A *Rottweiler puppy* makes an outstanding human companion dog.

Rottweilers are highly intelligent, affectionate, and loyal and despite popular opinion they can be a very sensitive breed. You'll find Rotties are most definitely "people" dogs who form a very close and special bond with their human family.

Having said the above it must also be stated that a Rottweiler puppy is not suited to every dog lover though.

Bringing a Rottweiler puppy into your life brings with it a whole range of added responsibilities. In the wrong hands a dog such as a Rottweiler becomes an extremely dangerous proposition. Rotties are powerful; slow maturing, headstrong and often prone to dominant behaviors. For this reason puppy selection, socialization and obedience training are absolutely essential to address correctly when bringing a Rottweiler puppy into your life. To be honest I believe that these ingredients are necessary for all dog breeds but I'd say it is especially important for Rottweilers due to their awesome strength and size.

The recent bad press and diminished reputation of the Rottweiler says more about the shameful and unscrupulous breeding practices and irresponsible or naive Rottie owners than it does about the breed itself History of the Rottweiler

Rottweilers descend from the ancient working mastiff breeds of southern German and Rome. Rotties were initially utilized to herd cattle, guard their owners, guard resources and later on as "butcher's dogs".

The Rottweiler has now spread far and wide to all parts of the globe. They are highly valued for their working capabilities and as pets. The temperament and intelligence of the Rottweiler has seen them successfully employed in various "jobs" such as – herding, military work, customs work, schutzhund, police work, as therapy dogs, tracking, carting, obedience and all kinds of protection duties.

Rottweiler Puppy Size & Appearance

A well bred Rottweiler is robust and athletic for its size. They are a unique combination of power, strength, agility and endurance. A fit, healthy and alert Rottweiler is a beautiful sight.

A male Rottweiler puppy will grow to be 61 to 68 cm in height at withers and weighs in at 50 kg or more of brute force. A Rottie bitch is a little smaller – 63 to 56 cm in height at withers weighing 42 kg or more.

Rottweilers have a glossy black coat with tan markings that can be located anywhere on the body. They have a thick double coat – which does shed. Their outer-coat is straight, course and of medium length. It is advisable to give your Rottie a thorough brushing every few days in order to maintain a healthy coat and to minimize the shedding.

Rottweilers are distinctive (and much loved) for their beautiful warm dark brown eyes, deep powerful chest and large handsome head.

The All Important Rottweiler Temperament

At their best a Rottweiler puppy grows to be a calm, level headed, stable and self confident companion. They are courageous, highly intelligent, affectionate and ever willing training partners.

Due to unscrupulous Rottweiler puppy breeders it is a sad fact that the temperament of Rottweilers can vary greatly

from one dog to the next. The temperament of your individual Rottie will be shaped by the breeder you purchase your puppy from, the socialization you provide and the obedience training you undertake together.

Always purchase your Rottweiler puppy from a responsible and respected Rottweiler puppy breeder. One that carefully plans each litter of puppies from carefully selected breeding stock.

Some general points regarding the temperament and traits of a Rottweiler:

- Rottweilers thrive on human companionship. They bond very tightly with their human family and don't do well when left alone, isolated and bored for long periods. Rotties consider themselves to be one of the family - they love to be included in all family activities. Separation anxiety is a common problem experienced by Rottweilers.
- Rottweilers are a working breed. They require plenty of physical and mental stimulation to keep them content. Some nice long on leash walks and obedience training sessions are always appreciated by Rotties. This will help to prevent many destructive behaviors such as digging, chewing, whining and excessive barking.
- Many Rottweilers display dominant behavior towards other animals and people. This problem can be prevented or minimized through some proper puppy socialization and also obedience training. Start your training sessions early in order to establish a healthy and rewarding human-dog relationship. Be your Rottie's respected leader.
- Rottweiler puppies develop into excellent guard dogs. They are naturally territorial dogs who will be very protective of you, your family and belongings.
- Rottweiler puppies are notoriously slow to reach maturity. Typically this occurs at about the two years of age mark. My advice is to be prepared for many months of hyperactivity bursts, chewing, puppy mouthing and all kinds of other mischievous behavior!

Rottweiler Health Care

Rottweilers are generally a pretty hardy and robust breed but they are not immune to many common health problems. With proper research, puppy selection, care and nutrition you should have a happy and healthy Rottie for up to 11 years.

Some health issues to keep in mind with your Rottweiler puppy:

- An overweight Rottweiler is an unhealthy Rottweiler - or will be anyway. Obese Rotties are far more susceptible to a wide range of health problems than a fit and healthy Rottie. Be sure to provide plenty of exercise and proper nutrition to your dog. Read some more about the best dog food to feed your dog here - Rottweiler nutrition.
- Rottweilers are not an ideal choice of dog breed if you live in a very hot climate. Check with your local breeders or Rottweiler club if you believe this may be an issue for you.
- Other health problems associated with the Rottweiler are - hip dysplasia, elbow dysplasia, osteochondrosis dissecans, panosteitis, von willebrand's disease, gastric torsion (bloat), allergies (once again dog food nutrition is important), eye disease

such as PRA and cataracts. Rottweilers are also susceptible to epilepsy, hypothyroidism and various cancer

Rottweiler Puppy Training

As we've already established it is essential to train your Rottweiler puppy – for the benefit of your dog, your family and the community at large.

Time spent training your Rottie is time well spent. It is the best way to develop and strengthen a healthy and close bond with your dog. It also opens up the lines of communication between you and your dog and helps to establish acceptable guidelines and boundaries for your dog to follow. Rottweilers excel at many training activities – plus they love it. They are a working breed so obedience training provides them with the perfect outlet or "job" for their vast intelligence and energy. This energy has to come out in some way so why not put it to good use in a positive and mutually rewarding manner?

Start your training sessions as soon as you possibly can – it's never too early to begin. Keep your obedience training sessions short, challenging, always consistent and use positive reinforcement. Many Rottweilers have been ruined by harsh or heavy "corrections" in the training process. They are sensitive animals who do not respond to and do not need any forceful training methods. Use your brain instead of your brawn.

Some common training issues that owners of a Rottweiler puppy will need to address:

- Rottweiler puppy house training is one of the first and biggest training or management issues to get right. The use of a crate is invaluable in the Rottweiler housebreaking process. As long as pick out and stick to a good house training schedule you'll find that your Rottweiler puppy catches on very quickly. Remember to make it crystal clear to your puppy exactly what you would like him/her to do and always be consistent and fair in the process.
- Rottweiler puppies can be extremely destructive little beasts if they are left alone, full of energy and bored for long periods. You'll find that this pent up energy will manifest itself through digging, chewing, whining and many other destructive behaviors. These problems can be minimized through on leash walks, obedience training and chew toy training.
- A Rottweiler puppy who pulls on the leash is a problem, a fully grown Rottie who pulls on his/her leash is a nightmare! This is one behavior that is best taught early and continually reinforced. The last thing you want is for your Rottweiler puppy to develop a leash pulling problem – prevention is better (and easier) than the cure.
- Dog to dog aggression is another behavioral problem that Rottie owners often report. This comes back to proper socialization and controlling your dog (and the environment) when on or off leash. Puppy kindergarten and Rottweiler obedience training classes are excellent places to provide some much needed interaction with other dogs and people. You can read more about the ins and outs of puppy socialization here – Rottweiler puppy socialization.

- Rottweiler puppies can be very energetic, frisky and mischievous little characters who take forever to "grow up". This puppy hood period is your opportunity to put your dog on the right path by providing leadership and direction. Doing so will help to establish desirable behavior habits and at the same time prevent problem behaviors from ever arising. Most important for Rottie owners is to never tolerate your puppy jumping up on you or other people and get stuck into chew toy training from an early age.
- Another essential obedience training command you will want to teach and reinforce in your Rottweiler puppy is the "come" or "recall" command. This is one of the most important commands you can teach any dog – for the safety of all concerned.

As I've mentioned previously (and is probably clear to you anyway) is that if you own a Rottweiler then puppy socialization and obedience training are not negotiable – they simply must be done.

I highly recommend puppy kindergarten and obedience training classes if you can afford them and there is a class in your area.

Caring for your puppy.

Buying and bringing your puppy is generally a very exciting time. In particular if this is your first puppy you will be filled with excitement and then very quickly some anxiety not really knowing what to do. Some of us more experienced dog people can't understand the fuss but that's because we can't remember the first pup we brought home!!!

INTRODUCTION

Rottweilers were originally established to fill a gap that I believed existed in the Rottweiler fraternity some years ago. My belief is that Rottweilers are first and foremost working dogs. The term "working dog' should, engender visions of intensity, drive and power that you would not necessarily associate with an ordinary household pet. Our goal is to produce puppies that clearly differentiate themselves from the pack; they will be energetic, robust, have a very outgoing, confident nature and should exude an intensity that leaves the observer with the clear impression that there is something different about this puppy.
This is a working Rottweiler puppy!!

WHAT YOU NEED TO BUY BEFORE YOUR ROTTWEILER PUPPY COMES HOME

There are several items that you will need to buy before you bring your puppy home.

They are as follows:
• Collar – something lightweight to begin with and it must have a ring of sorts for attaching a lead
• Lead – again something lightweight and, if possible something strong that you can use for a few months (keep in mind your puppy will grow to be very strong, very quickly) – leather is generally best (NOT NYLON) it might look nice but if your dog pulls it burns your hand)
• Food bowl – my preference is something metal that will last and that can be cleaned no matter what is left in it
• Water tray/bucket – again something metal that will stand the test of time. High drive dogs tend to play with things like bowls and if they do anything other than metal won't last
• Food – we will cover this later on, but make sure you buy it and are ready to feed your puppy

• Crate – unfortunately this is an item that you will have to buy

• Worming syrup or tablets – I prefer to change the type of worming agent every time I worm the puppies
• Toys – my preference is balls, tugs and rags – these will allow you to develop your dogs instinctive drives
• Books/Videos – I suggest that you acquire a variety of books or videos/DVD that cover the topics of dog behavior/psychology/training that will allow you to discover what methods will suit you and your dog best.

