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Dogs

Canine Prophylactic Gastropexy: A Cross-Sectional Study of Irish Veterinary Professionals' Attitudes and Current Practices

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Correspondence: Hannah Donnelly (hannah.donnelly@hotmail.com)**Received:** 3 June 2024 | **Revised:** 14 November 2024 | **Accepted:** 11 April 2025**Funding:** The authors received no specific funding for this work.**Keywords:** attitudes | canine gastropexy | gastric dilatation and volvulus | GDV | perspectives | prophylactic gastropexy | RVN | veterinary nurse | veterinary practitioner | VP

Abstract

Background: Prophylactic gastropexy reduces the occurrence of gastric dilatation and volvulus (GDV) in dogs, but ethical concerns exist due to its invasiveness. Research on veterinary professionals' opinions of the procedure is lacking, with no data having been published either in the Republic of Ireland (ROI) or further afield. This study was designed to bridge this knowledge gap, by identifying current practices in the ROI and examining veterinary professionals' views of the procedure.

Methods: A cross-sectional study was conducted with 43 registered veterinary practitioners (VPs) and 45 registered veterinary nurses (RVNs) in the ROI, on their current practices and views on prophylactic gastropexy. Data was analysed using Microsoft Excel, with descriptive statistical analysis of quantitative data and qualitative data subjected to thematic analysis.

Results: Two themes relating to prophylactic gastropexy were identified: enabling perceptions and disabling perceptions. Enabling perceptions included reduced risk of GDV, cost-effectiveness, improved quality of life and reduced anaesthetic risk. Disabling perceptions included anaesthetic and surgical risks, inability to prevent gastric dilation, potential gastropexy breakdown, cost and post-operative complications. In addition, ethical concerns were raised regarding the procedure's invasiveness, its potential interference with natural selection and the fact that it could encourage the use of surgical solutions to problems created by improper breeding practices.

Conclusions: Due to ethical issues associated with the procedure, the decision to perform a prophylactic gastropexy relies on multiple patient factors, the procedure's invasiveness, the timing of the procedure and its impact on future health. This study failed to account for the owner's perspective, necessitating further research.

1 | Introduction

Gastric dilatation and volvulus (GDV) is a painful and life-threatening condition, which most commonly occurs in large,

deep-chested dogs (King and Boag 2018). GDV is precipitated by gastric dilation (GD), where the stomach fills and distends with gas. Subsequently, GDV occurs when the stomach twists on its axis, obstructing both passages into and out of the stomach. As the

Abbreviations: CPA, Cardiopulmonary arrest; ECC, Emergency and critical care; GD, Gastric dilation; GDV, Gastric dilatation and volvulus; ROI, Republic of Ireland; RVN, Registered veterinary nurse; VCI, Veterinary Council of Ireland; VP, Veterinary practitioner.

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stomach distends, it compresses the caudal vena cava, reducing venous return from the abdomen (Philip et al. 2024; King and Boag 2018). If not treated urgently, the condition is fatal due to cardiovascular compromise.

The only remedy for GDV is surgical intervention. However, approximately 44% of patients who seek veterinary care are euthanised on presentation as surgical intervention is not feasible due to age, concurrent illness or owner finances (Piras et al. 2020). Of the patients that undergo surgery, 80% survive to discharge. Those that do not survive typically have a cardiopulmonary arrest (CPA) or are euthanised due to poor prognosis, or post-operative complications (O'Neill et al. 2017).

Changes to feeding habits and exercise routines have been suggested as a means of reducing a patient's lifetime risk, however, the efficacy of these interventions has been debated (Pipan et al. 2012; Raghavan et al. 2004; Glickman et al. 2000). Prophylactic gastropexy is the only method which significantly reduces a patient's lifetime risk of GDV (Stiles et al. 2016; Przywara et al. 2014; Rivier et al. 2011; Dujowich et al. 2010; Ward et al. 2003; Rawlings et al. 2002). However, given its invasiveness and the fact that it is an elective procedure undertaken in otherwise healthy patients, the procedure poses ethical issues that must be considered (Pinto Filho et al. 2014).

