

Peri-operative Regurgitation in Cats and Dogs: A Retrospective Cross-sectional Analysis of 551 Anaesthesia Records at a Multi-disciplinary Referral Clinic over a 19-month Period



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INTRODUCTION

Regurgitation is defined as the passive movement of gastric or oesophageal contents into the oropharyngeal or nasopharyngeal cavities; it is a common occurrence, with reported incidences of between 0.96% (Lamata *et al.*, 2012), and 5.5% (Wilson *et al.*, 2005), in anaesthetised dogs. Incidences of regurgitation in cats is not widely reported. Risk factors for peri-operative regurgitation and gastro-oesophageal reflux in dogs have been widely investigated, however much of this evidence is outdated (Galatos and Raptopoulos, 1995a). Fewer studies including cats are available, with no research comparing the two species.

Study objectives:

1. Determine the prevalence of peri-operative regurgitation in canine and feline patients and whether there were significant species differences
2. Identify risk factors for peri-operative regurgitation

MATERIALS AND METHODS

- A **retrospective cross-sectional analysis** of 551 clinical / anaesthesia records (October 2015 – June 2017) was performed at Lumbry Park Veterinary Specialists
- **Inclusion/exclusion criteria:**
 - All cats and dogs receiving general anaesthesia were included, except those with a history of vomiting/regurgitation
 - Where subjects received multiple anaesthetics, only data from the first was used
- **The following potential risk factors** were assessed and reported here:
 - Anaesthetist (RVN/vet)
 - Age
 - Bodyweight
 - Period of pre-operative starvation
 - Duration of anaesthesia
 - Number of positional changes during anaesthesia
- Preliminary univariate and descriptive statistics were performed using SPSS (Version 23) using odds ratios, non-parametric analyses and untransformed data

RESULTS

- Cats were significantly less likely to exhibit peri-operative regurgitation (Fishers Exact, $P = 0.002$)
- The prevalence of regurgitation was 8% in dogs and 0% in cats
- No statistically significant effects were identified for:
 - Anaesthetist (RVN/vet)
 - Age
 - Bodyweight
 - Period of pre-operative starvation
 - Duration of anaesthesia
- Number of positional changes during anaesthesia was a risk factor in dogs (see figure 1 and table 1)

Table 1: The effect of number of positional changes on the risk of peri-operative regurgitation in dogs. 'One-two changes' was the baseline to which the odds ratios for the other categories were calculated.

Number of positional changes	Regurgitation?		Totals	Odds ratio	95% confidence interval	Significant?
	Yes	No				
One – two	2	103	105	-	-	-
Three – four	16	179	195	4.6	1.038 – 20.433	* (P = 0.028)
Five – six	9	22	31	21.1	4.24 – 104.33	*** (P < 0.001)

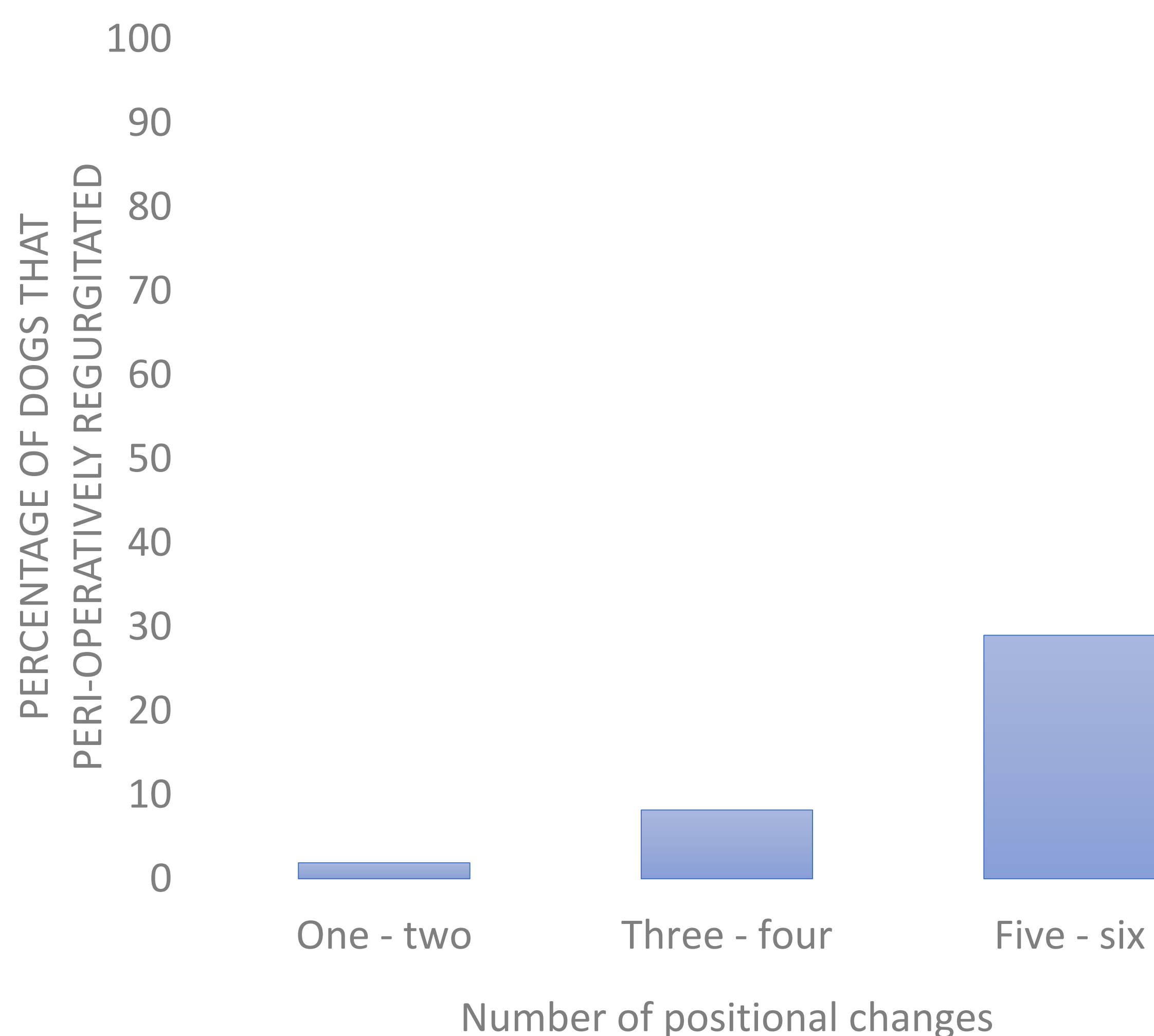


Figure 1: The effect of number of positional changes on percentage of dogs that exhibited peri-operative regurgitation

CONCLUSIONS AND CLINICAL SIGNIFICANCE

These results indicate that:

- Cats are at a significantly lower risk of developing regurgitation during general anaesthesia than dogs
- The lack of positive feline cases prevented further investigation into reasons for this
- In dogs, multiple repositioning of anaesthetised patients is a significant risk factor for peri-operative regurgitation. This finding is in agreement with other recent evidence documenting a change in body position as a significant risk factor for gastro-oesophageal reflux (Torrente *et al.*, 2017)

Practical recommendations:

- Un-necessary repositioning should be avoided
- Prophylactic measures to manage regurgitation may be indicated in canine patients where multiple repositioning is expected (such as radiography)
- These measures should be actively considered at the pre-operative stage

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