WHAT WILL HAPPEN WHEN YOU BRING YOUR ROTTWEILER PUPPY HOME

Obviously this will differ for almost everybody in the finite detail, but, taking the first timers point of view it is likely to go something like this:
¬ You'll collect your puppy from the breeder
¬ It is likely someone will accompany you to the breeder so either they or you will end up holding the pup on the drive home
¬ When you get home you'll play with the pup and then probably sit there and watch it for a few hours
¬ You may have visitors that come to see the new addition to the family
¬ You'll probably feed it at some point and at some point it will be time for bed – THIS IS WHERE IT GETS INTERESTING

Your puppy may not have yet experienced a night on his/her own and so will complain vigorously. This is where your crate comes in handy. But let's go back a few steps……all the way back to number 1 and even one step before that….

Flowing on from this you should ensure you have your crate with you when collecting your puppy so that it can travel safely in the car. And if your puppy is preconditioned to the crate then the car trip should be no trouble at all.

Ok, so now you're home….what's next? My preference is that the pup will have a predetermined space that it calls home, away from everything else – if this is the case then take the puppy to that area and allow it to acclimatize for a while and have a rest after the trip home (especially if it has traveled some way).

When the pup has had a rest, allow it to follow you around the house, yard and anywhere where it may find itself from here in. This process of acclimatization should be carried out a few times over the first few days to ensure your puppy is comfortable in every area of your home. Even if your puppy has free reign of the yard, I would ensure the first few forays into the unknown are supervised so that you can note the puppy's reaction to new stimuli.

So, within a couple of days, 4 or 5 at the most the puppy should be totally comfortable within your home – personally, I would resist the urge to have visitors for a couple of days just to give your pup the opportunity to feel at home before having to deal with overzealous visitors!! We'll deal with the specifics of socializing later in the puppy pack.

Now, if you have brought your puppy home you are likely to have an eventful couple of days – especially with a high drive, confident, defiant working dog. They are not likely to tolerate being left alone or locked up without protest. It is likely that the first time you put your puppy in its run, crate, laundry or even the backyard on its own; it will start to protest and howl/scream the place down.

Now read this carefully and make sure you understand it 100% – DO NOT GO TO THE PUP WHEN IT IS SCREAMING (unless there is something wrong with it – but be prepared so you know nothing is wrong check the area to ensure all is safe); wait till it stops and then you can go – if you do not follow these rules you will have much difficulty is settling the pup down for the evening etc. If you follow the rules you should be ok within a couple of days at most.

In summary, when you put the pup somewhere for its own time – do not go to it unless it is quiet and you do it on your own terms.

FEEDING YOUR ROTTWEILER PUPPY

When breeders write about this topic they seem to be transported to the land of "make life as complicated as possible" – mix this, so much of this, so much of that, vitamins, minerals etc. I don't think it has to be like that and I know for sure that we all don't have time for it to be like that. I'm a practical person and whilst I want the best for my dogs I also don't have 3hrs a day to prepare everything from scratch. With that in mind please find below what I think is an efficient and very effective diet for puppies/dogs of all ages.

Diet plan for dogs

0-8 weeks – generally cared for by the breeder

8-24 weeks – I feed 3 times per day, 2 main meals and a snack
Main Meal, good quality dry food mixed with meat (lamb, beef, chicken)

24 – 52 weeks – 2 main meals per day

After 1yr – 1 meal per day, good quality dry kibble

The main difference in the diet is the type of kibble I use. Puppies will be fed a more up market type of kibble such as **Hills Science or Royal Canin –Junior Pupp.** This type of diet seems to keep the dogs at a healthy, lean bodyweight.

GENERAL HEALTH CARE OF YOUR ROTTWEILER PUPPY

Rottweilers are a generally robust breed and coupled with a high pain tolerance will rarely show signs of discomfort or that they are not feeling well.

Rottweilers are essentially a low maintenance type breed, but in saying that there are some things that need your attention to ensure their well being.

You will need to:
¬ Ensure the diet that your dog is on delivers the required vitamins and minerals.
¬ Maintain the correct worming and vaccination schedule
¬ Keep your dog clean and well groomed – including nail clipping, flea treatment and occasional bath and bones for the teeth
¬ Ensure you dog receives adequate exercise – being a large dog they will need a decent walk and somewhere to stride out at least every couple of days. Be sure however not to overdo the exercise for growing pups – short walks and trips to training will suffice till they are 12mths old Also please use common sense and as with humans all exercise needs to be built up over a period of time.
¬ Occasional visits to vet will also ensure

your dogs health is kept in check – it is recommended that you visit the vet frequently even if you are not seeing the doctor just to let your dog familiarize itself with the environment, learns to hop on the scales etc

Collar Entrapment, Strangulation and CPCR Techniques

Collar entrapment and subsequent strangulation is life-threatening for the dog involved and presents a dangerous situation for humans and other nearby animals. Good equipment and sensible prevention practices can minimize the chances of a strangulation occurring in the first place, but even best practices cannot guarantee that accidental strangulation will never occur. In the event of a strangulation accident, CPCR (Cardiopulmonary Cerebral Resuscitation) may help to revive a dog and restore it to full mental and physical function.

The purpose of this article is twofold: to examine collar-entrapment from an equipment perspective and to give instruction on how to deal with it in the unfortunate case that it arises.

Foundation of the Problem – The Collar under Tension

Collars are valuable pieces of equipment for dog-owners, allowing both control of the dog and a conventional location for identification. However, collars present the potential for entrapment and strangulation. Some collars are "non-break-away"; they are not designed to break under pressure. Examples of this class include metal buckle styles, martingales, and chain training collars. Entrapment with this style of collar will not resolve until the collar breaks (unlikely) or tension is removed. This class of collars is especially dangerous to use without supervision. One of the most common collar entrapment and strangulation accidents is caused by metal training collars left on unattended puppies/dogs in kennels.

Aware of this potential, many fanciers use "break-away" collars when their dogs will be unattended. The most common of these are cotton or nylon web collars with a plastic buckle or "safety" clasp, similar to child seatbelts in grocery carts. A dog hanging from a fence, for example, or a similar non-twisting entrapment of the collar *may* apply enough tension to the buckle to either cause it to either pull apart or fracture; however, with large clasps and/or heavy plastic, this may not occur.

In such a situation, a human will usually be able to release the buckle, perhaps by first relieving the tension on the collar. However, this is not the case with a twisting entrapment. A common scenario for this is a collar entrapment between two dogs, wherein one dog's collar gets trapped on the lower jaw of the other. The ensuing

struggle to break free may result in the collar being tightened like a noose.

”Non-Break-Away” Collars

“Break-Away” Collars

Give This Test A Try…

Think your dog's break-away collar will give way under a twisting tension? Fasten the collar around a post, and twist until it is tight, then try releasing the buckle.

Alternatively, have a strong person hold the collar and attempt to pull it straight apart while you try to release it. Many "break-away" collars are difficult to release even in this test without any twisting.

My favorite example of a true "break-away" collar is the KeepSafe® Break-Away Collar made by Premier Pet Products. Designed to prevent dogs from getting entangled by their collars, the KeepSafe® Break-Away Collar has a patented break-away safety buckle that releases when pressure is applied. (This now adorns the neck of every dog in our home as their "everyday" collar.)

Relieving Tension during a Two-Dog Entrapment

Suppose a dog has become entrapped in the manner described above. What should you do?

We'll call the dog being strangled the "wearer" and the dog with its jaw trapped in the collar the "entrapper."

1) Lessen the chance of spinal trauma – Often the entrapper is roughly the same size as the wearer. Do your best to stop the entrapper from dragging the wearer around. This can cause severe or even fatal trauma to the cervical spine (neck) of the wearer.
2) Attempt to cut the collar – This must be approached with extreme caution. Attempting to cut the collar can severely injure the wearer, the entrapper or even yourself (especially when struggling against panicked, thrashing dogs). Often the collar is tightened around the neck of the wearer to the extent that the blade of a knife or pair of scissors/shears cannot be inserted between the skin and the collar. When faced with such a situation, an extremely sharp knife (e.g. a buck knife) can be used in an attempt to cut through the collar from the top down. Sometimes this is not an option because of risk of injury to the human involved or because a sufficiently sharp instrument is not available.
3) One last chance – When all else fails, struggling against one dog instead of two can make the situation more easily surmountable. By the time all other options have been exhausted, the wearer is most likely nearing the end, collapsing from lack of oxygen and blood flow to the brain. Once this is the case, the wearer will no longer struggle against rescue efforts or oppose tension from the other dog. With the wearer limp, it is now possible

to roll the dog laterally, using the entire body to untwist the collar. It may take several turns before tension is released enough to free the entrapper. Rolling a flaccid large breed dog is most easily done by grabbing the front legs (paired together in one hand) and the rear legs (paired together in your other hand) and pulling the legs either up and over the body or under the body (as dictated by the direction of the twist in the collar).

10 Most Important Things about Canine Hip Dysplasia

Posted in KUSA News

Written by Carol Beuchat (PhD), this article discusses canine hip dysplasia, one of the hot topics in dogdom.

Hips are a hot topic in dogs, if it's possible to stay "hot" for 50 years. Researchers have been working hard for decades looking for solutions, and breeders have been doing their best to reduce the risk of producing affected puppies. But still the problem remains.

There are some simple things we could do to reduce the incidence of hip dysplasia now if we understand a few basic things. Here are the 10 most important things you need to know.

1) All puppies are born with perfect hips

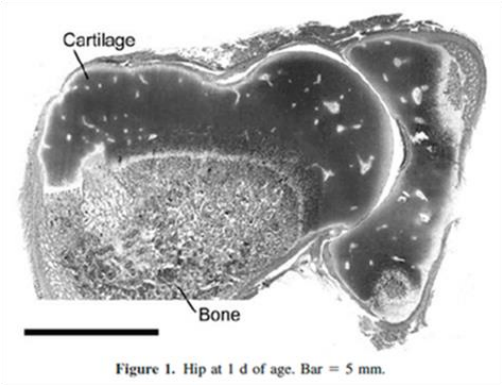


Figure 1. Hip at 1 d of age. Bar = 5 mm.

Hip dysplasia is not a congenital defect; it is not present at birth. Multiple of studies have demonstrated that all normal puppies are born with "perfect" hips. The structures of the hip joint are cartilage at birth and only become bone as the puppy grows. If a puppy is going to develop hip dysplasia, the process begins shortly after birth....

This is the hip joint of a 1 day old puppy. The cartilage tissue does not show up on an x-ray until the minerals are deposited that form bone. Proper development of the joint depends on maintaining the proper fit between the head of the femur and the socket (acetabulum).

