



Canine cranial cruciate ligament rupture in profile

Greg Harasen

Rupture of the canine cranial cruciate ligament (CCL) remains the most common orthopedic problem seen in veterinary practice around the world.

But has it changed? Are

we seeing a different population of dogs in terms of age, size, and breed, or is it unchanged? Seven years ago, the demographics of the canine CCL patient in our practice were reviewed (1). The time has come to survey the situation again. The original study looked at 165 CCL surgeries on 124 dogs from December 1983 to December 1994. This analysis includes 153 ruptures of the CCL in 124 dogs treated from January 1997 to September 2002.

The original survey identified a significant majority of females (65% female versus 35% male), which was not seen in the latest group (53% females versus 47% males). It is interesting to note that published surveys consistently describe more females than males with ruptures of the CCL; in some cases, only a bare majority of females, but in others, a split of up to 2/3:1/3 female:male (2–5).

One of the major issues in cruciate disease in the last 2 decades has been a shift to large breed dogs. In our first survey, 65% of patients were small breed dogs, while 35% were large breed dogs. In the first 8 y of the previous survey (1983–1990), large breeds made up only 22% of cases, but from 1991 to 1994, the numbers increased to 48%. From 1997 to 2002, the trend continued, with 61% of patients being classified as large breed and 39% as small breed. In both surveys, the definition of large versus small breed was based on a cut-off point of approximately 15 kg. Some obese animals > 15 kg were classified as small breed. In the latest survey, Labradors and Labrador crossbreds comprised 21.6% of all CCL patients; poodles and poodle crossbreds, 9%; bichon frises, 8.5%; and German shepherds and shepherd crosses, 7.8%. Rottweilers and golden retrievers have been cited as breeds in which CCL disease is common. In our survey, they made up 4% and 4.6% of all CCL patients, respectively.

The mean age of all CCL patients from 1983 to 1994 was 7.7 y, with small breed dogs averaging 8.7 y and large breed dogs averaging 5.8 y. In the latest survey, the spread in age was less; small breed dogs averaged 8 y,

large breeds averaged 7 y, giving an overall mean of 7.3 y. The median age was 7 y and the range was 9 mo to 15 y. The theme of many recent publications has been that CCL disease is becoming a condition of young, large breed dogs (4,6). While our latest survey identifies a clear trend towards large breed dogs and while we have seen CCL rupture in large breed dogs as young as 9 mo of age, the average age clearly falls in the geriatric definition for large breed dogs.

The weight range for all patients in the latest survey was 3.6 to 57 kg, with a mean of 24 kg. The mean weight of the small breed dogs was 10.5 kg, while for large breed dogs it was 32.3 kg.

From 1983 to 1994, 30% of all dogs surgically treated for CCL rupture subsequently sustained the same injury in the contralateral leg. Results from the latest survey were not significantly different, with 27% tearing the contralateral CCL: This percentage may well be understated, because undoubtedly some of the dogs will go on to rupture the other CCL after the end of the survey period. These figures are similar to those reported elsewhere (2,5) and warrant the advice to clients that their dog has a 1 in 3 chance of rupturing the contralateral CCL.

Forty-eight per cent of dogs in the latest survey had damage to their medial meniscus at the time of exploratory arthrotomy. This compares with only 15% of dogs in the initial survey. In both surveys, there was no significant difference between large and small breed dogs in the occurrence of meniscal damage. The increased occurrence of meniscal damage in dogs seen in the last 5 y may be due, in part, to better visualization and recognition of meniscal lesions by the author. The use of a 6-mm Hohmann retractor to lever the proximal extremity of the tibia cranially is a technique that has allowed better visualization of the medial meniscus. The 48% rate of meniscal damage is in close agreement with the results of many surveys (3,5,7,8).

Twenty (13%) of the patients seen from 1997 to 2002 had partial cruciate ligament tears at the time of surgery. These partial tears invariably involve the craniomedial bundle of the CCL and require the same surgical treatment as a complete rupture of the CCL. It is doubtful that partial tears are more common than they have been in the past, but there is a change in the way they are regarded. Previously, many surgeons would adopt a conservative approach, particularly if the stifle joint was stable. Now, it is increasingly being realized that such a conservative approach leads to rupture of the CCL and degenerative joint disease (9). More partial tears are going to surgery sooner.

Animal Clinic of Regina, 1800 Garnet Street, Regina, Saskatchewan S4T 2Z2.

As to outcomes, the owners of 23% of the large breed and 7% of the small breed dogs described some degree of lameness more than 2 mo after surgery. In the original survey, 30% of large breed owners and 11% of small breed owners reported lameness in their dogs more than 2 mo after surgery. All dogs in both surveys had been treated surgically by the author using extracapsular repair techniques. These results need to be viewed with some caution. First, the numbers are almost certainly artificially low, since the criterion for inclusion was a notation in the medical record describing lameness in the operated leg more than 2 mo after surgery. This criterion obviously misses owners who did not mention mild lamenesses on subsequent visits, omits cases where the veterinarian did not make note of lameness in the record, and omits those dogs, especially those that were referred, that were not examined again. There is also no attempt in these numbers to quantitate the severity, frequency, or duration of the lameness. All that can be concluded with certainty from both surveys is that some degree of postoperative lameness is not an unusual finding and that it is more common in large breed dogs.

If there is such a thing as a typical CCL patient in our practice, it would seem to be a 7-year-old, spayed female Labrador weighing 32 kg. She would have an even chance of having meniscal damage at the time of surgery and would have a 1 in 3 chance of subsequently suffering the same injury in the contralateral leg. Her owner should also be warned that she may experience occasional stiffness or lameness in the operated on leg in the future.

These parameters will be examined after another 150 cases to gauge the full effect of the postoperative rehabilitation that we have been practising for the last 18 mo, as well as the effects of tibial plateau leveling osteotomy, which we are starting to use.

References

1. Harasen Greg G. A retrospective study of 165 cases of rupture of the canine cranial cruciate ligament. *Can Vet J* 1995;36:250–251.
2. Doverspike M, Vasseur PB, Harb MF, Walls CM. Contralateral cranial cruciate ligament rupture: incidence in 114 dogs. *J Am Anim Hosp Assoc* 1993;29:167–170.
3. Elkins AD, Pechman R, Kearney MT, Herron M. A retrospective study evaluating the degree of degenerative joint disease in the stifle joint of dogs following surgical repair of anterior cruciate ligament rupture. *J Am Anim Hosp Assoc* 1991;27:533–539.
4. Johnson JM, Johnson AL. Cranial cruciate ligament rupture: pathogenesis, diagnosis, and postoperative rehabilitation *Vet Clin North Am Small Anim Pract* 1993;23:717–733.
5. Moore KW, Read RA. Cranial cruciate ligament rupture in the dog: a retrospective study comparing surgical techniques. *Aust Vet J* 1995;72:281–285.
6. Bennett D, Tennant B, Lewis DG, Baughan J, May C, Carter S. A reappraisal of anterior cruciate ligament disease in the dog. *J Small Anim Pract* 1988;29:275–297.
7. Bennett D, May C. Meniscal damage associated with cruciate disease in the dog. *J Small Anim Pract* 1991;32:111–117.
8. Flo GL. Classification of meniscal lesions in twenty-six consecutive canine meniscectomies. *J Am Anim Hosp Assoc* 1983;19:335–340.
9. Whitney WO, Beale BS, Chandler J. Arthroscopic assisted tibial plateau leveling osteotomy for treatment of partial cranial cruciate ligament rupture: 41 cases. (abstract) *Proc World Vet Orthop Congr* 2002:212–214.