Stabilization of Cranial Cruciate Ligament Deficient Stifles Using a Novel Internal Transarticular Implant
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Question
Can an internal transarticular implant effectively stabilize a cranial cruciate ligament (CrCL) deficient stifle?

Objectives
- Provide immediate and continuous translational and rotational stability.1
- Allow unimpeded normal range of motion.1
- Minimally affect stifle biomechanics.1-4
- Remain completely extracapsular.
- Be minimally invasive.

Implant
- ASTM F-138 compliant 316L stainless steel femoral and tibial components.
- Ultra high molecular weight polyethylene (UHMWPE) articular insert.
- Ball and stem projection of the femoral component interconnects with the tibial component via the travel channel of the articular insert.
- Each component fixed in place with three 3.5 or 4.0 mm cortical locking screws.

Materials and Methods
Patients
- 60 client owned dogs (66 stifles) with naturally occurring CrCL deficient stifles.
  - Weight 25.9 to 51.7 kg (mean 38.1 kg)
  - Age 1.1 to 14 years (mean 5.8 yrs)
Procedure
- Minimal medial parapatellar arthroscopy.
- Debridement of damaged portions of cruciate ligaments and menisci.
- No meniscal release procedures performed.
- Extracapsular application of implant in an isometric position.
- Implantation with NGD 3.5 mm cortical locking screws.

Results
- 7/66 lost to follow up.
- CL rupture: complete CrCL (80.3%), partial CrCL (19.7%), CaCL (24%).
- Meniscal tears: medial (53%), lateral(24%).
- Minor complication rate 11.9%.
- Major complication rate 17.0% included: disarticulation (n=4), screw failure (n=4), implant/surgical site reaction (n=2).
- Higher incidence of major complications in patients >40 kg (p<0.03).
- No clinical evidence of postliminary meniscal tears.

Discussion
- The implant provided effective translational and rotational stability.
- Complications were attributed to the learning curve associated with development of this new procedure.
- 4.0 mm cortical locking screws are now recommended in patients > 35 kg.
- Significant improvement in stifle ROM and lameness scores supports the hypothesis that this implant is an effective means of treatment for stifle instability.

References

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