"The hip joints of all dogs are normal at birth. The joints continue to develop normally as long as full congruity is maintained between the acetabulum and

the femoral head... The acetabular rims are stimulated to grow by mild traction applied by the joint capsule and gluteal muscles attached along their dorsal borders, and from pressure by the femoral heads upon the articular surfaces... The morphologic characteristics of the complex hip structure show that biomechanical behavior is the prime influence in the growth of this joint." (Riser 1985)

2) The genes that cause hip dysplasia have not been found

Hip dysplasia tends to be more common in some breeds than others and in some lines than others, which suggests that there is a genetic component to the disorder. However, scientists have been looking for genes that are responsible for the development of hip dysplasia in dogs for decades without success

Genes that are associated with hip dysplasia have been identified in some breeds, but they are breed-specific; that is, the assortment of genes is different in every breed. (For example, see studies on the German Shepherd dog (Marschall & Distl 2007, Fells & Distl 2014, and Fels et al 2014), Bernese Mountain Dog (Pfahler & Distl 2012), and Labrador Retriever (Phavaphutanon et al 2008.) Genes that could cause hip dysplasia have not been found in any breed.

3) Environment is more important than genetics

Although there is a genetic influence on hip dysplasia, the heritability of the trait is rather low. Many studies have shown that genetics only accounts for a relatively small part of the variation in hip scores, usually 15-40%. This means that 60-85% of the variation in the quality of the hips is the result of non-genetic, or "environmental" influences. This is one reason why decades of strong selection has resulted in only modest reductions in hip dysplasia in some breeds. At the current rate of progress, it could take decades to achieve a meaningful reduction in the incidence of hip dysplasia (Lewis et al 2013).

Understanding the specific environmental factors that play a role in the development of hip dysplasia should allow us to reduce hip dysplasia even if the genetic basis is not yet understood. This would reduce the significant pain and suffering caused by hip dysplasia, as well as the expense and heartache endured by owners of an afflicted animal. There is no reason why we should not be taking active steps to do this now.

The top three environmental factors that have been found to play a significant role in the develop of dysplastic hips are:

1. joint laxity,
2. weight,
3. exercise (see below).

4) Joint laxity is the primary cause of hip dysplasia

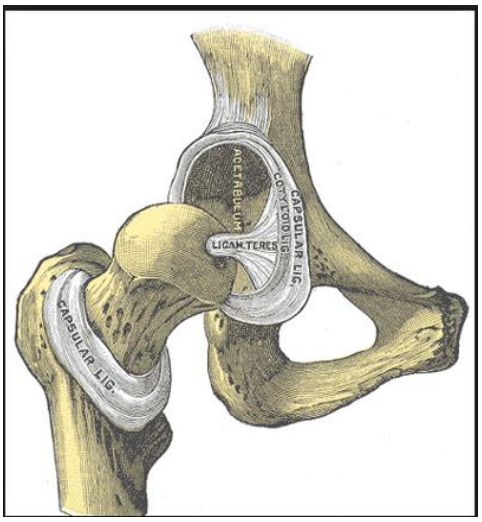
Puppies are born with perfect hips, and if the hips do not develop laxity the dog does not develop hip dysplasia (Riser

1985). Joint laxity occurs when the head of the femur does not fit snugly into the acetabulum. This could be the result of traumatic injury, overloading of the joint by weight, lack of muscle strength, or adductor forces (e.g., when the legs are together). Joint laxity is the primary factor that predisposes a dog to the development of hip dysplasia.

In dogs as well as many other vertebrates (including humans), the head of the femur is held securely in place by a strong ligament variously called the "round ligament" or "teres ligament".

One end of this ligament is attached to the head of the femur and the other end to the inner wall of the acetabulum (the cup-like socket on the pelvis).

You can see the teres ligament in this illustration (labeled "LIGAM. TERES").



If this ligament is damaged or severed, the femur will not be held tightly in the socket, which will cause the joint to feel "loose".

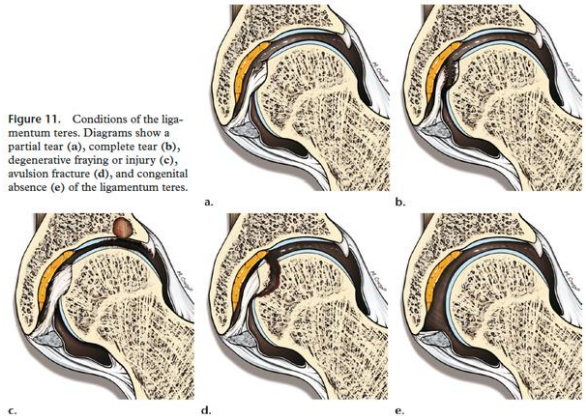
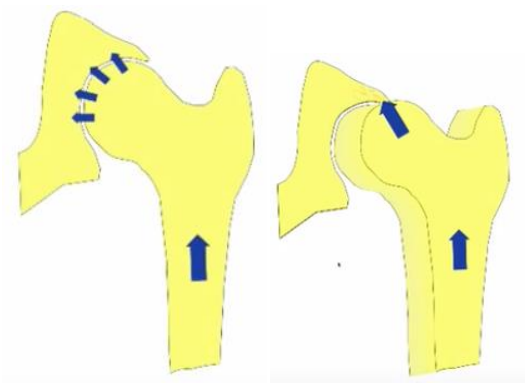


Figure 11. Conditions of the ligamentum teres. Diagrams show a partial tear (a), complete tear (b), degenerative fraying or injury (c), avulsion fracture (d), and congenital absence (e) of the ligamentum teres.

If the femoral head is not positioned properly in the socket, the forces on the hip will be abnormal. Instead of forces being distributed across the inner surface of the socket, they will be concentrated in a smaller area on the weaker rim of the acetabulum. The result will be damage to the rim of the socket when a load is placed on the hip joint.



5) Controlling joint stability is key

The teres ligament should hold the head of the femur securely in the socket of the growing puppy while the muscles that will support the hip develop and grow stronger. But in some puppies, the ligament shows evidence of damage before they are even a month old. (Riser 1985)

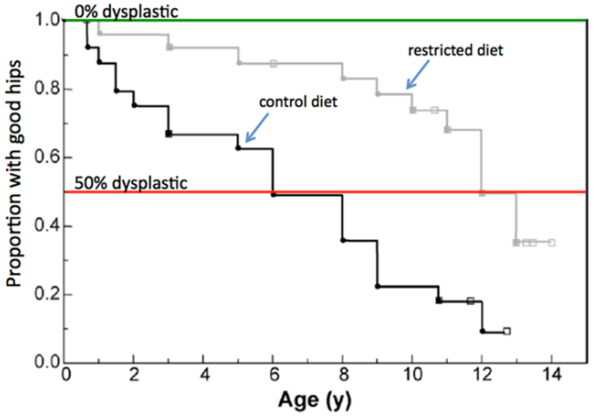
"The teres ligaments of the hip joints were edematous [swollen], a few ligament

fibers were torn, and capillary hemorrhage dotted the surface of the ligaments at the point of the tears. These changes were considered the first findings that might be linked to hip dysplasia."

The inappropriate forces on the femur and acetabulum that are caused by joint laxity result in the trauma that causes hip dysplasia and osteoarthritis of the hip.

"There is no evidence that a primary defect of bone exists but rather the disease is a failure of the muscles and other soft tissues to hold the hip joint in full congruity. This is further supported by the fact that bony dysplasia can be increased, decreased, or prevented by controlling the degree of joint instability and incongruity. No other malformations are associated with the disease. A causal relationship between muscles and soft tissue defects or pathologic changes other than lack of muscle mass or strength has not been established... Hip dysplasia is a concentration of factors from a pool of genetic weaknesses and environmental stresses that fall into a programmed pattern of progressive remodeling and degenerative joint disease." (Riser 1985)

6) Body weight is a MAJOR environmental factor



If there is laxity in the hip joint, the amount of damage done to the femur and acetabulum will depend on the magnitude of the forces in the hip joint. The heavier the dog, the greater the forces will be and also therefore the higher the risk of hip dysplasia and osteoarthritis.

Puppies that weigh more at birth as well as those with higher growth rates (so they get heavier sooner) have a higher risk of degenerative changes in the hip joint (Vanden Berg-Foels et al 2006).

Puppies kept on a restricted diet (gray line) have a dramatically lower risk of dysplasia and it develops much later in life than in puppies kept on normal rations (black line) (Smith et al 2006). And they live longer, too (Kealy et al 2002)!

Unfortunately, many dogs (including show dogs!) are overweight (McGreevy et al 2005, Corbee 2013), and obesity could well be the single most significant environmental factor affecting the development of hip dysplasia and osteoarthritis. But this is a factor that we can control.

Although progress from genetic selection will take many generations, the incidence of hip dysplasia in dogs could be immediately and dramatically reduced

simply by practicing better weight management.

7) Exercise is good and bad

Exercise strengthens the muscles of the legs and pelvis that will increase the stability of the hip joint. But all exercise is not created equal.

Puppies raised on slippery surfaces or with access to stairs when they are less than 3 months old have a higher risk of hip dysplasia,while those who are allowed off-lead exercise on soft, uneven ground (such as in a park) have a lower risk (Krontveit et al 2012). Dogs born in summer have a lower risk of hip dysplasia, presumably because they have more opportunity for exercise outdoors (Ktontveit et al 2012). On the other hand, dogs from 12-24 months old that regularly chase a ball or stick thrown by the owner have a higher risk of developing dysplastic hips (Sallander et al 2006).

The most critical period for proper growth and development of the hip in dogs is from birth to 8 weeks old, so the type of exercise the puppies are exposed to is most important during this time.

8) Nutrition is important

While puppies are growing rapidly, it is critically important to get their nutrition right.

Growing puppies need to eat enough to support growth but they should not be fat, because any extra weight can increase the risk of developing hip dysplasia (Hedhammar et al 1975, Kasstrom 1975).

An additional problem is that puppies getting too much food could also consume too much of specific nutrients. Puppies provided a good quality puppy food that is fed in the proper amount will have a nutritionally balanced diet and should not receive any supplements. Dietary supplements, especially of calcium, are not only unnecessary but could cause serious problems. There is no evidence that supplemental protein or vitamins will reduce the risk of hip dysplasia (Kealy et al 1991, Nap et al 1991, Richardson & Zentek 1998).