1.1 | Selection Criteria for Prophylactic Gastropexy

(a) GDV risk factors

Patients may be recommended for prophylactic gastropexy based on predisposing factors and their lifetime incidence rate of GDV. Breed-related thoracic conformation is one of the major predisposing factors for GDV, with large deep-chested dogs such as Great Danes and Irish Wolfhounds being at the highest risk for developing a GDV (Figure 1) (Uhríkova et al. 2016; Ward et al. 2003). Other predisposing factors for GDV include gender—with male dogs three times more likely to have a GDV compared to



FIGURE 1 | A Great Dane, a large deep-chested dog breed that is predisposed to GDV. Photo provided by a colleague, used with permission.

entire females (O'Neill et al. 2017), advanced age (O'Neill et al. 2017; Glickman et al. 2000), family history of GDV (Glickman et al. 2000), temperament (Glickman et al. 1997), feeding habits (Glickman et al. 2000), deviation from a healthy weight, digestive conditions (Hullar et al. 2018), parturition (Washabau and Day 2012) and possibly a single nucleotide polymorphism in genes involved in gastric tone and motility (Hullar et al. 2018; Piras et al. 2020).

(b) Post-splenectomy

The effect of a splenectomy on the patient's lifetime risk of developing a GDV has been much debated. During splenectomy, ligaments that help to stabilise the stomach such as the gastrosplenic ligament are detached from the spleen. As a result, the stomach may become more mobile in the abdominal cavity (Sartor et al. 2013). This, coupled with the increase in abdominal dead space once the spleen has been removed may allow the stomach to rotate more readily, especially in patients that are anatomically predisposed to GDV. According to Sartor et al., dogs that have undergone splenectomy are 5.3 times more likely to develop a GDV (Sartor et al. 2013).

1.2 | Comparison of Techniques

A gastropexy can be performed using several different techniques, however, the degree of invasiveness and duration of anaesthesia varies.

The laparoscopic-assisted technique has been demonstrated to be a fast, safe and minimally invasive method of performing a prophylactic gastropexy (Giacconella et al. 2021). Other minimally invasive techniques include endoscopically aided methods. Studies have shown that compared to incisional and belt loop gastropexy techniques, these methods resulted in significantly lower surgical time, length of the surgical incision and post-operative pain (Massari and Matthew 2024; Tavakoli et al. 2016; Dujowich and Reimer 2008).

Incisional gastropexy has been described as one of the most reliable and effective techniques (Fransson and Mayhew 2021), as sutures are placed directly to the stomach and the abdominal wall (Figure 2), providing a more secure attachment. However, it is more invasive and has longer recovery times compared to laparoscopic and endoscopic aided techniques.

Other techniques, such as the belt-loop (Figure 3) or circumcostal (Figure 4) techniques have been described (Aronson 2022), but no relevant studies were found on their usefulness or effectiveness when used for prophylactic gastropexy.

1.3 | Occurrence Rates of GDV and GD Following Prophylactic Gastropexy

Outcomes of prophylactic gastropexy using both the laparoscopic and endoscopic assisted techniques have been well studied. In studies undertaken in 2010 and 2016, no incidences of GDV were

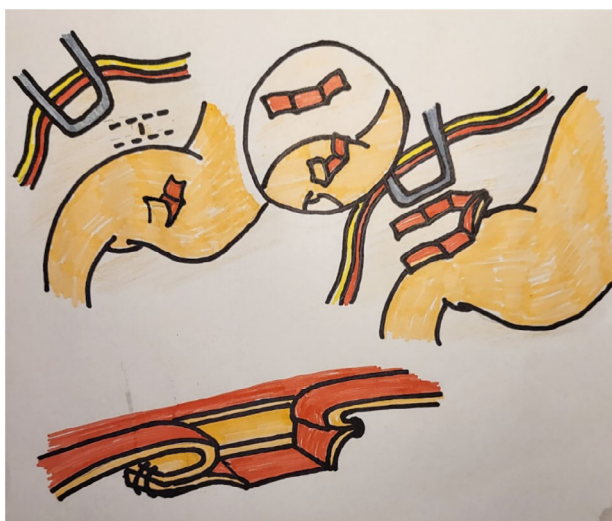


FIGURE 2 | Incisional gastropexy technique. Redrawn from Fossum, 2007.

