

DOUBLE PELVIC OSTEOTOMY FOR THE TREATMENT OF HIP DYSPLASIA IN DOGS

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ABSTRACT

Canine hip dysplasia (CHD) is the most common developmental orthopedic disease of dogs. Triple pelvic osteotomy (TPO) is a surgery that can be performed at 5 months of age, prior to the development of osteoarthritis. Complication rates of 33-50% have been reported for TPO and have spurred interest in a newer technique, double pelvic osteotomy (DPO). The purpose of this thesis is to review the veterinary literature about CHD, surgical treatment options for CHD, and pelvic osteotomy in particular, and to describe two studies, an *in vitro* study and a retrospective clinical study comparing complication rates of TPO and DPO.

We conducted an anatomic study of the effects of DPO on the anatomy of the juvenile canine pelvis. Axial rotation of the acetabulum was performed by DPO of 20°, 25°, and 30° and evaluated with computed tomography in an effort to evaluate which plate size most closely resembled a 20° TPO as previously recommended. The data from this study suggest that a 25° DPO results in the most similar acetabular ventroversion compared with the 20° TPO as indicated by a high concordance correlation (0.902). It was also found that most of the ventroversion with DPO comes at the level of the pubic symphysis.

A retrospective clinical study of TPO and DPO was conducted to compare complication rates between the two techniques at the University of Missouri between January 1, 2006 and May 1, 2011. Minor complication rates were similar between the TPO and DPO (46.6 and 42.9%, respectively). However, two major complications (13.3% of cases) occurred with TPO and none occurred with DPO. There were no catastrophic complications. Based on this retrospective study, both the incidence and severity of complications is lower for DPO than TPO.