9) Early intervention is critical

Most treatments for hip dysplasia are easier and more successful in younger dogs. If early symptoms are overlooked and screening is done only after 24 months or more, the window of time with the best prognosis in response to treatment will have passed (Morgan et al 2000). Signs of lameness usually first appear when the puppy is 4 to 6 months old, but after a month or two the dog will often seem better. This is because damage to the ace tabular rim such as micro fractures have healed, but development of dysplasia and osteoarthritis will continue. From there, the dog might not display clinical signs again for years while the pathological damage progresses.

Laxity in the joint can be determined as early as 4 months old. If detected early, intervention to mitigate additional damage can include weight loss, modifying exercise and activities, or surgery - but it must be done early before skeletal growth

is complete. Breeders should educate new puppy owners about the factors that can increase the risk of developing hip dysplasia and also advise them to get a veterinary examination immediately if there is any sign of lameness.

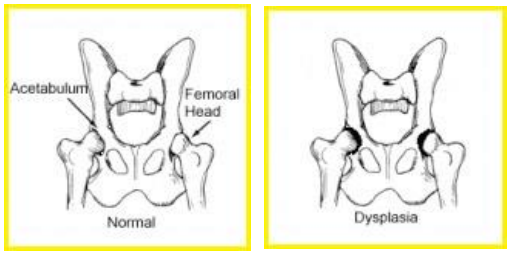
10) We can dramatically reduce hip dysplasia now

Genetic selection should continue to produce modest progress in the reduction of hip dysplasia. But a significant and immediate improvement could be achieved by better control of non-genetic, environmental factors. Weight management, appropriate exercise, proper nutrition, and early intervention at the first sign of lameness are simple steps we can take that will dramatically reduce the pain and suffering caused by hip dysplasia. The research will surely continue, but we already have the information we need to tackle this problem.

FCI Grade	Description	FCI Criteria	C
A1	Excellent hips	No signs of hip dysplasia	0
A2	Good hips		0
B1	Fair hips	Near normal hip joints	0
B2	Marginal dysplasia		1
C1	Mild dysplasia	Mild hip dysplasia	1
C2	Mild to moderate dysplasia		1
D1	Moderate dysplasia	Moderate hip dysplasia	2
D2	Moderate to severe dysplasia		2
E1	Severe dysplasia	Severe hip dysplasia	3
E2	Very severe dysplasia		4

Hip and Elbow Dysplasia

Hip dysplasia is a skeletal defect in dogs. In hip dysplasia, the ball portion (femoral head) of the hip is not securely seated in the socket portion (acetabulum). This condition is especially common in working and sporting breeds of dogs. Certain breeds are definitely predisposed.



Hip and Elbow Dysplasia

Hip dysplasia is an inherited problem which is not usually present at birth. It develops within the first 6-8 months of life. The exact cause is unknown, but it is generally accepted that the condition is from the

combined action of an unknown number of genes. Nutrition and environment are also believed to be contributing factors.

Concerned dog breeders and veterinarians have tried to reduce the incidence of hip dysplasia through selective breeding. X-rays has been performed on potential breeding pairs in an effort to determine the status of the hip joints. Some progress has been made toward reducing the severity and incidence of canine hip dysplasia, but progress has been slow.

Hip dysplasia is defined as a biomechanical disease. That is, the muscles do not develop and reach maturity at the same rate as the bones. Since the hip depends on muscle power to be stable, it can pull apart and trigger a series of events resulting in hip dysplasia.

If a pup is so poorly developed that it cannot walk, then the demands of the musculoskeletal support system are greater than the strength of the surrounding musculature. The muscles and ligaments are unable to maintain the needed relationship between the femoral head and the acetabulum.

This results in a partial or incomplete dislocation of the femoral head. The acetabulum is unable to develop properly if the femoral head is dislocated, and is shallower than normal when the pup reaches maturity. When the femoral head is dislocated, its cartilage covering is subjected to wear and tear. This eventually leads to a miss-shaped femoral head, and osteoarthritis or degenerative joint disease.

The degree of hip dysplasia (mild, moderate, or severe) does not affect the signs exhibited by the affected dog. Signs may range from no symptoms to a pronounced disability. Symptoms can appear any time after 4 weeks of age, but are generally not detected, except in severe cases, until after 6 months of age.

Clinical signs of canine hip dysplasia include:

• Lameness after prolonged exercise
• A waddling or swaying gait
• Morning stiffness
• Difficulty in standing up
• Reluctance to move
• Change in temperament
• Pain when moving the hip joints
• Limping

(These signs often appear worse on cold damp days)

Early clinical signs are caused by the stretching and tearing of the joint. This pain may disappear as scar tissue forms, and the puppy seems to get better. Unfortunately arthritis continues to get worse and eventually signs of pain appear again. Early treatment will slow or stop the development of arthritis.

The diagnosis of canine hip dysplasia is bases upon: history, symptoms, a complete physical exam, and X-rays. X-rays are necessary to confirm hip dysplasia. They can show:

• the shape and depth of the acetabulum
• the shape contour and position of the femoral head
• degenerative joint disease

Treatment

Hip dysplasia can be treated surgically, medically, or a combination of both. There is no cure for hip dysplasia, but with appropriate veterinary care affected dogs can live long, healthy, active lives. Non-surgical treatment can include:

• enforced cage rest when the dog is experiencing discomfort
• mild analgesics
• anti-inflammatory drugs

There are several surgical procedures that can be attempted in young dogs, and if the disease is not severe:

• Cutting of the femur and/or the pelvis and repositioning the joint. This is recommended for dogs 6-12 months of age only.
• Cutting the pectineus muscle. This is useful in relieving pain in certain cases, but has no effect upon the progression of the disease.
• Removal of the femoral head and neck. and formation of a "false joint" between the proximal femur and the pelvic musculature. Small and medium sized dogs usually do better with this procedure than larger dogs.
• Total hip replacement. Although this procedure is expensive, many dogs are able to return to full activity.

How Prevalent Is Hip Dysplasia

Any dog can have dysplasia. But, based on test results from the Orthopedic Foundation for Animals, the highest incidence of dysplasia is as follows (March 2010):

HD Breeding Restrictions

Only Rottweilers with hip scores of (0-0) A1, A2, B1, B2 may be mated to Rottweilers with hip scores of (1-1, 1-0 or 0-1) C1 or C2 (hips). Rottweilers with hip scores of (0-0) A1, A2, B1 or B2 (hips) may be mated to each other.

ED Regulations

From 1 January 2009 all Rottweilers must have ED X-Rays taken and certificate submit with HD certificate when applying for BA/BST. (This is for record purpose only)

General Appearance

The Rottweiler is a medium to large size, stalwart dog, neither heavy nor light and neither leggy nor weedy. His correctly proportioned, compact and powerful build leads to the conclusion of great strength, agility and endurance.

Behaviour / Temperament

Good natured, placid in basic disposition and fond of children, very devoted, obedient, biddable and eager to work. His appearance is natural and rustic, his behavior self assured, steady and fearless. He reacts to his surroundings with great alertness

Size and weight		
Height at withers:**MALE**	61 - 68 cm.	
	61 - 62 cm is small	63 - 64 cm is medium height
	65 - 66 cm is large - correct height	67 - 68 cm is very large
Weight:	approximately 50 kg	
Height at withers:**BITCH**	56 - 63 cm.	
	56 - 57 cm is small	58 - 59 cm is medium height
	60 - 61 cm is large - correct height	62 - 63 cm is very large
Weight:	approximately 42 kg	

Leash Training Your Puppy

Leash training a puppy is a very important part of any new puppy owners' responsibilities, but it can quickly develop into a battle of wills if you don't approach it the right way.

Your Rottweiler puppy is going to be a big, strong dog before you know it, and leash training is best done while he's still 'puppy-sized'!

Although it's perfectly possible to leash train a dog that's adolescent or adult, but it takes a lot more strength, energy and patience.... so save you the aching arm and start now.

Puppy Leash Training Basics

Before you even begin leash training a puppy, you need to get the little guy or gal used to wearing a collar - and then a collar and leash.

A nylon collar is the best choice for very young puppies, but as Rottweilers are fairly sturdy pups, a fairly narrow and soft leather collar is also an option.

Start out by having your pup wear her collar for 15 - 30 minute stretches. If her breeder didn't acclimate her to the feel of a wearing a collar, she may well act as though you just wrapped a python around her little neck!

Scratching at it, pawing at it, trying to 'rub it off' by rolling around on the carpet - they're all perfectly normal reactions. She may even try to run away from the collar (difficult as it's actually *attached* to her), or sit stock still hoping it will magically disappear.

Your best reaction to her behavior is no reaction! You can try to distract her with a toy or a game, but don't touch or bring

attention to the collar in any way. Ignore her complaints, and don't take it off her until she's forgotten about it and isn't fussing about it anymore.

After a few days, you'll be ready for the next step in leash training a puppy - that's actually using the leash! But, don't get too excited..... you still need to take it slowly, and for now all you want to do is attach a light leash to your puppies' collar and let her get used to feeling the weight of it.

In fact, you're not even going to hold the leash just yet. Simply clip it onto her collar and let her drag it around the house for 10 minutes or so at a time. Of course, you need to follow supervise her the WHOLE time she's doing this, as if it gets caught on something, or she gets tangled up in it she could be frightened, or even hurt. And that will set your puppy leash training efforts back somewhat.

For this part of the 'leash training a puppy' process, a light leash is best. A leather one is more likely to be chewed and played with, and a chain is just too heavy and could be dangerous. A lightweight (and cheap) nylon collar would be your best bet for now.

After a few days of running around with the leash dragging behind her, your puppy is now ready for you to join in the game. So, at your next leash training session, pick up the end of the leash and start to follow where she leads. She'll probably really enjoy this part!

This is also a good time to take a step up and you, puppy and leash can venture out into the back yard. She needs to feel totally comfortable with all of this before you move on.

Leash Training A Puppy - Follow My Leader!

Now that your Rottweiler puppy is familiar with the collar and leash, you can start to actually *walk together*. Of course, this is going to be a novel idea for your little girl, and you're going to need to be very patient, take it slowly, and be very consistent in your puppy leash training efforts.

Leash training a puppy while she is young has one very important benefit here - the fact that little puppies have an innate desire to follow their owners! Your pup will probably want to be right beside you and will be more willing to stay by your side now, than when she's a bit older, and bolder.

Again, start indoors where she feels comfortable, and gently lead her around. Encourage her with a happy, up-beat voice, and a treat whenever necessary. Your aim is to have her follow you happily, not being dragged or forced, that will soon put a dent in your leash training progress.

