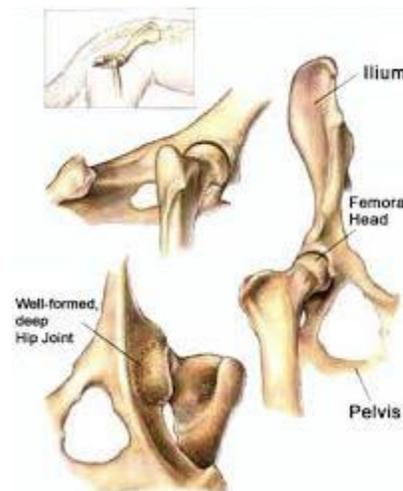


Diseases Of The Hip And Treatment In Small Dogs And Cats

Small dogs and cats are frequently affected by diseases and trauma that involves the hip joint. There is usually significant pain and discomfort associated with these issues as well as dysfunction that will significantly affect the pet's ability to walk, run and play. This client handout will provide information on these diseases and their treatment.

The hip is a "ball and socket" type joint which allows for a wide range of motion in multiple planes. The head of the femur forms the "ball" that inserts into the acetabulum (the "socket"), which is a spherical recess in the pelvis. As with all joints there is a joint capsule, which is a sheet of fibrous tissue completely surrounding the entire joint and attaches both to the neck of the femur and the rim of the acetabulum. Within this "bag" is joint fluid, which lubricates and provides nutrition to the articular cartilage.

The joint is held in place and prevented from dislocating by a number of structures and surface tension created by the joint fluid itself. The joint capsule acts as a ligament to limit motion and there is a proper ligament connecting the femoral head to the centre of the acetabulum (both of these structures must tear in order for the hip to dislocate). Numerous large muscles have attachments very close to the joint or cross over it and are major stabilizers of the joint as well.



Selected Disorders of The Hip

Hip Dysplasia

Hip dysplasia is a developmental disease characterized by laxity of the hip or failure of the "ball" to seat well into the "socket". In young patients this results in subluxation (i.e. partial dislocation) of the femoral head, which results in mild to severe degenerative joint disease and arthritis as the patient ages. Hip dysplasia is a genetic disease that is influenced by other factors such as environment, diet, etc. It is estimated that millions of dogs and cats in North America are affected with hip dysplasia with associated costs to society in the hundreds of millions of dollars. There is a spectrum of severity in pets with hip dysplasia that can range from very mild to very severe.

Hip dysplasia can occur in a dog or cat of any breed and unfortunately both hips are usually affected. Most people associate hip dysplasia

with larger breeds of dogs, but it is also common in small dogs and cats. Some breeds of dogs are predisposed to hip dysplasia: Labrador and Golden Retrievers, Newfoundland Retrievers, German Sheppard Dogs, and Bulldogs are some examples.

Hip Dysplasia is a painful disease and can affect dogs and cats at any age from four or five months and older. The pain results from catastrophic reduction of the head of the femur into the socket when the paw strikes the ground during locomotion. Damage to the cartilage and underlying bone results in degeneration and remodelling of the joint and ultimately osteoarthritis as these patients age.



Radiograph of one-year old cat with severe hip dysplasia and degenerative joint disease.

Patients with hip dysplasia exhibit a wide range of clinical signs from none at all to severe debilitating disease. Severely affected patients are often identified when they are young due to the effects on the pet's ability to walk, run and play. Less severely affected patients are often identified when they are older when the joint degenerates and problems begin to develop. The severity of radiographic changes does not correlate well to clinical signs – meaning that dogs can have really severe changes on x-rays and little or no visible problems. The opposite is also true – pets can have minor changes yet have severe mobility problems.

