

CT imaging reveals involution of severe prostatic changes in dogs with perineal hernia three months after castration

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1 Introduction

Perineal hernia (PH) is a disease of older male dogs associated with prostatic abnormalities like enlargement, cysts, mineralizations and displacement into the hernia.

The treatment of PH involves castration and herniorrhaphy. However, it is unclear whether prostatic changes resolve after surgery. CT imaging is a readily available tool for diagnosing prostatic changes.

Objective: assess whether prostatic changes on CT images resolve within three months after castration and herniorrhaphy.

2 Materials and Methods

Prospective observational study at the Veterinary Teaching Hospital of the University of Helsinki

Inclusion criteria: CT images of intact male dogs with PH from a previously published study¹ as well as images taken three months postoperatively of the same dogs (unpublished data).

Exclusion criteria: Castration or hormonal treatment, previously surgically treated PH.

Image evaluation: Osirix® DICOM viewer using soft-tissue window (WL 40 HU, WW 400 HU). Prostate volume², number of intra- and paraprostatic cysts, mineralizations and location¹ (Fig. 1) three months after surgery were compared with preoperative data. Prostate volume was calculated using the "Compute Volume" tool after manually tracing it in each slice containing prostatic tissue.

Statistical analyses: paired samples t-test for continuous and Wilcoxon signed rank test for categorical variables.

CT imaging protocol: helical 64-slice multidetector CT scanner (Lightspeed VCT, GE Healthcare, Madison, WI, USA). Voltage 120 kV, collimation pitch 0.516, speed 20.62 mm/rot., rot. time 0.6 s, detector coverage 40 mm, matrix 512 × 512. Max current 650-750 mAs. Slice and interval thicknesses 0.625 mm. Dogs scanned in dorsal recumbency caudally of the middle of the fourth lumbar vertebra, contrast agent administered (Omnipaque® 300 mg/ml) 2 ml/kg with 1 min delay.

3 Results

CT images of 37 dogs were included. The mean volume of the prostate (Fig. 2) three months after surgery was significantly lower than preoperatively ($P < .001$). The amount of intraprostatic cysts was significantly reduced ($P < .001$) (Fig. 3) Amount of mineralizations slightly increased and paraprostatic cysts decreased, however, this change was not statistically significant. Additionally, prostate location at three months remained similar to the preoperative position, with 18.9% caudally displaced (Fig. 1)

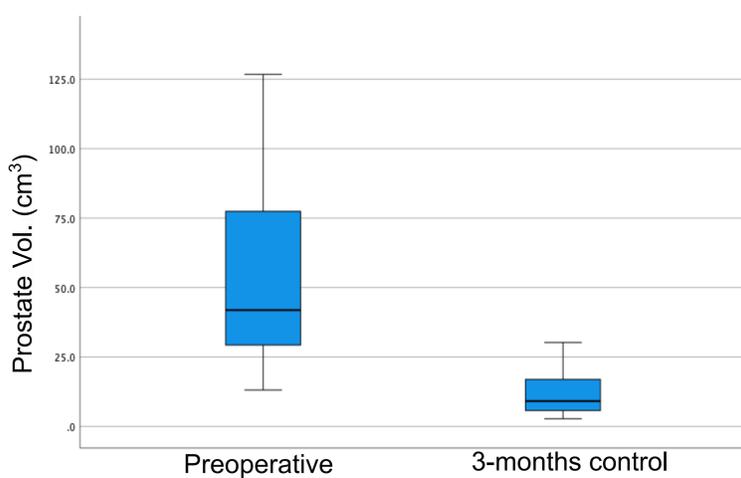


Figure 2. Mean volume of prostates in dogs with PH (n=37) before and 3 months after surgery. Preoperative data previously published¹

Figure 3. Number of prostatic cysts categorized into groups in dogs with PH (n=37) before and 3 months after surgery. Preoperative data previously published¹