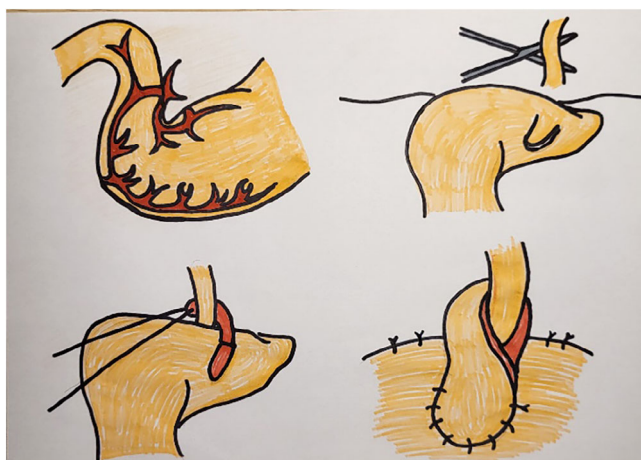


FIGURE 3 | Belt loop gastropexy technique. Redrawn from Fossum, 2007.

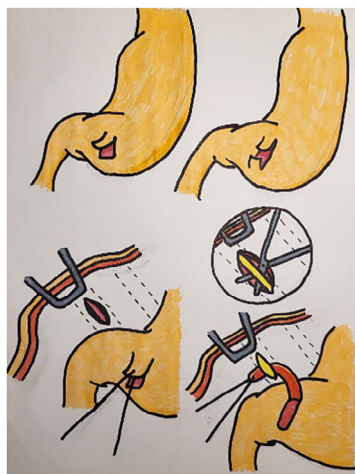


FIGURE 4 | Circumcostal gastropexy technique. Redrawn from Fossum, 2007.

observed in the follow-up period using either technique (Stiles et al. 2016; Rivier et al. 2011; Dujowich et al. 2010; Rawlings et al. 2002).

When completed prophylactically, incisional gastropexy has been demonstrated to reduce GDV incidence rates in at-risk breeds 2.2-fold in Rottweilers to 29.6-fold in Great Danes (Ward et al. 2003). The occurrence rate of GD for laparoscopic, endoscopic and incisional gastropexy techniques has been reported to range between 0% and 5% (Przywara et al. 2014).

As the procedure was done prophylactically, it could be argued that none of the participants in these studies would have developed a GDV in their lifetime regardless of gastropexy.

No studies have been published on GDV or GD occurrence rates in patients who have undergone prophylactic gastropexy via the circumcostal or belt loop techniques.

1.4 | Current Practices in the ROI

Prior to this study, no data on prophylactic gastropexy in the ROI had been published.

1.5 | The VP's Perspective

While prophylactic gastropexy does significantly reduce the likelihood of GDV, it does pose some ethical concerns. The main issue is that prophylactic gastropexy is an elective procedure performed in an otherwise healthy patient. No data has been published that gives insight into VPs' ethical reasoning or opinions of the procedure.

1.6 | The Role of the RVN

No studies pertaining to the role of the RVN in discussions around prophylactic gastropexy were found. Over the last few years, RVNs and their skills have become more widely used, with more practices offering RVN-led clinics (Wild 2017). RVNs have a role in educating clients in areas such as preventative healthcare. It is common for an RVN to undertake pre-neuter checks, where they provide information on the procedure and discuss its advantages and disadvantages with the owner. Given this, there could be scope for RVNs to have discussions about prophylactic gastropexy with clients.

2 | Methodology

As of 2022, 3281 VPs and 1189 RVNs were registered with the Veterinary Council of Ireland (2022) (VCI). Surveys were selected as the most suitable method of data collection, as they have a greater capture rate of responses compared to interviews or focus groups, and therefore would be more representative of stakeholders' views (Jain 2021). The other advantages of surveys were that

data could be collected anonymously—allowing participants to be more honest about their views on the procedure, they were time efficient, and the data collected could be easily analysed to understand patterns and trends.

