

## **1. Introduction**

Canine Elbow Dysplasia (ED), or abnormal development of the elbow joint, is a common condition in large-breed dogs and typically causes signs of pain and lameness (GRONDALEN, 1979; TIRGARY, 1980; BERZON and QUICK, 1980; WIND, 1982; FOX et al., 1983; OLSSON, 1983). ED now typically means a complex of developmental abnormalities of the elbow, including Ununited Anconeal Process (UAP), Fragmented Medial Coronoid Process (FMCP), Osteochondritis dissecans (OCD) of the medial humeral condyle, and Elbow Incongruity, which lead to elbow osteoarthritis (TROSTEL et al., 2003; REMY et al., 2004).

The breeds primarily affected are Rottweiler, Labrador Retriever, Golden Retriever and German Shepherd. Other breeds commonly affected worldwide are Bernese Mountain dog, Saint Bernard, Newfoundland, and Bullmastiff (KIRBERGER and FOURIE, 1998; MORGAN, 2000). The condition is seen sporadically in many other breeds. Breeds may be predisposed to a particular form of elbow dysplasia, e.g. the German Shepherd dog suffers more from UAP (GRONDALEN, 1980), the Rottweiler rarely has OCD (GRONDALEN, 1979; GUTHRIE, 1989), and the Labrador Retriever is most likely to have combined OCD and FMCP (GUTHRIE, 1989). Male dogs are affected more than females, probably due to their faster growth rate or sex-linked factor (GRONDALEN, 1979; VOORHOUT and HAZWINKEL, 1987; GUTHRIE, 1989; SCHWARZ, 2000).

Early diagnosis is important to help prevent the development and progression of osteoarthritis (OLSSON, 1983; HAUDIQUET et al., 2002). Good quality radiographs remain the most cost-effective method of diagnosing elbow dysplasia, but radiographic diagnosis of FMCP is often difficult. This is because the most frequently involved area

of the medial coronoid process is in intimate contact with the radial head and is obscured from standard projection of radiographs (FOX and ROBERTS, 1987; BERRY, 1992; CARPENTER et al., 1993; SNAPS et al., 1997; KIRBERGER and FOURIE, 1998; HORNOF et al., 2000). Indirect diagnosis of FMCP is made on the basis of subtle early signs of osteoarthritis. Multiple radiographic projections have been used to diagnose FMCP. However, CARPENTER et al. (1993) reported the accuracy and sensitivity of survey radiography in detection of a fragmented medial coronoid process to be 56.7% and 10% to 62% respectively. Computer Tomography (CT) has a higher accuracy, sensitivity and specificity than radiography when compared with the other imaging modalities (FOX and ROBERTS, 1987; CARPENTER et al., 1993; BRADEN et al., 1994; KIPPENES and JOHNSTON, 1998; ROVESTI et al., 2002). Moreover, CT has a high negative-predictive value. The disadvantages of CT are its cost and limited availability. Arthroscopy of the elbow joint allows direct visualization of the medial coronoid process, as well as the evidence of fissures, osteophyte, joint mice, cartilage abnormalities and the grading of osteoarthritis. Arthroscopy is the method not only for diagnostic FMCP but is also the method for treatment of FMCP. The greatest benefit of arthroscopic surgery of the elbow is the excellent exposure of the lesion combined with minimal operative morbidity, postoperative complications and aftercare (VAN RYSSSEN and VAN BREE, 1997; BARDET, 1997; VAN BREE and VAN RYSSSEN, 1998; SAMS, 2000, CAPALDO et al., 2005).

The objects of this study were to provide available data on a technical protocol for Multislice Computer Tomography examination of the canine elbow joint and to specify objective and subjective data regarding the sensitivity and specificity of CT in canine

elbow incongruence. Further objectives were to evaluate and compare the findings of CT, radiography and arthroscopy in Canine Elbow Dysplasia.