

Management of the Post-operative Canine Hip

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Whether the surgical technique is a femoral head and neck excision, triple pelvic osteotomy, fracture repair, total hip replacement, or another, the therapy goals for any post-operative procedure will be to reduce pain, improve mobility, facilitate weight bearing and early return to function, regain muscle mass, improve joint stability, maintain joint flexibility, retrain proprioception, balance, coordination, and postural stability, and rebuild cardiovascular endurance. (Trudelle-Jackson EFFECTS, Hewett, Nwadike,) These goals can be categorized into stages of healing.

Treatment of the post-operative canine hip

In the acute stage, the first few of weeks post-operatively, the treatment goals should include lifestyle management, control of inflammation, enhancement or maintenance of range of motion (ROM) and implementation of early proprioceptive inputting. The rehabilitation therapist should advise the animal owner on concepts such as non-slip throw rugs over slippery flooring, barricading free access to stairs, the potential need for slings or support for ambulation or stair use, separation from other pets, and confinement when not supervised. As well, the animal should remain on leash for outdoor activity for at least 2 months and/or until he has been re-evaluated and deemed safe to begin off-leash activity. At this stage, leashed walks to allow toileting are allowed and can begin with 5 minutes and progress to 10 minutes per session over the subsequent few weeks.

Inflammation and pain relief can be managed with low-dose of modalities, cryotherapy, passive application of neuromuscular electrical stimulation (NMES) to the surrounding musculature, acupuncture and/or light massage adjacent to the surgical site(s). It is common in human physical therapy practice to engage in gentle ROM the same day post-operatively. All available hip ranges should be gently encouraged; end ranges should be avoided in this stage and movements should never be painful. Proprioceptive techniques might include weight shifting onto the affected limb, encouraging the animal to take a treat from its contralateral side, and simply rubbing the hair on the leg or light massage. It is also appropriate to address any axial skeleton issues that may be present or developing. Lameness and back problems have been found to be highly correlated in horses. (Landman) This could mean that the post-operative animal might be at risk of developing back pain secondary to postural alterations following surgery. This author recommends evaluating the spine and pelvis on a regular basis throughout the rehabilitation process.

As the animal progresses to the subacute phase (approximately weeks 4 – 6), goals are focused more on strengthening, gaining ROM or flexibility and more advanced forms of proprioception. Increasing the duration of walks and introducing small hills should be encouraged, and use of therapies such as swimming or underwater treadmill walking can be utilized as long as any incisions are well healed. In the case of total hip replacements, it has been found that complications such as late stage luxation in dogs, as well as hip or back pain, reduced stamina, poor balance, and an abnormal gait pattern in humans are

often correlated with abductor weakness (of the gluteals and/or tensor fascia lata).(Bhave, Bergh) Exercising in combination with NMES is better than volitional exercise alone.(Fitzgerald) The practitioner may wish to use those exercises described in Table 2 that are conducive to simultaneous application of NMES to better strengthen the hip abductors. Muscle contractures of the iliopsoas, rectus femoris, tensor fascia latae and adductors have been cited in human literature as functional limitations that cause malalignment of distal joints or contralateral limb joints, apparent leg length discrepancies and abnormal gait, hip and back pain.(Bhave) To prevent or address such problems, stretching of these key muscle groups should be incorporated into treatment, myofascial release techniques (a hands-on technique that applies prolonged light pressure with specific directions into the fascia system) could also be used, as well as acupuncture / dry needling or acupressure / trigger point releases of the tight muscles.(Tappan) Proprioception can be challenged to a greater extent in this phase with the use of balancing with front legs or all four legs on a balance boards, slow walking on uneven or unstable surfaces, and/or walking over obstacles spaced evenly or unevenly as the animal progresses.(Hewett)

Mid stage rehabilitation incorporates advanced strengthening, proprioception, and gait retraining as necessary. Increasing the time, distances, speed (i.e. trotting) or terrain traversed during leashed-walks (i.e. hills) will aid in strengthening and conditioning. Continued use of static balancing on two legs (this author prefers making the animal balance on the surgical leg and its opposite front limb by holding the other diagonal pair off the ground) with manual displacement or while on a novel surface (i.e. foam or mini trampoline) and stepping-over exercises moving both laterally, rotationally, or backwards may also increase the difficulty. Walking on a plank of wood elevated a few inches above the ground will address coordination issues, and may be combined with volitional balance disturbances (i.e. such as making the dog turn to take treats from near each shoulder while standing on the board). Following an injury or surgical intervention, many dogs will develop compensatory postural or movement strategies (such as habitual off-loading of the surgical limb or external rotation of the hip and toeing out at the foot) and while some of the exercise and proprioceptive techniques described above can address these issues, other therapeutic interventions might be required. These could include bandaging techniques to promote proper limb usage or contralateral limb inhibition by creating a perturbation stimulus.

In the end stage of rehabilitation (14 weeks and more), if healing has been occurring appropriately and according to schedule, then advanced strengthening techniques can be encouraged, such as destination jumping (i.e. on to a bed or over a jump). Longer trotting sessions may be necessary to build up muscular and cardiovascular endurance. This author uses a gradual return to off-leash activities beginning after 12 weeks, dependent upon the safety issues (i.e. time of the year and condition of the ground in order to assure non-slip footing, and only if not near other dogs that might initiate rough play). Owners need to be instructed to allow for a long warm up (10 minute or more) before allowing a short off-leash run (consisting of just 5 minutes off-leash to start) or that the initiation of the off-leash time should occur in the middle of the dog's walk.

Straight line running can be attempted (i.e. asking the animal to run back and forth between two people) can be introduced at this time as well.

If return to sporting activities is the end goal, then advanced training must be advised. The return to training and eventually competition needs to be gradual. Plyometrics, jumping, training of agility equipment, sport specific training, sprints, training using greater balance perturbations, quick directional changes/pivoting/ figure 8 exercises at sub maximal effort at first, then progressing to greater speeds, cardiovascular endurance and a continuation of strength training should be targeted.(Hewett)

Additionally, human research points to the need for post operative hip surgery patients to continue their exercise program for at least a year or be given a more advanced exercise program later in their recovery.(Trudelle-JacksonOUTCOMES, Long) It is suggested that this be accomplished either via a supervised exercise program or 2 to 3 follow-up sessions with the physical therapist to ensure that exercises are performed precisely and are progressed as necessary.(Trudelle-JacksonEFFECTS) It is important to note that not all post-operative patients will progress at the same rate although they will go through the same healing stages. It is important to make the post-operative rehabilitation specific to the extent of the surgery and the animal's rate of healing. The therapist should regularly assess when it is appropriate to progress through the various stages/phases of rehabilitation or to determine if a referral back to the surgeon is required.

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