2.1 | Participants

Eligibility criteria for veterinary professionals included being registered with the VCI, currently practising in the ROI, and having experience in one of the following divisions: small animal (first opinion), small animal (referral), small animal (OOH/ECC), or mixed practice involving small animal care.

2.2 | Survey Design

Cross-sectional surveys were designed using Microsoft Forms. Individual studies were designed for VPs and RVNs, to ensure questions were focused and relevant to participants. Both surveys were designed to include a combination of open and closed-format questions, Likert scales, and multiple-choice questions to gain a broad view of viewpoints from veterinary professionals on prophylactic gastropexy. Several questions were similar across both the RVN and VP surveys, allowing for a comparative analysis between the two stakeholder groups, to help identify any trends that were particular to, or influenced by, the participants' role in practice.

2.3 | Pilot Survey

Before the finalised surveys were disseminated, they were piloted with two RVNs and three VPs. Alterations to survey questions were made to improve ease of understanding, effectiveness and relevance.

2.4 | Data Collection

Online surveys were disseminated using social media platforms including Facebook, WhatsApp and LinkedIn and to members of a veterinary continuing professional development and discussion group. Both the RVN and VP survey links remained active for a two-week period in February 2023.

2.5 | Data Analysis

Data collected from online surveys was exported from Microsoft Forms to Microsoft Excel, where it was analysed as follows:

1. Quantitative Data:

Participants' perspectives on prophylactic gastropexy and related factors were gauged using a 5-point Likert scale, where 1 denoted strong disagreement and 5 indicated strong agreement. Responses were consolidated and analysed using the COUNTIF function in Microsoft Excel, providing a summary of participant feedback, percentage breakdowns, mean, mode and standard distribution of opinions.

The COUNTIF function in Excel was used to determine response frequencies to dichotomous questions. Percentages were then calculated.

Multiple-choice questions were analysed by assigning a value of 1 to each response, creating an Excel table illustrating response frequencies, and calculating percentages based on the total number of participants.

2. Qualitative Data

Data collected from open-ended questions was exported to Excel where it underwent thematic analysis by the first author. Common terms or phrases were identified according to the guidelines set out by Bree and Gallagher (Bree and Gallagher 2016).

3 | Results

Of the 50 RVN survey respondents, 46 met the eligibility criteria (92%). While for VP surveys, 43 out of 45 respondents were deemed eligible (95.5%). As the surveys were disseminated using social media platforms, it was not possible to calculate the response rate.

3.1 | Quantitative Data:

3.1.1 | Demographics

Of the 46 RVN respondents, 70% worked in small animal—first-opinion practices ($n = 32$), with the remainder working in small animal—referral (11%, $n = 5$), mixed (13%, $n = 6$), emergency and critical care (ECC) (4%, $n = 2$) and shelter (2%, $n = 1$) settings. The majority of the 43 VP respondents worked in small animal—first opinion practice (63%, $n = 27$) with the remainder working in small animal—referral (5%, $n = 2$), mixed (21%, $n = 9$) or ECC (11%, $n = 5$) (Figure 5).

On average, RVN respondents were qualified for 4 (± 4.91) years while VP respondents were qualified for 7 (± 7.86) years (Figure 6). The median number of years qualified was 3–4 years for RVNs and 9–10 years for VPs.

3.1.2 | Prevalence of GDV in the ROI

GDVs were primarily seen by ECC or referral professionals, with RVNs and VPs in these settings reporting an average of 4.28 cases in the last year. Respondents working in first opinion practices reported 1.85 cases and those working in mixed practice 1.6 cases on average. The average number of cases seen annually by respondents was 2.58, with the median falling within 1–3 GDVs (Figure 7).

3.1.3 | Surgical Intervention and the Factors Leading to Euthanasia

Around 61% of patients who presented with a GDV received surgical intervention. The remaining 39% were euthanised or died following a CPA.