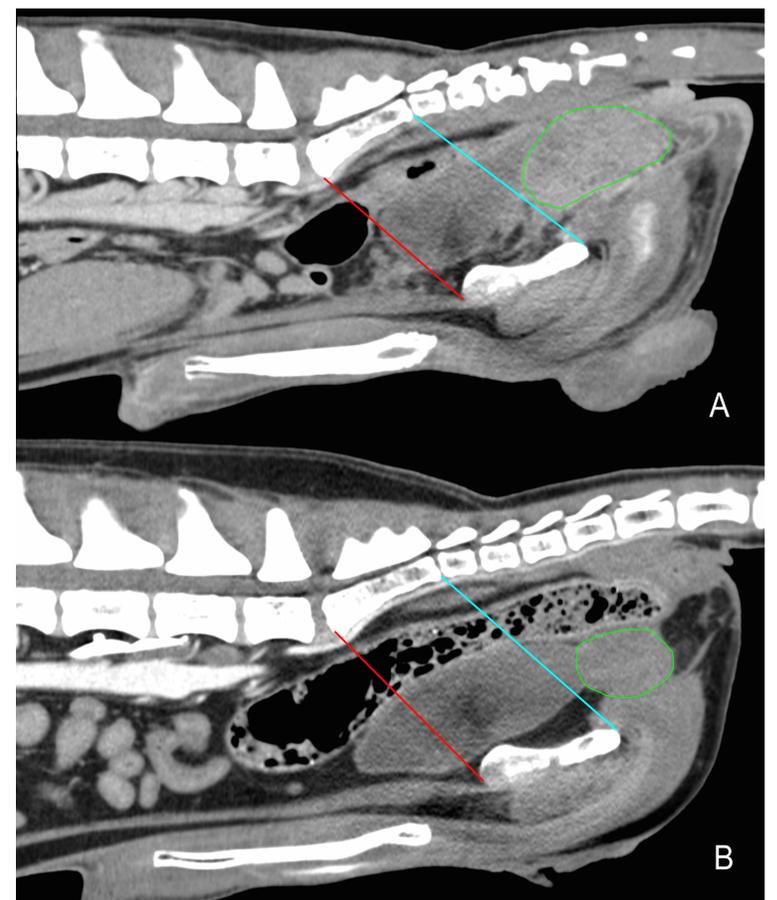
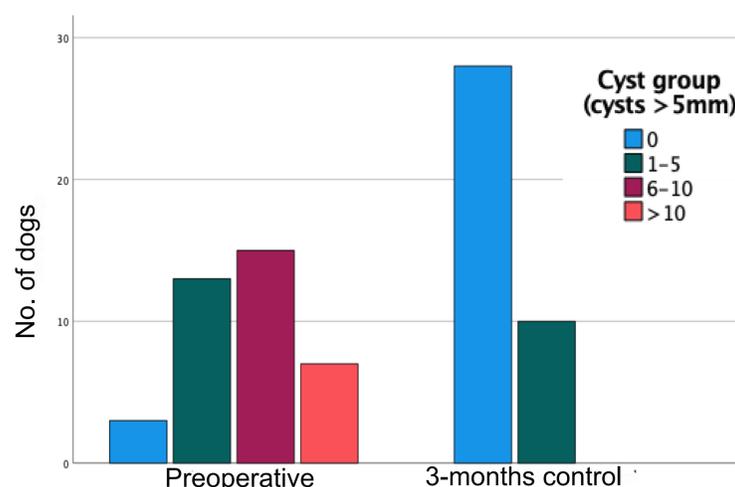


Figure 1A & B. Images of the same dog taken before and three months after PH surgery. Prostate has decreased in size but location remains caudal. Location of the prostate was defined in midline sagittal images as abdominal, pelvic(B) or caudal (B) based on percentage of length of the prostate to cross the cranial (red line) and caudal (blue line) borders. Prostate defined as pelvic unless over 80% of the length was outside these borders.¹

4 Conclusion

Prostatic size and number of cysts decreased significantly in only three months after herniorrhaphy and castration in dogs with PH. Number of mineralizations did not decrease. Despite involution, location of the prostate did not significantly change. CT was an excellent tool for assessing morphological changes of the prostate over time.

¹Åhlberg TM, Salonen HM, Laitinen-Vapaavuori OM, Mölsä SH. CT imaging of dogs with perineal hernia reveals large prostates with morphological and spatial abnormalities. *Vet Radiol Ultrasound*. 2022;1-9.

²Salonen HM, Åhlberg TM, Laitinen-Vapaavuori OM, Mölsä SH. CT measurement of prostate volume using OsiriX® viewer is reliable, repeatable, and not dependent on observer, CT protocol, or contrast enhancement in dogs. *Vet Radiol Ultrasound*. 2022;1-9