

ULTRASONOGRAPHIC MEASUREMENT OF PROSTATIC SIZE IN INTACT NON-DESCRIPT DOGS*

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ABSTRACT

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The present study was carried out to estimate the prostatic size in 38 intact, non-descript dogs using ultrasonography. The mean prostate length (L), prostate depth on longitudinal section (DL), prostate depth on transverse section (DT) and prostate width (W) was 3.2 ± 0.60 cm, 2.65 ± 0.60 cm, 2.67 ± 0.54 cm and 3.02 ± 0.54 cm respectively. The mean prostatic volume (PV) and prostatic weight (PW) was 20.19 ± 3.92 cm³ and 17.61 ± 7.42 g respectively. The study showed that there was statistically significant correlation between body weight or age and prostatic dimensions (L, DL, DT and W).

Key Words: Canine prostate, Non-descript dogs, size, Ultrasonography

The normal size and weight of the canine prostate gland are said to vary depending on age, breed and bodyweight (Barsanti and Finco, 1979). Estimation of size of the prostate is important in the diagnosis of the prostatic diseases and in monitoring the response of such conditions to treatment. There are several clinical methods to evaluate prostatic size in the dogs including rectal palpation, radiography, ultrasonography etc. Transabdominal or transrectal ultrasonography provides a reproducible and accurate method of measuring prostatic dimensions. It provides information on the shape, dimensions, lobular structure and echo texture of the gland parenchyma (Nair *et al.*, 2012). A thorough search of literature revealed a paucity of studies on the prostate gland of the intact, non-descript dogs using ultrasonography. Hence the present study was carried out to estimate the prostatic size in intact, non-descript dogs using ultrasonography.

The study was conducted on 38 healthy adult male non-descript dogs with their owners' consent. All dogs were presented to Olive's Pet Clinic, Bashirbagh, Hyderabad, Telangana, for routine castration, orthopaedic disorders, respiratory or urological problems. The dogs undergoing urological investigations were excluded if any evidence of prostatic disease was detected.

The protocol for measurement of the prostate gland was as described by Atalan *et al.* (1999). The dog was positioned in dorsal or dorso-lateral recumbency. Hair coat was clipped on the ventral abdomen and liberal amount of acoustic gel was applied over the skin. The probe was placed against the ventral abdominal wall, just cranial to the pubis and angled caudally to view the prostate gland. The prostate gland was imaged in longitudinal and transverse sections and required measurements were obtained.

Each prostate was imaged according to the established protocol using a 6.5 MHz micro-convex array transducer (Mindray 65C15EAV). Standard longitudinal and transverse sections were obtained and prostate length (L), depth on longitudinal (DL) and transverse sections (DT) and width (W) were measured in cm. Prostatic volume and weight were

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estimated according to the formulae derived by Atalan *et al* (1999) as:

$$\text{Prostatic volume (cm}^3\text{)} = \left(0.487 \times L \times W \times \left(\frac{DL + DT}{2} \right) \right) + 6.38$$

$$\text{Prostatic weight (g)} = \left(0.508 \times W \times L \times \left(\frac{DL + DT}{2} \right) \right) + 3.21$$

L= Maximum length (cm) in longitudinal section,
DL=Maximum depth (cm)in longitudinal section,
W=Maximum width(cm) in transverse section,
DT=Maximum depth (cm) in transverse section

The statistical software package – Analysis Tool Pak for Windows Microsoft Office Excel was utilized in this study and the results were analysed.

The present study demonstrated significant relationships between all these parameters. Atalan *et al.* (1999) also found a significant correlation between prostatic volume and bodyweight in dogs aged between one and 10 years.

There was statistically significant correlation between bodyweight and L, DL, DT and W. Similarly, significant correlations were obtained between age and L, DL, DT and W (Table 1).

The mean measured prostate length (L) depth on longitudinal section (DL), prostate depth on transverse section (DT) and prostate width (W) was 3.20 ± 0.60 (1.83 – 4.21) cm, 2.65 ± 0.60 (1.48 – 3.85) cm, 2.67 ± 0.5 (1.52 – 3.99) cm and 3.02 ± 0.54 (1.54 – 4.09) cm respectively.

The mean values of all the measured prostatic dimensions were higher than those reported by Atalan *et al.* (1999). The variation in measurement obtained in the present study might be due to differences in breed, age and body weight. The DL and DT values were similar to each other as reported by Atalan *et al.* (1999).

The mean calculated prostatic volume (PV) and prostatic weight (PW) was 20.19 ± 3.92 (8.44 – 39.09) cm³ and 17.61 ± 7.42 (5.36 – 37.34) g respectively. Both calculated prostatic dimensions were comparable to those obtained by Nair *et al.* (2012). The findings of the present study slightly differed from Ruel *et al.* (1998), Atalan *et al.* (1999) and Kamolpatana *et al.* (2000) who obtained slightly lesser prostatic volume of 18.9 ± 15.5 cm³, 12.3 cm³ and 16.77 ± 11.77 cm³ respectively.

Using ultrasonographic methods, Juniewicz *et al.* (1989) calculated a mean prostatic weight of 15.9 ± 2.2 g. However, the present study reveal a mean estimated prostate weight of 17.61 ± 7.42 g. The differences between this study and previous studies can be explained by variations due to breed differences, age and bodyweight.

The study showed there was positive correlation between body weight or age and measured prostatic dimensions (L, DL, DT and W). The findings of Atalan *et al.* (1999) were in agreement with the present study.

Table 1: Summary of correlation coefficients* between body weight and age and prostate measurements

Measurements	BW Mean (17.67) ± 2.84	Age Mean (5.30) ± 0.60 yrs
L (cm)	0.589	0.702
DL (cm)	0.541	0.488
DT (cm)	0.521	0.514
W (cm)	0.538	0.63

*p < 0.01

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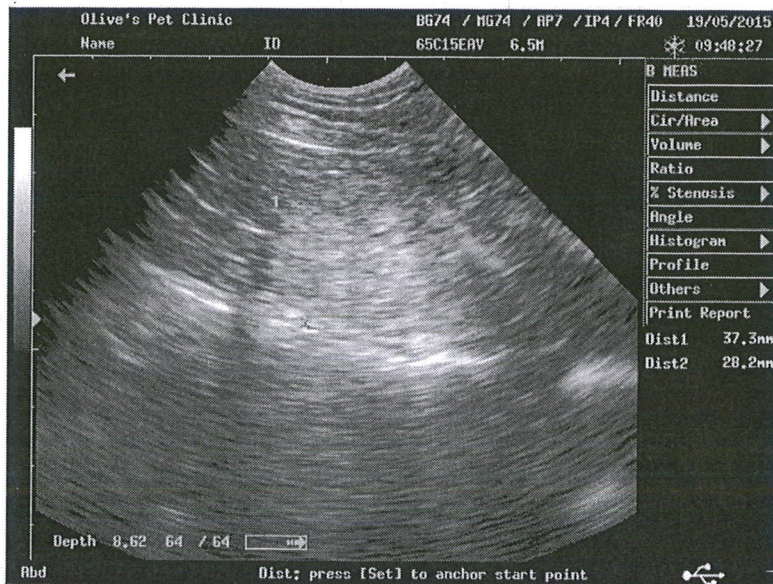


Plate 1: Ultrasonographic image of the prostate in the longitudinal section measuring L and DL