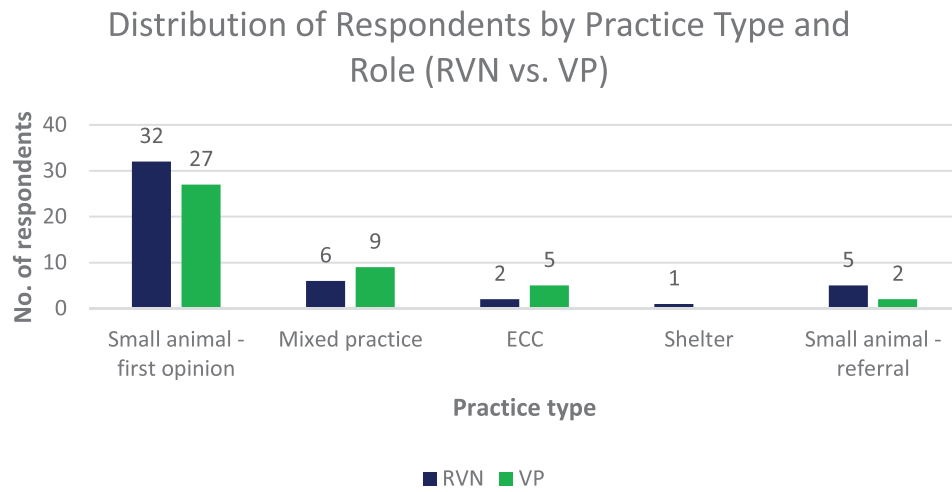


FIGURE 5 | Distribution of respondents by practice type and role (RVN vs. VP). Results based on data collected from this study.

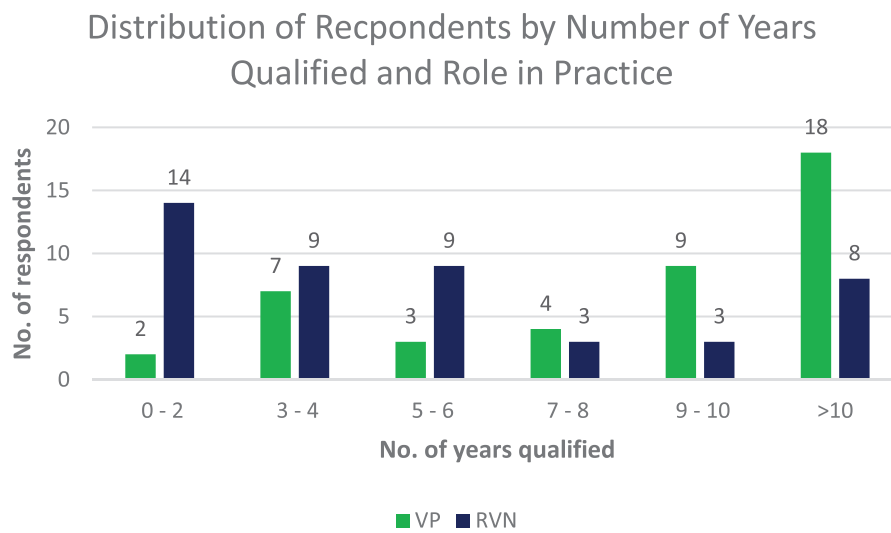


FIGURE 6 | Distribution of respondents by role and years of experience. Results based on data from this study.

