**Hip Dysplasia:**

**Treatment options**

**Anatomy of the hip**
The hip is a “ball and socket” joint, with the ball being on the end of the femur (the femoral head) and the socket in the pelvis (the acetabulum).

**What is hip dysplasia?**
Hip dysplasia is the abnormal development of the hip joint. It can affect dogs and cats. It is a hereditary disease that can be passed on in the genes from the parents. Primarily hip dysplasia is a disease of large and giant breed dogs. But it does also affect medium and small breed dogs and more recent studies show cats are also susceptible to the disease. There are a number of genetic factors which predispose to the development of hip dysplasia (see Hip Score Scheme Factsheet). Other contributing factors may also have an effect on development of hip dysplasia:
- Obesity
- High impact exercise during growth
- Very early neutering

**When does hip dysplasia develop?**
- Affected animals have a normal joint at birth.
- During growth, one or both hip(s) become unstable.
- The initiating problem is a laxity of the muscles, connective tissue and ligaments that usually support the joint.
- Laxity causes the femoral head and the acetabulum to move apart and back together.
- As the bones impact and/or rub on one another during exercise, abnormal wear of the joint takes place.

As a result of abnormal wear:
- The femoral head and neck and the acetabulum remodel
- The femoral head becomes flattened

- The acetabulum becomes shallow
- Osteoarthritis develops which can lead to discomfort and continues to progress throughout the animals' life.

**Signs**
- Exercise intolerance
- Abnormal gait e.g. bunny hopping (legs move more together when running rather than swinging alternately)
- Stiffness on rising after rest
- Lameness
- Reluctance to jump up or climb stairs
- Atrophy of the hind limb muscles (muscle wastage)
- Sometimes a “clunking” sound can be heard when the dog gets up/walks
- Dogs often exhibit signs of hip dysplasia during growth when the laxity allows the bones to impact/ rub on one another
- Signs can reduce (or even disappear) for a few years because new bone formation and thickening of the soft tissues help to stabilise the hips
- Signs then reappear when osteoarthritis becomes more severe

**Cats**
Cats can also develop hip dysplasia, but the condition may go undetected. Due to their small size and the fact that cats are not exercised as much as dogs, along with their natural agility, they may have hip dysplasia but still appear to function normally.

A cat that is disinterested in playing and outdoor activity may not simply be a lazy cat, but may have painful hips.

**Diagnosis**
The diagnosis of hip dysplasia is made based on a combination of history, clinical signs, physical
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examination by the vet, and radiographs (x-rays). X-rays are always necessary to diagnose hip dysplasia, to enable the vet to see the severity of the abnormal joint development and assess the presence of secondary osteoarthritis.

Conservative management
- Controlled exercise (including physiotherapy)
- Medication
- Weight management
- Strenuous and high-impact exercise should be avoided in at-risk breeds until dogs are skeletally mature
- Hydrotherapy is recommended for dogs with clinical signs (especially in the underwater treadmill) to help maintain/restore muscle mass
- Medications to reduce inflammation and increase comfort may be given
- Restricted caloric intake to slow rate of growth reduces the severity of developing hip dysplasia and the degree of secondary osteoarthritis

Some dogs showing clinical signs will respond well to conservative therapy, and may become comfortable for a time. Osteoarthritis in these dogs may need to be addressed in later life.

Triple pelvic osteotomy (TPO)
This surgical procedure should be reserved for dogs under 12 months old, without the presence of any osteoarthritis. The TPO involves cutting the pelvis in three places and fixing the bone segments back in place with a plate and screws such that the acetabulum lies further over the top of femoral head, reducing movement between the two bones during weight-bearing.

Treatment
The treatment can differ depending on the age of the dog.

In the young/juvenile dog:
- Conservative management
- Triple pelvic osteotomy (TPO)
- Femoral head and neck ostectomy (FHNO)

Treatment in the mature dog:
1. Conservative
2. Femoral head and neck ostectomy (FHNO)
3. Total hip replacement (THR)
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**Femoral head ostectomy (FHO)**

This is the surgical removal of the femoral head and neck. Hip joint function is altered, but an acceptable outcome and, above all, a comfortable joint can usually be achieved. It is less successful in larger dogs. It is reserved for dogs and cats that have lameness which responds poorly to conservative therapy and where financial constraints prevent total hip replacement.

During the surgery:
- The femoral head and neck are removed and replaced with an alloy implant
- The acetabulum is reamed and a polyethylene acetabular cup is placed.

The position of the acetabular component is shown on an x-ray by a small metal ring within the plastic implant.

The success rate with THR is excellent with approximately 95% of animals returning to normal function.

There are two types of THR - cemented and cementless. In the cemented system, the acetabular and femoral prostheses are held in place by bone cement. In the cementless system, the prostheses have a porous outer coating, into which bone grows, to secure them in place.

The type of prosthesis used is based on individual assessment of each case and may involve a combination of cemented and cementless components.

**Total hip replacement (THR)**

THR is a major surgical procedure with possible complications, therefore it is reserved for dogs with persistently painful hips which are poorly responsive to conservative management. THR is the preferred alternative to FHNO, especially in large breed dogs.

During the surgery:
- The femoral head and neck are removed and replaced with an alloy implant
- The acetabulum is reamed and a polyethylene acetabular cup is placed.

The position of the acetabular component is shown on an x-ray by a small metal ring within the plastic implant.

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