When (and it is 'when' not 'if') she decides that she wants to 'take the reins' and pulls forward, or to the left or right, you need to stop moving immediately. Then call her to you in a cheerful voice and praise her when she comes close to you. Once she's back by your side, say something along the lines of "Let's go!" and move forward again.

Leash training a puppy relies on a lot of repetition, and you will need to practice

this over and over again. But remember, little puppies have short attention spans and your puppy leash training 'lessons' should be short, but frequent.

Your aim here is to have your little girl realize that if she pulls hard, or away from you, that the walk stops and so does the fun. Once she 'gets it' she will happily follow you.

Some puppies may try to rebel by sitting (or lying) down and refusing to move an inch. The temptation to tug or drag them may be strong, but you need to resist!

Instead, do as you did for the wandering pup, call her to you (encourage her by crouching down, offering her a treat and so on if necessary) and reward her when she gets there. Then say "Let's go" and move on.

If you're leash training a puppy outside, you can often get a really stubborn puppy moving by backing up a few steps and then 'jogging' past them (still holding the leash of course!) while calling their name. Your puppy won't be able to resist running after you – works like a charm.

Leash Training a Puppy – Next Steps

If you are patient and consistent in your puppy leash training efforts, your little girl should soon be walking nicely by your side most of the time. This is a great start.

But it's not where leash training your puppy should end! Rottweilers need early and ongoing obedience training and socialization so that they can grow up to be all that they can be.

Basic Obedience Class As soon as your Rottie pup has had all of his or her puppy vaccinations, get her enrolled in a Puppy Class or a obedience school.

It's a great way to improve bonding between you, and of getting her some valuable socialization. It will help you too, as you can ask a qualified dog trainer about any puppy training problems you might have, and give you a support network of other new puppy owners. A win-win situation all around!

NEUTERING YOUR DOG'S AT 6 MONTHS: THE FACTS

On neutering, you will be hard pressed to find a vet today that would recommend

anything but neutering your pet early in their life, normally around six months. The reasons given are always the same, prevent unwanted babies and long term health benefits including a reduction in cancer.

But unlike your appendix for example where its absence is not noticed in your daily routine, your reproductive (or sex) organs play a whole host of hormonal roles that stretch far beyond the manufacturing of babies. Like dry food, parasite control, annual boosting and casual steroid shots, these things are not without consequence for the patient and too rarely are these consequences ever discussed with the owner. It is not enough that we are told things are perfectly harmless. We must go into the decision with eyes wide open.

So here's what we know of neutering dogs early in their life. The implications for your pet and society as a whole are then discussed below. It's a whopper of an article; maybe grab a cup of tea first! This would normally be two articles but if I chop it in half people will be left with too many questions. Please leave emotion at the door and your comments below!

WHAT ARE THE GONADS?

In male mammals the gonads are the two testes, and in females the gonads are the two ovaries.

WHAT DO THE GONADS DO?

The gonads are best known for making gametes (single celled germ cells) which is sperm in males and eggs in females. These two cells then get it on inside the female and make a baby. Most of us have that down pat.

But the gonads also produce a variety of hormones including the female sex hormones estrogen and progesterone; and the male hormones including testosterone and androsterone. However men necessarily have some of the female hormones, and women some of the male hormones.

WHAT DO THE SEX HORMONES DO?

While sex hormones in males and females function largely in the whole “sex” business from conception to baby birth, they also play pivotal roles in the maintenance of body muscle and bone growth.

We see testosterone's dramatic effects in lanky 13 year old males. It controls all the typical puberty bits in males such as the less useful growth of the adams apple, facial and body hair to the very much more useful height and muscle mass of the individual. As adults testosterone continues to function in maintaining muscle strength and mass, and it promotes healthy bone density. It also reduces body fat (one reason why some spayed pets can put on weight).

Estrogen too functions in skeletal growth. At puberty, estrogen promotes skeletal maturation and the gradual, progressive closure of the epiphyseal growth plate (plates of cartilage at the end of bones, which are responsible for laying down new bone). Estrogen also functions in maintaining the mineral acquisition by your bones.

WHAT IS NEUTERING?

Neutering or 'spaying' a female animal involves removing the womb and ovaries (an ovaro-hysterectomy). Males are castrated whereby the testicles are surgically removed. This is done before dogs come into puberty (i.e. start producing sex hormones for the first time) which is very approximately 6 months in males and around 9 months in females,

though breed and body size play large rolls here. General advice from the majority of veterinary circles is that responsible dog owners neuter at 6m months. In other countries it is much earlier. Both operations are carried out under general anesthetic.

BENEFITS OF NEUTERING:

The number one reason for removing the sex hormones is to prevent unwanted breeding, hence folk at the front line of mopping up all our unwanted fur babies are very big fans (www.dspca.ie/SpayorNeuteringYourPetBenefits). The major health benefit constantly cited is to prevent the possible occurrence of testicular cancer, peri-anal cancers and ovarian cancers in dogs and cats. Other reasons often cited is the spread of inferior genetic traits and to reduce problematic behavior including male-male aggression around females in heat and the roaming behavior of both males and females when love is in the air.

THE PROVEN SIDE EFFECTS OF NEUTERING EARLY:

The early neutering of dogs is not without its side effects or critics, and I'm certainly one of them. But please, before the heavily stressed and over-worked shelter staff post up about overpopulation problems (I spent a couple of years in them too), let's look at this this issue with less emotion and more science.

1.CANCER

If we ignore the fact that gonadal cancers are rare enough in a general population and that dogs recover very well from testicular cancer following diagnosis and castration, by removing the gonads in developing animals you certainly prevent the possible occurrence of gonadal cancers such as testicular and ovarian cancer. However, ironically, while these possible cancers of your pet will be avoided, numerous studies show that removing the sex organs early in the developmental period of an animal causes cancer in your pet, just not in their testes or ovaries.

A study in the Journal of Veterinary Internal Medicine, compiled over 13 years found that "… neutering dogs appeared to increase the risk of cardiac tumor in both sexes". The results showed that spayed females were five times more likely to suffer tumors of the heart than intact females
(Ware and Hopper, 1999, http://www.ncbi.nlm.nih.gov/pubmed/10225598)

In another study spanning 14 years of research it was concluded that sterilization increased the risk for bone cancer in large breed pure-breeds twofold.
(Ru et al. 1998, http://www.ncbi.nlm.nih.gov/pubmed/9691849).

Upon further investigation using male and female Rottweilers spayed or neutered before one year of age, both sexes were found to be significantly more likely to develop bone cancer than intact dogs with early sterilization bestowing a staggering 25% likelihood of bone cancer in your Rottweiler.
(Cooley et al. 2002, http://www.ncbi.nlm.nih.gov/pubmed/12433723)

It's often stated that neutering a male dog will prevent prostate cancer but some authors refute this on the basis that " non-testicular androgens exert a significant influence on the canine prostate". The College of Veterinary Medicine at Michigan State University

found "…castration at any age showed no sparing effect on the risk of development of prostate cancer in the dog." (http://www.ncbi.nlm.nih.gov/pubmed/3506104.

All these considered, it's hard to argue the cancer benefits to neutering early or you end up playing the whole "I see your very slight chance of testicular cancer and raise you a certain increase in bone and heart tumours".

2. ABNORMAL BONE GROWTH AND DEVELOPMENT

Testosterone and estrogen play pivotal roles in the development of your muscles and bones. It stands to reason that if you remove testosterone and estrogen from the vital and dramatic puberty growth phase there will be consequences to that individual's height, muscle mass and bone formation of the individual, compared to an intact animal of the same size and breeding. Studies show this to be absolutely the case.

EARLY NEUTERED ANIMALS ARE TALLER

A study by Stubbs and Bloomberg (1995) set out to answer the following theory: Estrogen tells the growth plates to stop. Thus if you remove the estrogen-producing organs in immature dogs, female and male, you could expect cause growth plates to remain open and the dog to grow longer bones. They divided dogs and cats into three groups. Group one was neutered at 7 wks, group two at 7 months, and group three remained unneutered. They found that "early spay/neuter may result in a slight increase in adult height". The earlier the spay the taller the dog. Other authors found similar findings (Salmeri et al 1991). Preston Stubbs, DVM & Mark Bloomberg, DVM Seminars in Vet Med & Surgery, Small Animal, Volume 10, No 1 Feb 1995 Dept of Small Animal Clin Sci, Univ of Florida Katherine Salmeri, DVM, Mark Bllomber, DVM, Sherry Scuggs, BS, Victor Shille DVM, Journal of American Vet Med Association, Volume 198, No 7 1991

INCREASED CRUCIATE RUPTURE

Thus with no estrogen to shut it down, these animals can continue to grow and wind up with abnormal growth patterns and bone structure. This results in irregular body proportions.

Grumbach (2000) quotes Chris Zink, DVM to explain the problem with neutering males and females early and cruciate rupture - "For example, if the femur has achieved its genetically determined normal length at 8 months when a dog gets spayed or neutered, but the tibia, which normally stops growing at 12 to 14 months of age continues to grow, then an abnormal angle may develop at the stifle. In addition, with the extra growth, the lower leg below the stifle likely becomes heavier (because it is longer), and may cause increased stresses on the cranial cruciate ligament."
www.ncbi.nlm.nih.gov/pubmed/11202221
www.ncbi.nlm.nih.gov/pubmed/15577502

This is verified with a study by Slauterbeck et al. (2004) who found that spayed and neutered dogs had a significantly higher incidence of ACL rupture than their intact counterparts, regardless of breed or size. http://www.ncbi.nlm.nih.gov/pubmed/15577502

INCREASED RISK OF HIP DYSPLASIA

A study by the Cornell University's College of Veterinary Medicine and published in the Journal of the American Veterinary Medical Association showed that both

male and female dogs sterilized at an early age were more prone to hip dysplasia.
http://avmajournals.avma.org/…/a…/10.2460/javma.2004.224.380

3. INCREASED RISK OF HYPERTHYROIDISM
When one organ is removed, others will suffer and spayed and neutered Golden Retrievers are proven to be more likely to develop hypothyroidism.
Panciera DL. Hypothyroidism in dogs: 66 cases (1987–1992). J Am Vet Med Assoc. 1994 Mar 1;204(5):761–7
Glickman L, N Glickman, and R Thorpe. The Golden Retriever Club of America National Health Survey, 1998–1999. Available online athttp://www.grca.org/pdf/health/healthsurvey.pdf

4. INCREASED RISK OF INCONTINENCE

Early neutering increases the risk of urinary incontinence by 4–20%
http://www.ncbi.nlm.nih.gov/pubmed/11787155

5. INCREASED RISK OF DISEASE

Very early neutering increases the risk of disease in dogs. A study of shelter dogs conducted by the College of Veterinary Medicine at Texas A&M University concluded that infectious diseases were more common in dogs that were sterilized at less than 24 weeks of age.
www.avmajournals.avma.org/doi/abs/10.2460/javma.2001.218.217

6. WOOLY COAT

I can't find a study to verify this, I can only testify to what groomers are repeatedly telling us, that de-sexed dogs have very wooly coats, commonly called “spay coat”. It seems to be an overproduction of the undercoat but until more is knows, this is annecdotal.

