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Updated Conservative Management of Cruciate Deficiency – 2017

Laurie Edge-Hughes, BScPT, MAnimSt (Animal Physio), CAFCI, CCRT

ARGUMENT:

Some dogs are not surgical candidates due to any of the following:

- age
- weight
- breed issues
- poor health
- additional factors / issues
- an inadequate state of fitness
- financial constraints, or owners' beliefs
- or they look pretty great functionally despite injuring their cruciate ligament

This subset of patients deserves a chance at optimal function as much as those that are prime surgical candidates with owners willing and able to bear the financial burden of surgery.

CONSERVATIVE MANAGEMENT IN CANINE CRUCIATE-DEFICIENCY

A 2013 survey of British small animal veterinarians and found that conservative management is still widely used for treatment of CCL ruptures in dogs less than 15kg.

- Conservative management consisted of NSAIDS (91.1%), short leash walks (91.1%), weight loss (89%), hydrotherapy (53.6%), physiotherapy (41.9), and cage rest (24.2%).

Another 2013 study compared nonsurgical (PT, wt. loss, & NSAIDS) and surgical (TPLO) management in overweight dogs with CCL ruptures. They found:

- Body fat % decreased in both groups
- Owner questionnaires revealed both groups improved.
- Surgical group had significantly higher peak vertical forces on affected limbs
- Successful outcomes for the conservative group were (47.1%, 33.3%, and 63.6% for 12-, 24-, and 52-week evaluations, respectively).

** 2/3 of the dogs in the conservative group had successful outcomes at the 52-week mark

REHABILITATION PLANNING FOR CONSERVATIVE CCL-DEFICIENCY

GOALS in successful management of ACL-D in humans:

- Early activity modification
- Neuromuscular knee rehabilitation
- Strength training

STAGING the goals through rehab:

- TIME does not dictate progression
- Attention should be paid to ROM, strength, fluidity of performance of functional activities, & functional testing

Phase 1: Protection (Weeks 1 – 3)
Goals and Treatment Suggestions for Phase 1 (Protection) of the Canine ACL-D Stifle

Increase ROM
- PROM flexion and extension
- Tummy rubs into extension
- 'Square' sitting practice

Increase muscle function using movement synergies and utilizing motor learning transfer
- Active sitting down to a stool (guiding rear legs for symmetry of movement)
- Toe pinches (alternating and simultaneous) in side lying
- Leash walking to toilet, progressing to 5 minutes and increasing time by 3 – 5 minutes per week (if no increase in joint inflammation) – multiple times a day
- Weight shifting exercises
- Balance board exercises (front legs on the board)
- Standing on soft surfaces and balance
- 3-leg standing; step ups
- Walking in circles or figure-of-8 patterns.

Increase proprioception
- Joint compressions
- Grades 1 – 2 joint mobilizations.
- Weight shifting with a blindfold

Decrease pain and effusion
- Icing
- PROM & AROM within pain tolerance
- Joint compressions
- Grades 1 -2 joint mobilizations
- NMES
- Modalities

Phase 2: Early Strength Training (Weeks 3 – 7)
Goals and Treatment Suggestions for Phase 2 (Early Strengthening) of the Canine ACL-D Stifle

Full ROM
- As above
- May add toe-touch hanging, or extension on the stairs
- May add sitting practice on a stool or platform

Normal gait
- Walking with a 'disturbance' on the unaffected foot
- Obstacle walking or trotting

Steep up-hill walking or trotting

Increase motor control (neuromuscular training) and strength
- Underwater treadmill or swimming exercise
- NMES or manual tapping on quadriceps or gluteals with 3-leg standing
- NMES or manual facilitation on/of hamstrings with sitting practice
- Side stepping or back stepping over a pole
- Stepping up backwards
- Walking backwards
- Any of the above land exercises on a soft surface
- Hill walking
- Stair walking

Increase Load: 70 – 80% of uninjured limb (increasing by 10% nearer end of stage)
- Increase time and duration of exercises above
- Perform exercises above with a weight pack.

Phase 3: Intense Strength Training (Weeks 7 – 11)
Goals and Treatment Suggestions for Phase 3 (Intensive Strengthening) of the ACL-D Stifle

Increased strength, and motor control (neuromuscular training)
- Continue most challenging exercises from above
- Walking with a weight on the affected leg (open kinetic chain training)
- Trotting up-/down-hills
- Walking on uneven surfaces
- Recall running between two people
- Tug of war – straight line backwards and forwards
- Step ups or Squat blocks

Increase Load: 70 – 80% of uninjured limb (increasing by 10% nearer end of stage)
- Increase time and duration of exercises above
- Perform exercises above with a weight pack

Phase 4: Intensive Strength Training and Return to Sporting-Type Activity (11 – 16 weeks)
Goals and Treatment Suggestions for Phase 4 (Intensive strength training and return to sporting activities) of the Canine ACL-D Stifle

Increased strength
- Continue most challenging exercises from above
- Destination jumping exercises from a stand (plyometrics)
- Aggressive tug of war (side to side, over objects, etc)

Increased coordination

Agility-type training

Increased ability in sport-specific activities
Short-distance ball retrieves
1 or 2 agility-type pieces of equipment
Avoid play with other dogs until closer to 6 months or longer and start with only short intervals

Load 80% of uninjured leg (increasing by 10% nearer end of stage)
Increase time and duration of exercises above
Perform exercises above with a weight pack

Realistically

I've found that at the 6-month mark, there is sufficient fibrosis to limit drawer in extension. Drawer in flexion isn't usually reduced until closer to 9+ months. I advise owners to be cautious for 9 months to a year! Your biggest fear is of blowing the meniscus.

Additional Advisements

It should go without saying that joint supplements should be in the dog's system during the rehabilitation phase and forever. Your secondary goal needs to be prevention of osteoarthritis and/or meniscal tears

- Advisement on supplementation: glucosamine and fatty acids
- Weight loss or weight maintenance advice

PRP (platelet rich plasma) may also be useful in canine cruciate tear and meniscal deficiency

- A series of PRP injections may aide in ACL repair (of partial tears), improve ROM, decrease pain, and improve limb function for up to 6 months
- A singe injection of PRP improved lameness, pain and effusion, and enhanced function and comfortable ROM compared to NSAIDS (but so did a saline flush!). However it was not protective against OA progression.

Stifle bracing may be of assistance as well:

- Stifle joint biomechanics were improved following orthosis implementation compared to CCL-D stifle joints.
- Stiffness of the hinge influences stifle joint mechanics
- Owner satisfaction for stifle bracing is high and comparable to satisfaction with surgical intervention for CCL-D
- Owners contemplating management of CCL-D with an orthoses should be advised of potential complications such as persistent lameness, skin lesions, patient intolerance of the device and the need for a subsequent surgery.