As hip dysplasia is a developmental disease, this problem develops from birth and is a permanent condition. Degenerative joint disease that results from laxity, inflammation and inevitably arthritis is chronic and progressive. Clinical signs worsen with the passage of time and therefore pets become more likely to display signs as they age. If detected early, numerous preventive measures can be taken that may dramatically alter the course of the disease. As with all orthopaedic diseases, early detection and treatment can profoundly impact the outcome.

Trauma

Trauma is a common cause of hip problems in pets. These involve either fractures or dislocations of the joint. Any time a joint is involved in a trauma there will be a concern long-term arthritic changes will be a concern and will frequently influence the treatment choice – i.e. primary repair of the trauma vs a joint salvage procedure such as a hip

replacement. In smaller patients there is frequently an underlying disease such as hip dysplasia or feline physeal dysplasia and this can greatly impact the treatment options, which will usually involve a joint salvage procedure.



Small breed dog with Legg-Calve-Perthes diseases on the left and a dislocated hip on the right

As traumas to the hip can vary considerably in nature and are often treated as emergencies, these are discussed in detail on intake to the hospital. If a primary repair is undertaken, then long-term joint care will be necessary to slow the development and progression of degenerative joint disease.

Feline Physeal Dysplasia

Feline physeal dysplasia is a developmental disease that affects young, large, particularly male cats, often that have been neutered at a young age. This disease affects the cat's growth plates, particularly the growth plate involving the femoral head. This growth plate should close and turn into solid bone at approximately 44 weeks of age. In affected patients the growth plate fails to close and a fracture later occurs at this site, separating the head of the femur from the neck. This is also sometimes referred to as a slipped capital epiphysis or "slipped cap". Maine Coon and Siamese cats are particularly predisposed to this disease.

As this is a pathologic fracture where the cartilage of the growth plate failed to develop into bone, the ability to primarily repair this fracture is an added challenge. There is also very limited bone available in the small femoral head to allow for implant placement. Additionally, as these are very young animals that are likely to develop significant degenerative joint disease over time, a surgical salvage procedure is typically recommended for these patients.

Legg-Perthes Disease/Avascular Necrosis of The Femoral Head

This is a disease that primarily affects young growing dogs, most patients presenting between 4 and 11 months of age. The femoral head and growth plate are affected and undergo fragmentation



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and collapse in severely affected patients. While patients may be mildly affected, this usually results in severe lameness. This is a disease of small breed dogs and miniature poodles and West Highland White terriers are particularly affected, although any small breed of dog can have this issue.

Conservative management of this disease with rest and NSAIDs is rarely successful even in the short-term. This is considered a surgical disease in the vast majority of cases but has an excellent prognosis with surgery.

Medical Treatment Options for Diseases of The Hip

Medical management of select diseases involving the hip as either a short or long-term treatment option may be appropriate. This may apply to patients with mild or early hip dysplasia or avascular necrosis. Medical management may also be an appropriate short-term option for a patient awaiting a definitive surgical treatment such as a total hip replacement. Medical management of severe disease that requires surgery is not an appropriate long-term treatment.

Until or unless a patient is receiving a definitive surgical treatment, it is important to understand that treatment is life-long as these are permanent conditions. The goal of all therapy, including surgery, is to minimize

the development of arthritis so that the dog can live a normal, healthy and pain-free existence.

It is also important to understand that arthritis is not a disease. Hip dysplasia, Legg-Perthes, etc., are diseases. These diseases cause inflammation; arthritis is simply inflammation with the addition of time. As such, the goal of **all** of our therapies is to prevent or suppress inflammation, thereby preventing the development of arthritis. Attempting to treat arthritis is unproductive and ultimately unsuccessful.

Medical management may consist of one or more of the following: NSAIDs, laser therapy, joint diet/dietary management and chondro-protectants. Which therapies are chosen depends on the particulars of the case, the degree of disease present, the size of the patient and the client's preferences. A brief description of these therapies is listed below.