NEUTERING, IN CONCLUSION...

Dr. Karen Becker is now a famous veterinary advocate for more thought to be brought back in to the dog world. Her YouTube video last year on neutering and article on same subject gave me the bones of this article. The video received an enormous amount of support but also scathing criticism. Since then Dr. Becker has released another video on the subject explaining her thoughts on the whole affair. She breaks down in the middle of it when she thinks about the number of animals she has harmed with her previous advice. Worth watching.
www.youtube.com/watch?v=enPCZA1WFKY

To quote Dr. Becker:

“As responsible members of society, we owe it to our communities to proactively protect our intact pets from unplanned breeding at all costs. We must hold ourselves to the highest standard of reproductive control over the intact animals we are responsible for.

Clearly, there are health benefits to be derived from waiting until after puberty to spay or neuter your dog. However, there are also significant risks associated with owning an intact, maturing pet.

How seriously you take your responsibility as a pet owner is the biggest determining factor in how risky it is to leave your dog intact until he or she matures. If you are responsible enough to absolutely guarantee your unsterilized pet will not have the opportunity to mate, I would encourage you to wait until your pet is past puberty to spay or neuter.

If you are unable to absolutely guarantee you can prevent your dog from mating and adding to the shameful, tragic problem of pet overpopulation, then I strongly encourage you to get your animal sterilized as soon as it's safe to do so".

It is interesting to note that some vet organizations agree with Dr. Becker. While the American Veterinary Association pushes for early neutering there are some European Veterinary Associations that defend the view that "when reproduction is not an issue, then neutering, particularly of dogs, should be decided on a case-by-case basis..." www.ingentaconnect.com/…/az…/2012/00000025/A00103s1/art00010

Health perspective would be to put off neutering In my opinion it is quite clear that neutering your dog early, before he / she is a fully formed, mature adult, comes with very significant health concerns. The best advice for a your pet until after puberty, which is at least a year, though some large breeds are still maturing at two years of age. And for all these major health benefits in your dog, all it takes is a little responsible pet ownership during the 3 – 6 month danger time. Sadly however, looking at just Ireland's dogs, responsibility and dog ownership do not go hand in hand.

If aliens were to arrive in Ireland to study the success of sterilizing dogs at 6 months and population control they would be forced to conclude that sterilization does not work. We are the puppy farming capital of Europe. We have over 400 groups (shelters, pounds and charities) mopping up a portion of the strays. We are a nation of 4 million which killed 25% more and more pet dogs than the entire UK (63mil) in 2010. We have a totally unregulated greyhound industry that slaughters many thousands more dogs each year with tax payers money. And they keep coming.

Clearly the issue of population control goes far beyond neutering or not. We have a desperately underfunded animal welfare system and our legislation protecting animal rights and welfare via heavy penalty fines and jail time is impressive for it's almost total absence. On the other hand Sweden has 13million people and only one pound. Lose your dog once there it's a day's wages. Lose him twice it's a week's wages. Lose him three times and he's gone. This is all backed up with very tough welfare laws. Over there dog ownership is not so much a right as a privilege.

My personal thoughts on neutering in dogs in Ireland is this: If it was obligatory for dogs to be chipped and tagged at birth; if they weren't bought and sold from car boots; if they cost us a small fortune initially (where every penny of that tax went back into their welfare); if the penalty for allowing your dog to roam was proper and severe; if it cost us €1,000 to relinquish a puppy to a shelter and €100 a week until they found her a home, then just maybe we could inject a little responsibility back into dog ownership in Ireland and talk seriously about neutering. However, in my opinion, we are so far away from responsible pet ownership in this country that sadly postponing the early neutering of our pets to the great benefit of their health is simply not information that I think the Irish public can be trusted to hear, yet. If you have Swedish friends though, please share this post with them.

Canine Parvovirus

Overview

Canine parvovirus is a highly contagious viral disease that commonly causes serious illness in dogs in animal shelters, boarding kennels, breeding facilities, and anywhere dogs are concentrated in high numbers. Most kennels and breeding facilities have been affected by outbreaks canine parvo virus in the past or might be affected in the future. Outbreaks can be very costly in terms of resource allocation to manage and eradicate these viruses, animal suffering, and negative public image.

This document provides a basic overview of: 1) the properties of canine parvovirus; 2) incubation times, clinical disease, duration of virus shedding, modes of transmission; 3) diagnosis; and 4) strategies for management and prevention in breeding facilities

Virology 101

Canine parvovirus (CPV-2) emerged in 1978, presumably originating from Feline Parvo Virus through a small number of mutations that allowed the cat virus to replicate in dogs. Although the mutations provided the ability to infect dogs, CPV-2 lost the ability to infect cats. By the mid-1980's, the original CPV-2 strain was replaced by 2 new genetic variants, CPV-2a and CPV-2b, both of which continue to circulate in dogs today. Despite differences in a few amino acids, CPV-2, CPV-2a, and CPV-2b are still closely related genetically. The most prominent strain in South Africa is CPV-2b, but since it is a genetically unstable virus, it is important to keep monitoring the situation and adapt any vaccines as needed.

In 2000, another genetic variant of CPV-2 was identified in dogs in Italy. This variant, designated as CPV-2c, differs from CPV-2a and CPV-2b by another single amino acid change. Therefore, each of the 3 variants contains a different amino acid at this position in the VP2 protein. However, they are still 99% related genetically. CPV-2c appears to be widespread in Europe, and has been detected in dogs in Asia, South America, and most recently in the U.S.

If you want to know more about CPV-2c

There is no evidence that CPV-2c is a more serious threat to dogs than CPV-2a or CPV-2b. CPV-2c causes the same clinical signs of vomiting, hemorrhagic diarrhea, and leukopenia. Although some believe that CPV-2c causes more severe disease and higher mortality than CPV-2b, others report that there is no difference. There are some reports of vaccinated adult dogs becoming infected with CPV-2c, but the details of the vaccination history with regard to when and how many vaccinations were administered were not provided or fully known.

Recently, a parvo outbreak due to CPV-2c was documented in 11 adult dogs housed in a breeding kennel in Italy. The dogs ranged in age from 6 months to 2.5 years and had received at least 3 CPV vaccines, including boosters at 1 year and 2 years of age, prior to the outbreak. Another recent study evaluated the ability of

antibodies from vaccinated dogs to block CPV-2c from infecting tissue culture cells in vitro. Dogs were vaccinated with commercial CPV vaccines containing either CPV-2 or CPV-2b. Antibodies induced by these vaccines were very effective in preventing infection of tissue culture cells by CPV-2a and CPV-2b, but were not as effective in blocking CPV-2c infection of the cells.

These findings have raised concerns about the efficacy of current CPV vaccines in providing protection against infection by CPV-2c. However, recent vaccine trials have demonstrated that currently available commercial CPV vaccines do provide protective immunity to CPV-2c. In one study, 5 beagle puppies that were free of maternal antibodies to CPV received a vaccine containing CPV-2 (Intervet) at 8 weeks and 11 weeks of age. Vaccination induced antibody titers to both the CPV-2 vaccine strain as well as to CPV-2c, but the CPV-2 titers were higher. The vaccinated puppies and non-vaccinated puppies were challenged with CPV-2c administered orally. All of the unvaccinated puppies developed clinical disease within 4 days, shed the CPV-2c virus in feces, and had 50% mortality. In contrast, none of the vaccinated puppies had clinical
disease or fecal shedding of virus. In another study, 6 beagle puppies that were free of maternal antibodies to CPV received a vaccine containing CPV-2 (Continuum, Intervet) or CPV-2b (Galaxy, Schering Plough) at 12 weeks of age. The vaccinated puppies and un-vaccinated puppies were challenged 5 weeks later with a combination of CPV-2b and CPV-2c administered orally or intranasally. All of the vaccinated puppies were protected from disease while all of the unvaccinated puppies developed disease with 50% mortality. The unvaccinated puppies also shed high amounts of virus in feces, but only 2 of 18 vaccinated pups shed virus. The most recent study evaluated the efficacy of vaccines containing either CPV-2 or CPV-2b from 5 major
manufacturers (Fort Dodge, Intervet, Schering Plough, Pfizer, and Merial) in providing protective immunity against CPV-2c.7 Seronegative puppies were vaccinated with one of the 5 vaccines, then challenged 5 weeks later with CPV-2c. Seropositive adult dogs that had been vaccinated against CPV at least 3 years earlier were also challenged. All of the vaccinated puppies and adults were protected from disease. Collectively, these vaccine trials demonstrate that current commercial vaccines containing CPV-2 or CPV-2b provide protective immunity against CPV-2c, even when dogs were vaccinated 3 or more years prior to challenge.

Besides vaccine efficacy, another concern about the new CPV-2c strain is the accuracy of the commonly used ELISA diagnostic tests in detecting CPV-2c antigens in feces. These tests utilize monoclonal antibodies to detect single epitopes of CPV. To date, these tests have been shown to reliably detect CPV-2c in fecal samples from infected dogs. In fact, the only way to determine if dogs are infected with CPV-2a, CPV-2b, or CPV-2c is to perform PCR on feces and DNA sequence analysis of virus isolates. Since vaccine efficacy, diagnostic accuracy, and management strategies for CPV have not changed, there is no real advantage afforded by determining which strain has infected dogs in shelters at this time.
Although current vaccines and diagnostic kits work for the newly emerged CPV-2c

strain, canine parvovirus is still evolving. It is possible that future genetic variants may be altered enough to escape protection from current vaccines and detection by available diagnostic tests.

Populations at risk

Puppies are the most susceptible to parvoviral infection either due to lack of protective immunity from maternally derived antibodies or from ineffective responses to vaccination (maternal derived immunity suppresses the vaccination respons) Unvaccinated adult dogs are also at risk for infection, but the clinical disease may be in apparent or mild. Older dogs that have spent time outdoors eventually develop immunity by natural exposure to virus in the environment.

