landing from a distance. Disruption of the carpal ligaments carries a guarded prognosis with conservative therapy and stabilization via carpal arthrodesis is strongly recommended.

Distal fractures of the radius are a common condition seen in small breed dogs as a result of

having decreased blood flow to the distal aspect of the radius. Scapular luxation is rare and surgical repair is recommended. Traumatic luxation is not commonly seen secondary to landing from a high distance.

Question

The 4-year old cat in the photo was brought to your clinic after jumping out of a high-rise window. You are repairing a mandibular symphyseal separation (fracture) with cerclage wire as shown in the photo. How long after surgery should you plan to wait until removing the cerclage wire?

- 3 weeks
- 6 weeks
- 10 weeks
- 16 weeks

Explanation - Separations of the mandibular symphysis are seen commonly with "high-rise syndrome" or when cats fall from heights because they frequently are able to rotate in mid-air, landing on all 4 feet to break the fall but often also landing with their lower jaw hitting the ground at the same time. This is sometimes referred to as a symphyseal fracture but it is not a true fracture as the mandibular symphysis never fully ossifies or fuses.

The standard treatment is circummandibular cerclage wire placed caudal to the lower canine teeth with the wire tightened once the hemi-mandibles are aligned. Symphyseal separations typically take 5-7 weeks to heal. You should expect to remove the cerclage wire under heavy sedation in about **6 weeks**.

Question

A 3-year old, domestic long hair, indoor-outdoor cat was brought to the clinic, after sustaining unknown trauma while roaming the neighborhood. The owner was particularly concerned about the right hind limb that the cat refused to place any weight on. The cat is particularly fractious and it was necessary to gas him down in order to obtain a physical exam. Multiple abrasions are noted throughout the skin. When examining the right hind leg, the cat's heart rate is noted to rise on palpation of the tarsus. Subjectively there seems to be more laxity when manipulating the tarsal joint laterally. Which anatomical structure has likely been compromised?

- Medial collateral ligament
- Long digital extensor tendon
- Superficial digital flexor tendon
- Lateral collateral ligament

Explanation - Disruption of the medial collateral ligament will lead to increase lateral give of the tarsal joint and a greater joint opening noted on the medial aspect. The reverse would be observed with a disruption of the lateral collateral ligament. The long digital extensor and the superficial digital flexor tendon do not play a role in stabilizing the tarsal joint.