Weight, Diet and Hip Problems

In any patient with any orthopedic disease, the most important factor impacting the development of disease, prognosis and treatment is the weight of the patient. This is true with respect to the relative weight of the dog (St. Bernard v. Chihuahua) but especially with respect to obesity. **Regardless of the orthopedic condition, failure to recognize and address issues of diet and obesity will result in treatment failure, no matter how much is invested in treatment and surgery.** Some surgeons have a policy of declining to perform surgery until obesity issues are resolved due to the higher complication rate, increased difficulty in performing procedures

and sometimes demonstrated failure of compliance on behalf of the client. Your veterinarian should provide specific dietary recommendations including not only a specific diet(s), strict feeding guidelines that include specific measuring instructions and complete diet counselling. Any complicating medical conditions such as hypothyroidism need to be diagnosed and treated.

Joint Diets – these are prescription veterinary diets formulated specifically for addressing joint disease and arthritis in our patients. These diets are designed not only to deal with and prevent inflammation associated with joint disease but are excellent at addressing weight issues that will have the most impact on patient outcomes. Our mobility support diets work by suppressing inflammation, thereby preventing and slowing down the development of degenerative joint disease.

Joint diets have had a major impact on how we manage joint disease over the past two decades, and for many patients on monotherapy have allowed us to replace drugs with food. These are prescription diets available only through your veterinarian that are intended to be used to treat disease. There is no substitute or equivalent product available through the pet store.

Chondroprotectants - All patients with any type of joint disease should be on chondroprotectants (glucosamine, with or without chondroitin) and this is usually prescribed and supplied in our hospital. Please note, glucosamine incorporated into dry food is not present in sufficient quantities

to have a therapeutic effect – most of it is destroyed during processing as it breaks down under the high temperatures and pressures used to make dry kibble. It has to be added to the food after processing, usually as a top- dressing added at feeding time by the client. It is strongly advised to use a veterinary product to ensure that the correct formulation and dose are being administering in a therapeutically useful format. The majority of the nutraceutical industry is not regulated which has led to concerns regarding the quality and therapeutic efficacy of most “over-the-counter” products.



NSAID's and other medications – Most patients presented with clinical signs initially start on some medications as this is our primary means of immediately addressing pain and inflammation. Prescribed



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medications are tailored to suit the needs of the patient's particular condition. While our other therapies may be just as good at addressing these issues they all take a significant amount of time to start having an effect – drug therapy is immediate. Often we will withdraw the medications if possible when other therapies have had time to produce the intended effect. A number of options are available, including some newer products that have a reduced incidence of adverse effects.

Laser Therapy – Therapy lasers have become increasingly popular in small animal practice since they became widely available. Laser therapy allows us to treat both acute injuries and chronic disease with often spectacular results. It is also extremely helpful for managing post-operative pain, inflammation and swelling and is included in our post-operative management for all orthopedic cases. This treatment has had a major impact on dramatically lowering our post-op complication rate for a variety of reasons.

Surgical Management of Hip Diseases

Femoral Head Ostectomy (FHO)

Femoral head ostectomy works by removing the femoral head and neck and interposing soft tissue between the femur and acetabulum. This will of course obliterate the hip joint completely, thereby eliminating pain associated with hip disease. Due to the large number of tendon attachments and heavy musculature

surrounding the hip, the femur will pivot around this point and allow for function of the limb.

The majority of cats and dogs will be able to walk after this procedure. No patient that receives an FHO has a normal gait afterwards. Most patients who receive an FHO will be able to function acceptably however 25% will have clinically detectable pain. This procedure was first published in 1960 and is currently the most common surgical treatment performed to surgically address hip trauma or disease. The only study published to date on FHO that used objective gait analysis was published in 1978 and showed a good or excellent outcome in 52% of patients. The equivalent procedure in humans is known as a Girdlestone procedure and was largely abandoned in the late 1960s when total hip replacement became available. Due to the extremely poor outcomes associated with this surgery in people it is now only considered in patients who are bed-ridden or confined to a wheelchair.