Clinical features

The primary route of exposure to parvovirus's is nasal or oral contamination with virus-containing feces. The incubation period from time of exposure to onset of clinical disease ranges from 2 to 14 days, but typically is 5 to 7 days. Apparently healthy animals with parvovirus may be adopted out only to become ill a few days later in their new home.

CPV infect rapidly dividing cells in the intestinal tract, lymphoid tissues, and bone marrow. Resulting clinical signs include a sudden onset of fever, vomiting, diarrhea, dehydration, hypovolemic shock, panleukopenia, and death from shock or sepsis. The clinical signs can be worsened by concurrent infections with internal parasites and protozoa (coccidian/giardia), other viruses, bacteria, and STRESS. The mortality rate can approach 90% in puppies that are not treated aggressively with supportive therapies. Adult dogs may have subclinical infection or mild transient diarrhea.

Parvovirus shedding in feces starts within 4 days of exposure, so that infected dogs in the incubation period are already contagious prior to onset of clinical signs. Virus shedding continues for 14 days, so that animals recovered after a week of illness are still contagious to other animals. Animals with subclinical infection or transient symptoms also shed infectious virus in feces and thus contaminate the environment.

Transmission of parvovirus's occurs by direct contact with an infected animal or feces, by contact with contaminated fomites (cage or kennel surfaces, hands, clothing, food/water bowls, toys, litterboxes), and even by rodents and insects! The infected animal is covered with virus from head to toes, including the fur. Dogs that recover from parvovirus should be bathed before allowed contact with other animals.

Diagnosis

Not all cases of vomiting or diarrhea in juveniles and adults are due to CPV. Therefore, parvovirus infection cannot be diagnosed based on the age of the dog or cat and the clinical signs. Since other diseases mimic parvo, diagnostic testing should be performed on all dogs with compatible clinical signs instead of making a decision on a guess, especially if animals suspected of having parvo are euthanized.

The test kits (*IDEXX, Anigen Rapid*) for detection of parvovirus antigens in feces

are a rapid and cost-effective diagnostic tool for dogs. All animals with compatible clinical signs should be immediately tested in order to start proper containment strategies. False negative results can occur due to intermittent virus shedding very early or late in the course of disease. Test results are most accurate if the test is performed within 5 days of onset of clinical signs. Negative tests should be repeated another day on any dog suspected to have parvo based on clinical presentation.

There has been concern that the new canine parvovirus strain CPV2c may not be detected by currently available fecal antigen tests. A recent study showed that the IDEXX SNAP test was similar in sensitivity for CPV2c as for other strains. However, as with all strains, CPV appears to be shed intermittently and clinically affected animals can test positive on one day and negative on the next day. Thus, clinicians should maintain a high index of suspicion in animals with compatible clinical signs and histories. A PCR test on feces may be helpful cases suggestive of CPV in the face of negative fecal antigen tests. A WBC count can also be performed to build evidence for or against a diagnosis of parvoviral inferction.

Recent vaccination with modified-live parvovirus vaccines sometimes results in transient fecal shedding of vaccine virus that causes false-positive reactions on the parvo tests. Documentation of this phenomenon in dogs is scant. Thus, vaccine interference with parvovirus diagnostic testing is low, especially when the IDEXX SNAP test is used. A strong positive test result in combination with compatible clinical signs or known contact with virus is unlikely to be due to vaccination. Testing of feces by PCR is likely to result in a higher rate of vaccine-induced positive test results due to the high sensitivity of PCR.

Outbreak Management

The most effective management strategy for limiting transmission of CPV is the prompt removal of sick dogs with positive test results. These animals should be housed in an isolation room. Since sick animals shed infectious virus before onset of clinical disease, all others exposed to the sick animals either by direct contact or fomite contact should be quarantined from the general population for 14 days with twice daily monitoring for appearance of clinical signs. If clinical signs occur, the animal should be immediately tested and removed if positive to help reduce the infectious dose of virus in the environment. Staff caring for the quarantined population should wear protective wear (hair cover, gown, gloves, booties). Use of footbaths in lieu of disposable foot covering is not as effective because the entire shoe could be contaminated, not just the soles. Handling of dogs in quarantine should be minimized. Staff should always care for healthy animals first, and then quarantined animals, then sick animals in isolation.

In some situations, the numbers of exposed but asymptomatic dogs in quarantine may comprise almost the entire population. One option is to quarantine all exposed dogs for at least 14 days after the last diseased dog is removed from the population. An alternative to holding all the animals for 14 days is to test them for protective antibody titers to parvovirus.

Cleaning and disinfection

The virus is very stable in the environment and able to withstand wide pH ranges and high temperatures. It is resistant to a number of common disinfectants and may survive for several years in contaminated areas. A few disinfectants kill parvoviruses – eg bleach and quaternary ammonium(F10 at the correct concentration). For optimum killing activity, environmental surfaces contaminated with feces, urine, vomit, blood, and other organic material must first be cleaned with a detergent before applying the bleach or F10 solution. The minimum required contact time is 10 minutes. Air drying is preferred if possible, but if the animal needs to be returned to the same run or cage, the area should be rinsed after the 10 min contact time, then dried using a squeegee or towel. Moisture favors the survival of pathogens.

A 5% solution of household bleach should be prepared fresh daily and stored in an opaque container since light exposure inactivates it. F10 solution should be prepared according to manufacturer instructions – it is not inactivated by light and is less corrosive to metal and skin than bleach. For both disinfectants, more is not better! The more concentrated the solutions, the more irritating and damaging to skin, eyes, and the respiratory tract of animals and staff.

Cleaning followed by disinfection with bleach or F10 should be performed not just during CPV outbreaks, but on a daily basis for all animal housing areas, food and water bowls, animal transport vehicles, transport cages, and hallways to reduce the risk for environmental transmission of any infectious disease. In addition, they should be made of stainless steel instead of plastic because scratched plastic is difficult to fully disinfect.

Mop buckets should not be used for cleaning and disinfection of kennel runs. High pressure hoses and power washers should also not be used in kennels unless all dogs are removed, because the force sprays feces on all surfaces and can even aerosolize fecal matter. Cleaning and disinfection supplies should be dedicated to each room and not removed for use in other areas in order to minimize cross contamination.

Prevention

Vaccination of all dogs is the cornerstone for prevention of parvoviral transmission. All dogs 4weeks of age should receive a vaccine containing modified-live parvovirus All puppies should be re-vaccinated every 3 weeks until they are at least 4 months old.

Vaccines containing modified-live parvovirus for dogs or cats are one of the most effective vaccines for reliably inducing protective immunity very quickly. Vaccine trials have proven many times that canine modified-live parvovirus vaccines induce protective immunity within 3 days **if there is no interference by maternally derived immunity**. The potential for maternally derived antibodies to interfere with vaccination in puppies and kittens < 4 months old is the reason they should be re-vaccinated every 3 weeks to successfully induce protective antibody titers

Another strategy to reduce risk for parvoviral outbreaks is to segregate

juvenile animals from adults. Puppies should not be housed with adults.

In combination with vaccination and segregation of age groups, another key strategy is the daily cleaning of all areas followed by disinfection with bleach or F10. Puppies and kittens should be cared for before adult animals, and healthy animals should be cared for before sick or exposed animals.

<u>A couple of pointers for breeding facilities</u>

- Educate staff on the importance of the transition of any disease. Why should they dilute it like this and wash it like that if they do not understand it. A F10 consultant has many training modules for workers that they can assist you with when you use their product.
- Have spray bottles with F10 or bleach as well as disposable booties handy at the entrance of all puppy runs. Everybody must spray and don booties before entering. Preferably dedicate one worker to the care of the puppies and only the puppies while there are puppies.
- Limit the exposure of the puppies to strangers
- When prospective owners visit, let them spray their hands and bring the puppies to them. When they want to sit down and play with the puppies, offer towels to throw over their laps.
- Be aware of possible contamination of your gear at shows and training facilities.
- Do not visit your own puppies after a show/training before you have donned clean clothing.
- Do not forget to keep the bitches' vaccinations up to date.
- All of the above is also applicable during an outbreak of kennel cough or (heaven forbid) a distemper virus outbreak.

Compiled by Dr Valmai le Grange BVSc

Signs of Coccidiosis

Puppies stressed by other illness such as parvovirus or roundworms, an unsanitary environment, and/or the crowded conditions of pet stores and shelters, are at highest risk for coccidiosis. The earliest sign typically is a mild diarrhea which becomes more severe until it contains mucus and sometimes blood. Anorexia, weight loss, and dehydration follow. This acute phase lasts up to ten days, and severely affected puppies may die. Diagnosis is made by finding oocysts during a microscopic examination of a stool sample.

Treating the Disease

Puppies are usually treated for five days to two to three weeks to eliminate the parasite. Typically, resolution of the symptoms is slow once signs develop, and it may require a week of therapy before improvement is seen. Severe case may demand hospitalization to counter dehydration with fluid therapy.

Sanitation is the single most important prevention of coccidiosis, particularly in kennels or other environments where large numbers of dogs are housed. Environmental control is important. Remove feces promptly from the yard or kennel to prevent infection or reinfection.

Coccidia are resistant to common disinfectants, but a strong ammonium hydroxide solution or heat treatment using boiling water, steam or a flame gun (on cement or gravel runs) is effective. Disinfect runs, cages and food bowls every day to destroy infective organisms.

In high-risk environments, puppies may benefit from use of a preventative drug called amprolium more commonly used to treat chickens. However, it's not approved for puppies and only effective against one stage of the protozoan's life cycle, so must be administered for about seven days until all parasites reach this stage and are destroyed. Also, amprolium can cause a thiamine deficiency in puppies if used beyond ten days, and should only be used under your veterinarian's supervision.

Coccidia

Coccidia are tiny single-celled parasites that live in the wall of your dog’s intestine. They are found more

often in puppies, but they can also infect older dogs and cats.

Dogs become infected by swallowing soil that contains coccidia or other substances in the environment that may contain dog feces.

How will coccidia affect my dog?

Coccidiosis, the disease caused by coccidia, may not cause any signs in dogs but is usually more serious in puppies. The most common sign of coccidiosis is diarrhea. More severe infections can cause bloody diarrhea. Severe infections, especially in puppies, can kill them.

