CORA Based TPLO in a 17 week old Boxer

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Introduction

The center of rotation and angulation based tibial plateau leveling osteotomy (CORA Based-TPLO), is a procedure that was more recently developed to allow for the combined advantage of both the TPLO and cranial closing wedge tibial osteotomy (CWTO) techniques, procedures used commonly by orthopedic surgeons for the treatment of cranial cruciate ligament (CCL) disease.

History and Initial Examination

◦A 17 week old female intact boxer puppy presented for the evaluation of a right pelvic limb lameness of 7-8 weeks duration. Right stifle effusion and drawer instability were noted.

◦Initial physical examination revealed a grade 2/4 right pelvic limb lameness with right stifle effusion, medial buttressing, cranial drawer instability, and appreciable muscle atrophy of the hind limb.

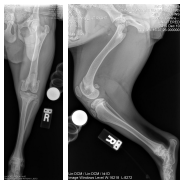
◦Diagnostic imaging (pelvic and stifle) was performed revealing an osseous defect of the right tibial plateau slightly medial of midline characterized as a mineralization within the right stifle joint at the cranial aspect with effusion, suggesting ligamentous avulsion likely to be cruciate in origin.

◦Arthroscopic examination: complete avulsion of the cranial cruciate ligament at the point of insertion (too small for reattachment) as well as several areas of chondromalacia.

Initial Procedure

The CCL was completely excised. A CORA based TPLO (CB-TPLO) as described previously by Castaneda and Bruecker1 was then performed using a medial approach to the proximal tibia and a lateral approach for fibular transection.

Images



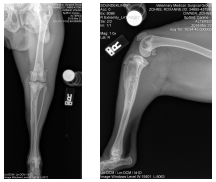
At presentation

Immediate post op

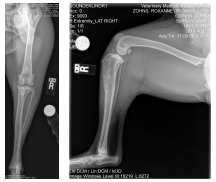
1 Week Post Op

5 Weeks post op

10 Weeks post op



14 Week Plate removal



5 Month Post Plate Removal

Follow up

◦The patient was rechecked by exam and radiographs at one, five, and ten weeks.
◦Gait improvements and increased comfort noted at each exam, the implant and osteotomy sites were stable, in good apposition, and healed by the ten week recheck.
◦Due to age, removal of the surgical implants was performed at 14 weeks post CB-TPLO.
◦Five months after implant removal the patient represented with a history of an audible click while walking for 2 weeks.
◦A sedated physical examination revealed a click during limb manipulation and radiographs showed severe increased intracapsular soft tissue swelling within the right stifle.
◦An ultrasound examination of the right stifle was performed and findings were consistent with medial meniscal injury.
◦An arthroscopic assessment of the medial stifle compartment was recommended.

Follow up Procedure

◦Arthroscopy revealed double level bucket handle tears at the caudal horn of the medial meniscus as well as mild fibrillation of the lateral tibial plateau.

◦A subtotal caudal horn medial meniscectomy of the bucket handle tears was performed and remnants attached to the joint capsule were released at the caudomedial meniscal tibial ligament.

◦Hyaluronic acid and platelet rich plasma were injected into the joint prior to closure.

Discussion/Conclusion

◦A progress update 8 weeks after the meniscectomy reported that the patient continued to do well. The gait is reported to be normal at the walk with an occasional paddle, click or hop noted after an energy spurt or rough play which resolved after rest. The owners did not feel that she was limited in her level of activity.

◦An additional follow up examination was performed 6 months after meniscectomy for the purpose of this poster. The patient continues to do well with mild occasional gait abnormalities that do not appear to effect her mobility or comfort.

The location of the osteotomy for both TPLO and TTA procedures is through the physis at the proximal tibia. Neither of these procedures is therefore suitable for patients whose growth plates are still open. This case demonstrates the ability to utilize a previously reported CB-TPLO as an alternative biomechanical alteration procedure for young animals experiencing lameness due to cruciate ligament tear or avulsion who would be too young for a TPLO or TTA. Medial meniscal injury can be seen with both the TTA and TPLO procedures although there is ongoing debate whether to recommend a meniscal release or partial meniscectomy at the time of the initial surgery to prevent this from becoming a problem in the future. A medial meniscal injury was also seen post surgically with this CB-TPLO despite arthroscopic confirmation of integrity during the initial surgery.

References

1. Castanda K, Bruecker KA, TPLO (Tibial Plateau Leveling Osteotomy) Based on Center of Rotation and Angulation (CORA): Description of pre-surgical planning and Surgical Technique. VOS 2014 Poster presentation submitted for publication
2. Mejia S, Bruecker KA, Center of Rotation and Angulation (CORA) based Tibial Plateau Leveling Osteotomy (TPLO) in dogs: 10 cases. VOS 2015 Poster presentation submitted for publication