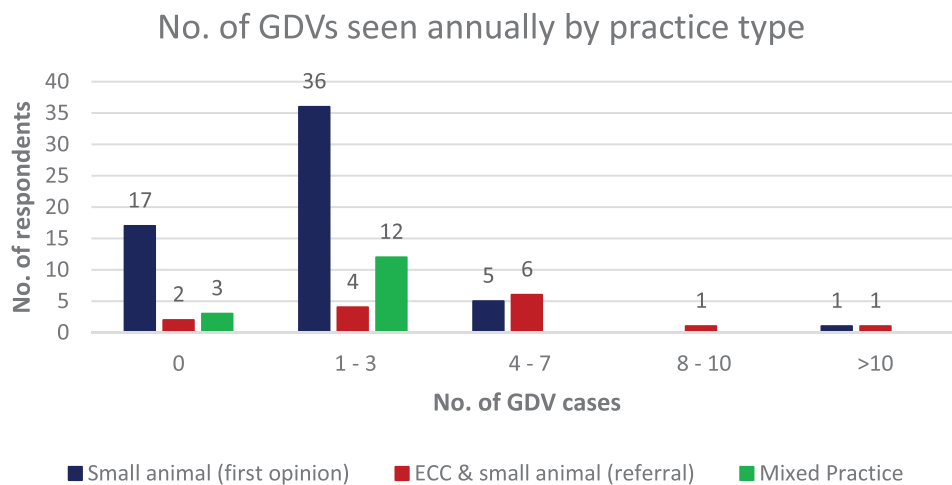


FIGURE 7 | Comparison of the number of GDV cases handled annually by respondents in different practice settings. Results based on data from this study.

Factors leading to euthanasia of GDV affected dogs

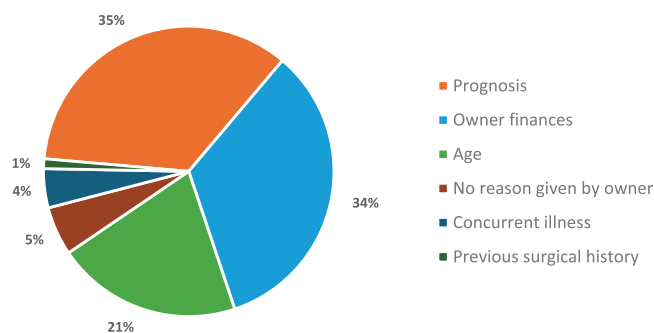


FIGURE 8 | Factors that contributed to owners of GDV affected dogs opting for euthanasia over surgical intervention. Results based on data from this study.

3.1.4 | Factors Leading to Owner's Decision to Euthanise GDV Affected Dogs

Factors leading to owners opting for euthanasia included prognosis (35%, $n = 32$), finances (33%, $n = 31$), age (21%, $n = 19$), concurrent illness (4%, $n = 4$) and previous surgical history (1%, $n = 1$). Five respondents stated no reason was given by the owner (Figure 8).

3.1.5 | Selection Criteria for Prophylactic Gastropexy

There was little difference between the way VPs and RVNs ranked selection criteria. The breed emerged as the predominant criterion, with 93% of VPs and 87% of RVNs stating that consideration of the patient's breed ($n = 40$ in both groups) should be of the most concern. This was followed by the history of GD ($n = 36$, 83.72%, $n = 40$, 87%), and thoracic depth-to-width ratio ($n = 25$, 58.13%, $n = 25$, 54.35%). While ranked lesser in importance, both VPs and RVNs thought that family history ($n = 19$, 44.18%, $n = 20$, 43.47%), and the abdominal depth-to-width ratio ($n = 16$, 37.21%, $n = 22$, 47.83%) should have a part to play in the selection criteria. While both VPs and RVNs thought that a history of digestive disorders was of importance, VPs thought it was of less importance compared to RVNs ($n = 7$, 16.28%, $n = 22$, 47.83%). Less commonly selected answers included temperament ($n = 4$, 9.3%, $n = 5$, 10.86%) and weight ($n = 7$, 16.28%, $n = 11$, 23.91%). All respondents selected multiple answers, except one participant who noted there are 'no indications or criteria whatsoever that would justify undertaking a prophylactic gastropexy' (Figure 9).

3.1.6 | Perceived GDV Risk and Gastropexy Recommendations After Splenectomy

Around 33% ($n = 14$) of VPs surveyed believed dogs that had undergone a splenectomy had an increased risk of developing a GDV. Conversely, 67% ($n = 29$) did not believe this to be true. This was substantiated by the fact that 66% ($n = 27$) of VPs never recommended a prophylactic gastropexy for splenectomy patients. A further 12% ($n = 5$) rarely, 15% ($n = 6$) sometimes, 5%

($n = 2$) often, and 2% ($n = 1$) always, recommended a prophylactic gastropexy for splenectomy patients.

