

Canine Modular Total Hip Replacement

Why choose a hip replacement?

Successful joint replacement relieves pain, improves function and allows patients to return to an active lifestyle. Joint capsule tearing and distension combined with *bone-on-bone* contact causes the pain of osteoarthritis. THR removes these painful components of the hip and replaces them with a polyethylene acetabular component and cobalt chrome femoral component.

Indications.

THR is indicated in patients with medically-unresponsive, non-infectious, non-neoplastic, disabling conditions of the coxofemoral joint. The most common indication is osteoarthritis secondary to canine hip dysplasia, however THR can also be appropriate in other cases such as coxofemoral luxation (chronic traumatic or non-traumatic), femoral head disease such as non-reconstructable fracture or avascular necrosis, nonunion or malunion of femoral neck, acetabular fractures and failed excision arthroplasties. The clinical signs of hip pain can initially be as subtle as: stiffness in the morning, slowness to get up, not wanting to exercise as long or as vigorously, a change in stride of the hind legs, “bunny hopping”, wanting to sit down while eating and during walks or reluctance to stand.

Contraindications.

Contraindications include prior or current joint infection, joint neoplasia, radiographic diagnosis of osteoarthritis without detectable joint pain (i.e. clinically sound), skeletal immaturity and insufficient patient size (< 10-15 kg). Juvenile hip dysplasia is often more appropriately addressed by reconstructive procedures which are both prophylactic and/or therapeutic such as pelvic symphysiodesis or triple pelvic osteotomy (TPO).

Relative contraindications which increase the risks of complications include: severe dental disease, UTIs, skin infection over the operative site, insufficient analgesic drug trial, excitable or fractious patients which are difficult to handle, poor owner compliance with postoperative care instructions, high risk anaesthesia candidates and patients with concurrent severe spinal cord diseases (e.g. progressive degenerative myelopathy in GSDs).

What is involved from the patient perspective?

Patients are evaluated on an outpatient basis prior to surgery. The surgeon performs a thorough general physical examination followed by an orthopedic and neurological examination. The goal is to identify and inform pet owners of other problems which may impact the decision of whether to proceed to a joint replacement. Pelvic radiographs under sedation or anesthesia are performed to confirm the diagnosis, identify complicating factors such as infections (e.g. punctate lysis), luxation, poor bone quality, limited bone stock and to measure the acetabular and femoral dimensions for selection of prosthetic components.

Patients are admitted to hospital the morning of surgery. The typical hospitalization is two days. Intensive anaesthetic

monitoring including pulse oximetry, end-tidal capnography, continuous electrocardiogram and non-invasive blood pressure manometry is offered. All patients receive a morphine epidural in addition to pre-emptive and postoperative NSAIDs and parenteral narcotics. Extensive measures are taken to provide a *state-of-the-art* operating theatre with strict aseptic technique. Prophylactic antibiotics are used systemically and in the bone cement. Operative times average 100-120 minutes.

Most patients support weight on the leg immediately postoperatively. Detailed discharge instructions are provided to pet owners with emphasis on confinement, restricted activity / excitement and provision of good footing. Pelvic radiographs are repeated at 6-8 weeks postoperatively. Most dogs are performing well at 3 months postoperatively.

Potential postoperative complications.

The most recent clinical studies document an overall complications rate of 5%. This figure only applies for established total hip programs with surgeons experienced in THR. The complications in decreasing order of frequency include: luxation, aseptic loosening (cemented THR), infection, periprosthetic femoral fracture and sciatic neuropraxia. Dr. Chris Preston has been involved in modular THR since 1995. Problems are minimized by frequent repetition of the same team of surgeons and surgical nurses and using the most advanced instrumentation available. In each individual case, the potential benefits and risks of THR are explained and a decision of whether or not to proceed with the procedure is made by the informed owner.

Do the implants wear out?

The effective life of a THR in humans is 10-15 years and is limited due to chronic aseptic loosening. This justifies postponement of elective joint replacement in people for long as possible to avoid the necessity of revision surgery. Replacement of implants due to loosening is less common in dogs. The reasons are unknown but are likely to be related to their lower body weight, quadruped ambulation and considerably shorter lifespan. Age is not a disease. THR is equally successful in dogs of all ages provided they are skeletally mature.

Do we have to do both sides?

Although it is ideal to replace both hips in patients with bilateral disease, few patients receive two surgeries. This is due to a combination of financial and patient factors. The majority of patients improve dramatically relative to their preoperative status if the most painful side is replaced. This provides them with one normal hip and they seem to have improved tolerance of the unoperated hip. A coxofemoral neurectomy is a minimally invasive procedure (reduction of joint nociception) which can easily be performed on the contralateral side at the time of the THR if a second THR is not planned in the future.

Outcome studies – is it worth it?

Yes. In appropriate candidates, THR performed by an experienced surgical team in a modern theatre environment, is a procedure which consistently yields an excellent functional outcome.

‘Total hip arthroplasty’s success rate as a satisfactory surgical therapy for serious disabilities or illness is probably surpassed only by removal of the appendix.’

W.H.Harris M.D. 1971