Despite this, it is true that if cases are being selected appropriately a patient receiving an FHO or who ends up with an FHO due to failure of a hip replacement will have a better outcome than would have been the case without surgery. Our hospital does not offer FHO as a primary treatment option and its use is restricted to patients who are not hip replacement candidates, patients where a hip replacement was attempted but could not be executed or a patient had a hip replacement but had to have the implants removed.



Improperly performed FHO in a cat that resulted in significant discomfort and chronic lameness. This is unfortunately extremely common with this procedure.

Total Hip Replacement (THR)

As the name implies, total hip replacement involves replacing the acetabulum (socket) and femoral head and neck (ball) with artificial implants. The diseased femoral head and neck are cut off, the acetabulum and femoral shaft are reamed out and replaced with artificial implants. These implants may be press-fit in-growth (biological fixation or BFX) or cemented (CFX) or a hybrid of both. Currently in small dogs and cats only CFX implants are available however BFX implants are being developed and will be available soon. The smaller implant systems available for

small dogs and cats are called micro- or nano-THR. They require more skill and experience to implant and there are far fewer surgeons who are qualified to do this procedure. Our hospital is currently the only facility in Canada that offers micro- and nano-THR and we have one of the highest caseloads in the world for this procedure currently.

Indications for THR include unsalvageable trauma, such as badly healed fractures and hip dislocations that are unable to be repaired, severe hip dysplasia with or without chronic degenerative changes, several diseases previously discussed and FHO revision. THR can be performed on any dog or cat from 2Kg to 80Kg. Exclusions for surgery include obesity, unmanaged cruciate ligament disease or other orthopedic disease, incomplete or successful medical management of hip dysplasia, and skin infection. Obviously most of these exclusions are temporary and allow surgery to occur on resolution. Age is not an exclusion; any healthy dog or cat may be a candidate for THR. Dogs and cats up to 14 years of age have received successful hip replacements in our hospital.



Total Hip Replacement in a one year old cat for severe hip dysplasia.

THR is the only joint surgery in veterinary orthopedics where the expected outcome is completely normal function post-operatively. The goal of surgery is to return an injured or chronically lame patient to normal or near-normal function, including athletic, sporting and working dogs. A 2010 study using objective gait analysis demonstrated normal weight-bearing as early as 12 weeks post-operatively. Other more recent evidence also supports this finding. Compared with most other surgical options, particularly FHO, THR is clearly a superior option in most cases based on currently available evidence.

While the pay-off to the patient is extremely appealing, THR is not without

risk. Very serious potential for complications limit performance of this procedure to only the most highly experienced and advanced orthopedic surgeons. Highly rigorous, expensive and complex training is involved not just for the surgeon, but for the entire surgical and radiology team. A minimum of 6 to 8 highly trained people are required to ensure meticulous and precise performance of this procedure. In order to achieve certification, candidates must engage in months of intensive training and study.

Complications can be serious and lead not only to loss of the arthroplasty but may include fracture of the femur or pelvis, neurological injury and infection. The concept that a failed THR results in “an expensive FHO” is over-simplified. Reported complications also include dislocation, implant loosening, embolism, and implant displacement or subsidence. Complication rates with cemented implants have been reported as high as 12-13% and include luxation (4%), infection (1-2%) and aseptic loosening (2-3%). While a significant proportion of these complications would result in removal of the implants, it has also been demonstrated that the outcome after implant removal is (in general) identical to that which would be seen with an FHO. Our hospital’s current complication rate for this procedure is 4.8%. All of our complications to date have been successfully resolved with a good outcome.



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Physiotherapy and Exercise

Rehabilitation is vitally important for these patients. Light exercise, particularly in the form of leash walks, light off-leash activity, and swimming have a significant and positive impact on dogs with hip dysplasia and secondary osteoarthritis. Exercise helps maintain joint health, especially range of motion, healthy muscle mass and overall mobility.

