Early Gonadectomy as a Factor that Predisposes Canines to Cranial Cruciate Ligament Injury: An Evaluation With Reference to the Tibial Plateau and Femoral Anteversion Angles

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An overwhelming majority of canines in the United States undergo surgical sterilization before one year of age. With the importance of gonadal organs, specifically in the growth and development of certain non-reproductive aspects, it is important that researchers pinpoint potential adverse effects of their early removal. Currently, cranial cruciate ligament (CCL) injury is the most common type of rear leg orthopedic injury in canines. The purpose of this project was to determine if early spaying and neutering (gonadectomy), before 1 year or the age of skeletal maturity, can affect a canine's predisposition to sustaining a cranial cruciate ligament injury. In this study radiographic and body measurements of 31 canines across three different weight categories and two different ages of gonadectomy classifications, early or late, were taken. A confirmational CCLD score formula was used by inputting the degree values for the tibial plateau and femoral anteversion angles. A score of less than -1.5 correlated with low risk and a score of above -1.5 correlated with high risk to CCL injury. When looking at the small and medium-sized canine groups, the values of the CCLD score and the corresponding p-values suggested that there was little to no evidence that the age of gonadectomy had a correlation with CCL injury predisposition. Looking at the large dog category, however, the p-values of <0.05 suggested that the results were statistically significant and there is likely a correlation between the age of gonadectomy and predisposition to CCL injury. This study can contribute to combating the growing number of CCL injuries in canines.

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