3.1.7 | Discussions With Clients About Prophylactic Gastropexy

Of the 43 VP respondents, 12% ($n = 5$) always, 12% ($n = 5$) often, 28% ($n = 12$) sometimes, 26% ($n = 11$) rarely and 23% ($n = 10$) never discussed prophylactic gastropexy with owners of dogs susceptible to GDV. RVNs were also surveyed, with 41% ($n = 19$) of the 46 RVN respondents never, 28% ($n = 13$) rarely, 22% ($n = 10$) sometimes, 7% ($n = 3$) often and 2% ($n = 1$) always discussing the procedure with owners.

3.1.8 | The RVN's Role

Around 66% ($n = 59$) of respondents worked in a practice that offered RVN-led clinics, while 34% ($n = 30$) did not. Of the 28 RVN respondents who worked in practices that offered RVN-led clinics, 93% ($n = 26$) reported that VPs often referred patients to these clinics, while 4% ($n = 1$) were not sure and 4% ($n = 1$) did not have patients referred.

Overall, there was agreement from VPs, that an RVN would be capable of having a discussion with a client about a prophylactic gastropexy, with 37% ($n = 16$) strongly agreeing and 40% ($n = 17$) agreeing with the statement. A further, 9% ($n = 4$) neither agreed nor disagreed, 9% ($n = 4$) disagreed and 5% ($n = 2$) strongly disagreed.

3.1.9 | Timing of the Procedure

If a prophylactic gastropexy is warranted for a patient, VPs thought that it should be performed at the time of neutering or during another procedure when the abdominal cavity is easily accessible, and the stomach can be visualised.

3.1.10 | Prophylactic Gastropexy Techniques

Of the 43 VP respondents, 51% ($n = 22$) had performed prophylactic gastropexy. Twenty-one (95%) of these respondents used the incisional gastropexy technique, while one respondent (5%) used the belt-loop gastropexy technique. None of the respondents had ever performed a prophylactic gastropexy using the laparoscopic or endoscopic assisted methods.

3.1.11 | Recurrence Rates of GDV or GD Post Gastropexy

Around 29 of the 43 VP respondents (67.44%) thought a prophylactic gastropexy reduced a patient's lifetime risk of developing a GDV to between 0% and 10%. A further 23.25% ($n = 10$) thought it was reduced to 11%–20%, 6.97% ($n = 3$) to 21%–30% and 2.32% ($n = 1$) to 31%–40%.

Veterinary professionals opinions on what selection criteria for prophylactic gastropexy should include (VP vs. RVN)