Helpful exercise periods for these dogs mean shorter duration and more frequent. Exercise periods ideally would involve 15-20 minute sessions about 3-4 times daily. Longer duration exercise periods should be avoided, as should vigorous or extreme activity. A very long walk daily is likely to accelerate problems rather than help them. “Weekend Warrior Disease” – doing no activity all week then playing hard all weekend – will have the most devastating impact.

In addition to light exercise, other rehabilitation may be prescribed for dogs with advanced clinical signs. Significant loss of range of motion is particularly evident in most dogs with hip dysplasia. Maintaining good range of motion is extremely important in these dogs and in fact improved range of motion is a major outcome measure in many orthopaedic diseases. A number of exercises and activities can be prescribed to assist with this.

Appropriate rehabilitation will be prescribed post-operatively. It is vitally important to diligently follow the discharge instructions given. Post-operatively most surgical patients will initially require absolute

exercise restriction then begin gradual controlled leash walks and other exercises after a post-op recheck.

Post-Operative Care

Client compliance with post-operative care is extremely important – **failure to meticulously follow instructions can, and usually does result in severe complications and treatment failure.** It is our preference whenever possible to provide complete and comprehensive case management for the entire post-op period. In our practice, we perform laser therapy during the first two weeks post-op to aid with recovery and pain management. Other pain management such as NSAIDs, opioids (codeine) etc., are provided as is a short course of antibiotics. Physiotherapy is a crucial component of post-op management and instructions are given at discharge.

Other than prescribed physiotherapy, absolute exercise restriction is necessary and off-leash activity is strictly forbidden. Unrestricted access to flights of stairs in the house is to be avoided, however going up and down exterior stairs to get in or out of the house is permissible (on-leash only!). As these are smaller patients, they need to be confined to a small space such as a single room of the house. It is extremely important that cats are housed so that they are unable to jump on objects or into window sills, etc.

Sutures are removed after 14 days and post-op x-rays are taken at 6 weeks. If post-op x-rays are within expectations, owners are



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instructed to continue with prescribed treatment and physiotherapy until 12 weeks post-op, at which point normal activity may be resumed. For THR patients, radiographs are obtained again at six months post-op, then annually thereafter. Annual rechecks (radiographs) are strongly recommended as, although uncommon, implant loosening, subsidence and infection can occur long after implantation.

THR patients are usually able to walk on the affected limb within hours after surgery. Hospitalization is typically dependant on the surgeon and patient factors, with discharge the following morning. Patients are able to weight-bear normally by 1 month and are on exercise restriction for 8-12 weeks post-operatively. For THR patients, radiographs are obtained 6 and 12 weeks post-op then annually thereafter. Annual rechecks (radiographs) are necessary as, although uncommon, implant loosening, subsidence and infection can occur long after implantation.

Cost

The cost of these procedures is as follows:

Orthopedic exam: \$650 + HST
(includes consult, sedation and whatever x-rays are necessary)

Surgeries:

Femoral Head Ostectomy (FHO) \$3000-3500
+ HST

Uncomplicated Micro- or Nano-Total Hip Replacement (THR) \$3800 + HST

Complicated THR or FHO revision – priced on an individual basis

Note that these fees may be subject to change and should be confirmed at the time of the procedure.

Note that post-op x-rays are **not** included in the cost of surgery.

****A non-refundable deposit of \$250.00 is due at the time of booking any orthopedic work- up. Deposits for Total Hip Replacements are \$1000.00 due at time of booking and are 100% non-refundable.**

****Financing options are available. Please contact reception for further details.**

NOTE: Surgical discharge with Dr. Rocheleau is scheduled for 8:30am the morning following surgery (unless otherwise stated). It is imperative that a patient's owner(s) be present at the hospital at this time. Failure to do so will result in a missed surgical discharge and is highly likely to lead to post-operative complications which will be at the expense of the owner(s).