How do I prevent my dog from getting coccidia?

Coccidial infections can be prevented by removing your dog's feces regularly from your yard or other areas where the dog goes to the bathroom. Because coccidia are found most often in puppies, it is important to have puppies examined for the parasite as soon as possible. Your veterinarian can perform a fecal test to diagnose coccidiosis. If your dog is infected with coccidia, your veterinarian is able to give it effective medications.

Can my cat get coccidia from my dog?

A dog infected with coccidia cannot pass the infection to cats and vice versa. Coccidial infections in dogs occur only by swallowing the coccidia in soil or dog feces

http://www.capcvet.org/capc-recommendations/coccidia

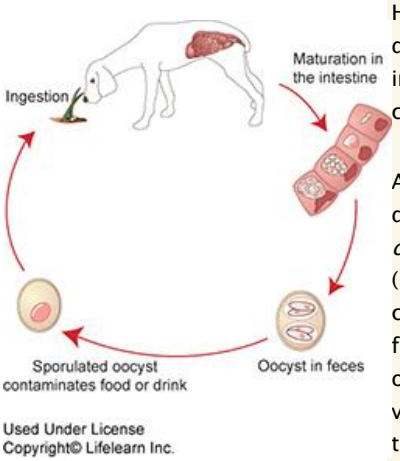
What is coccidiosis?

Coccidiosis is an intestinal tract infection caused by one-celled organisms (protozoa) called *coccidia*. Coccidia are sub-classified into a number of genera, and each genus has a number of species.

"At least six different genera of coccidia can infect dogs."

At least six different genera of coccidia can infect dogs. These microscopic parasites spend part of their life cycle in the lining cells of the intestine.

Most infections are not associated with any detectable clinical signs. These infections are called *sub-clinical infections*. The species *Isospora canis* causes most clinical infections in dogs. *Cryptosporidium parvum* is another coccidian parasite that may cause diarrhea in some puppies.



How did my dog become infected with coccidia?

An infected dog passes *oocysts* (immature coccidia) in the feces. These oocysts are very resistant to a wide variety of environmental conditions and can survive for some time on the ground. Under the right conditions of temperature and humidity, these oocysts "sporulate" or become infective. If a susceptible dog ingests the sporulated oocysts, the oocysts will release "sporozoites" that invade the intestinal lining cells and set up a cycle of infection in neighboring cells. Dogs may also be indirectly infected by eating a mouse that is infected with coccidia.

What kinds of problems are caused by coccidiosis?

Most dogs that are infected with coccidia do not have diarrhea or other clinical signs. When the coccidial oocysts are found in the stool of a dog without diarrhea, they are generally considered a transient, insignificant finding.

"In puppies and debilitated adult dogs, coccidiosis may cause severe, watery diarrhea, dehydration, abdominal distress, and vomiting."

However, in puppies and debilitated adult dogs, coccidiosis may cause severe, watery diarrhea, dehydration, abdominal distress, and vomiting. In severe cases, death may occur.

How is coccidiosis diagnosed?

Coccidiosis is diagnosed by performing a microscopic examination of a stool sample. Since the oocysts are much smaller than the eggs of intestinal worms, a careful fecal evaluation must be made. Infection with some of the less common coccidial parasites is diagnosed with a blood test.

How is the coccidial infection treated?

The most common drug used to eliminate coccidia is a sulfa-type antibiotic. It is usually given for ten to fourteen

days. In severe infections, it may be necessary to repeat the treatment. Other drugs may be required if diarrhea and dehydration occur. If the sulfa-type drug is not effective, other treatments are available. Re-infection of susceptible dogs is common so environmental disinfection is important. The use of diluted chlorine bleach [one cup (250 ml) of bleach mixed in one gallon (3.8 L) of water] is effective if the surfaces and premises can be safely treated with it.

Are the coccidial parasites of my dog infectious to humans?

"The most common coccidia found in dogs do not have any affect on humans."

The most common coccidia found in dogs do not have any affect on humans. However, less common types of coccidia are potentially infectious to humans. One parasite, called *Cryptosporidium*, may be carried by dogs or cats and may be transmitted to people. This parasite has also been found in the public water supply of some major cites. It poses a health risk for immunosuppressed humans such as AIDS patients, those taking immune suppressing drugs, cancer patients, or the elderly.

Good hygiene and proper disposal of dog feces are important in minimizing risk of transmission of all canine parasites to humans, or to other animals.

What is Giardia?

Giardiasis is an intestinal infection of man and animals caused by a protozoan parasite *Giardia intestinalis (*also known as *Giardia lamblia).*

"...it is not a "worm", bacteria or virus."

Giardia is a simple one-celled parasitic species; it is not a "worm", bacteria or virus. The parasite occurs worldwide and is a common cause of "Traveler's Diarrhea" in people. Outdoor enthusiasts who inadvertently consume contaminated water may develop "beaver fever", which is another name for giardiasis in people. Other examples of protozoan parasites that can cause enteric (intestinal) disease are Coccidia, Cryptosporidia and Toxoplasma.

Giardiasis can be an important cause of illness, especially diarrhea, in animals and man. However, the majority of dogs infected with *Giardia* do not have diarrhea, vomiting or any other signs of illness.

The Giardia organism has two forms. A fragile, feeding form exists in the gut of infected animals, while a hardy cystic form is shed in feces and can survive several months in the environment, particularly in water and damp environments.

What are the clinical signs of Giardiasis?

These microscopic parasites attach themselves to the intestinal wall and the damage causes an acute (sudden-onset) foul-smelling diarrhea. The stool may range from soft to watery, often has a greenish tinge to it, and occasionally contains blood. Infected dogs tend to have excess mucus in the feces. Vomiting may occur in some cases. The signs may persist for several weeks and gradual weight loss may become apparent.

"The disease is not usually life threatening unless the dogs' immune system is immature or immunocompromised."

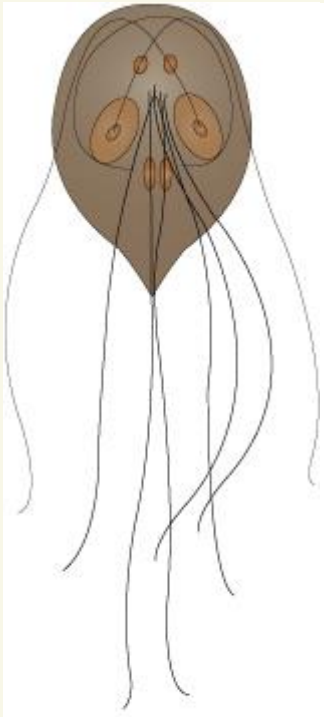
The diarrhea may be intermittent. Most dogs do not have a fever but may be less active. The disease is not usually life threatening unless the dogs' immune system is immature or immunocompromised.

If your pet is showing these symptoms do not wait for symptoms to get worse. It's better to **contact your local VCA Veterinarian**. We offer a **free first exam*** for new clients.

How do dogs get giardiasis?

A dog becomes infected with *Giardia* when it swallows the cyst stage of the parasite. In susceptible dogs, once the cyst passes into the dog's intestines; it goes through transformation to the *trophozoite* or feeding form and attaches to the intestinal wall to feed. If sufficient numbers are present, clinical signs of damage to the intestinal wall will develop. Trophozoites reproduce by dividing, and some transform into the cystic form. Eventually, the dog passes cysts in its stool.

"Giardiasis can be transmitted by eating or sniffing the cysts from contaminated ground, or by drinking contaminated water."



Giardia: 3000 x actual size
(after Kofold and Christiansen)

These cysts are immediately able to infect another animal. Giardiasis can be transmitted by eating or sniffing the cysts from contaminated ground, or by drinking contaminated water.

When *Giardia* cysts are found in the stool of a healthy adult dog without diarrhea, they are generally considered a transient, insignificant finding. However, in puppies and debilitated adult dogs, they may cause severe, watery diarrhea that may be fatal if left untreated.

The likelihood of developing disease increases when large numbers of cysts are present in the environment from fecal contamination. Giardiasis is a common occurrence in environments that are densely populated, such as kennels, pet stores, or animal shelters.

How is giardiasis diagnosed?

"...require a special zinc sulfate flotation solution for detection."

A routine fecal flotation test may fail to detect these tiny cysts, which are shed inconsistently in the feces, and which often require a special zinc sulfate flotation solution for detection. Occasionally, the parasites may be seen on

a direct smear of the feces. If your veterinarian suspects giardiasis, a sample of stool may be analyzed for the presence of *Giardia* specific antigens (cell proteins). Many cases are presumptively diagnosed on the basis of medical history and clinical signs suggestive of giardiasis.

How is giardiasis treated?

The most common drug used to kill *Giardia* is metronidazole, an antibiotic. It is normally given for five to seven days to treat giardiasis. Another antiparasitic drug, fenbendazole, is suggested as a potentially useful treatment, especially when used in conjunction with metronidazole. This combination is usually administered to cats with refractory diarrhea (diarrhea that hasn't responded to treatment). Supportive treatment with other drugs may be needed as supplemental therapy if dehydration or severe diarrhea is present. Some dogs may require follow-up tests and treatments based on their condition and severity of infection.

What is the prognosis for Giardiasis?

The prognosis is good in most cases. Debilitated or geriatric animals and those with incompetent immune systems are at increased risk for complications, including death.

Can my dog give a Giardia infection to me or my family?

Giardia can cause diarrhea in humans and can potentially be passed from dogs to humans. In the past, it was assumed that cats and dogs, along with wildlife, were an important source of infection for humans.

"...contaminated municipal water supplies are responsible for many outbreaks. "

However, human-to-human transmission is also important and contaminated municipal water supplies are responsible for many outbreaks.

If your dog is diagnosed with giardiasis, environmental disinfection and good personal hygiene are important to prevent accidental spread to humans. In particular, people with immunodeficiency, such as AIDS or cancer, or who are undergoing chemotherapy, should use extreme care, especially when handling feces or after administering medications.

For environmental disinfection, you can use chlorine bleach at 1:32 or 1:16 dilutions, or 1-2 cups in a gallon of water (60-120 mls/L). However, be sure that the affected surfaces can be safely treated with bleach. Lysol® and quaternary ammonium compounds (Parvosol®, etc.) are also reported to be effective in killing the cysts. *Giardia* cysts are susceptible to drying so try to keep your environment as dry as possible. For best results, thoroughly clean the pet's living and sleeping areas and then allow the areas to dry out for several days before reintroducing pets.