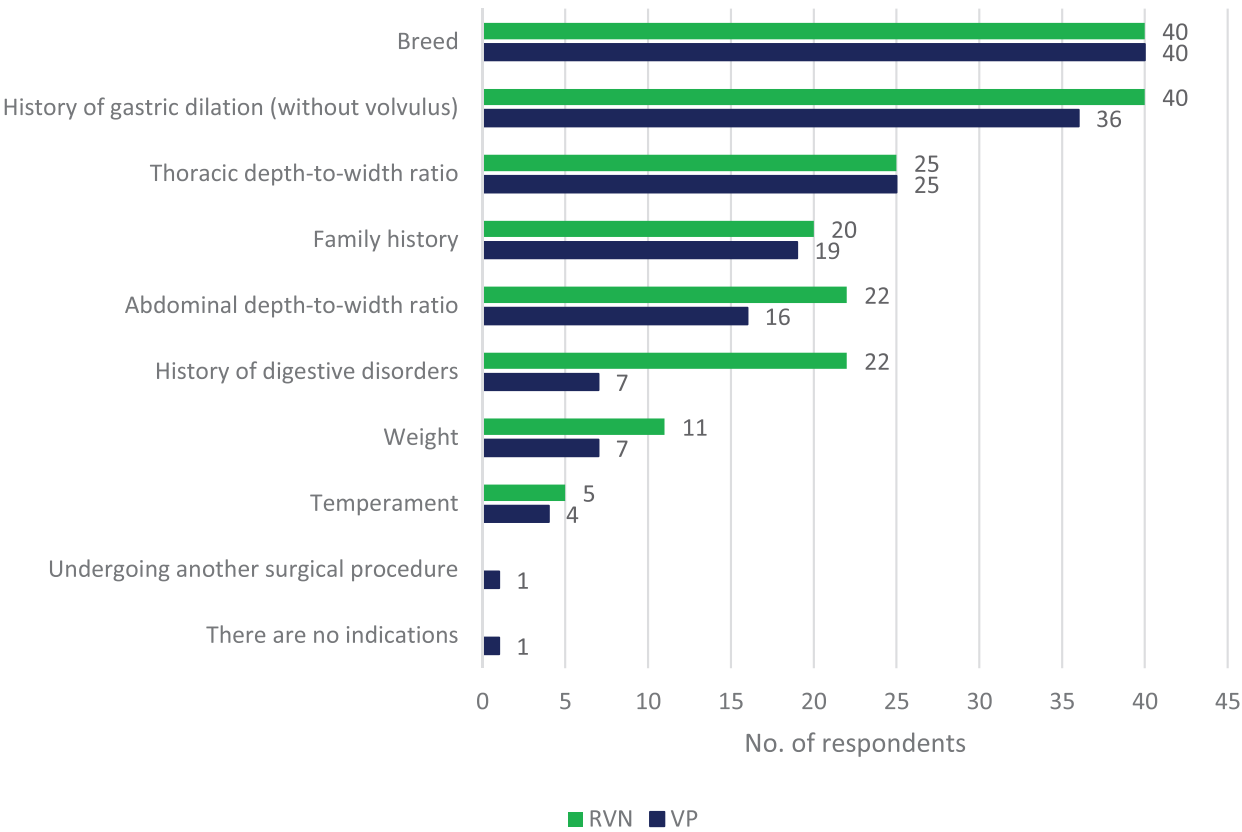


FIGURE 9 | A comparative of VPs and RVNs opinions on what selection criteria for prophylactic gastropexy should include. Results based on data from this study.

Regarding GD, 17 of the 43 VP respondents (39.53%) thought prophylactic gastropexy reduced the occurrence rate of GD in a patient's lifetime to between 0% and 10%. A further 20.93% ($n = 9$) thought it reduced to 11%–20%, 18.6% ($n = 8$) to 21%–30%, 11.63% ($n = 5$) to 31%–40%, 4.65% ($n = 2$) to 41%–50% and 4.65% ($n = 2$) to >50%.

3.1.12 | Availability of Prophylactic Gastropexy Services

Half of the practices (52%, $n = 46$), that survey participants worked in, did not offer prophylactic gastropexy as part of their services. Around 14% of respondents were unsure whether the practice offered the procedure. The most common reason for not offering the procedure was a small demographic of patients susceptible to GDV that would not justify having the service. Other responses included client cost concerns, as well as a lack of skill or knowledge about the procedure.

When queried about offering the option of referral to have the procedure done, 74% ($n = 20$) of VP respondents reported that they never discussed this as an option. A further 15% ($n = 4$) rarely, 7% ($n = 2$) sometimes and 4% ($n = 1$) often, offered the option of referral.

3.2 | Qualitative Data

3.2.1 | Views on Prophylactic Gastropexy

(a) Benefits and risks

Both RVNs and VPs agreed that prophylactic gastropexy did offer benefits including a reduced lifetime risk of GDV, cost-effectiveness compared to GDV surgery and enhancing the patient's quality of life by allowing them to lead a more active lifestyle. They also noted the patient's lowered anaesthetic risk with prophylactic gastropexy versus corrective GDV surgery. However, respondents acknowledged some drawbacks to the procedure such as the anaesthetic and surgical risks, the fact that the procedure does not prevent dilation, the potential failure of the gastropexy, the cost to the owner and potential post-operative complications, including 'peritonitis and vagal related issues.

(b) Ethical concerns

Respondents expressed concerns over the procedure's invasiveness, the potential interference with natural selection and that it

could encourage the use of surgical solutions to issues created by improper breeding. One participant commented that the procedure is 'similar to BOAS surgery' with it being 'good for the individual, but not good for dogs in general'. Some respondents also remarked on additional anaesthetic requirements for a 'potentially unnecessary procedure'.

3.2.2 | Discussions With Clients

Both VPs and RVNs cited reasons for not routinely discussing prophylactic gastropexy with relevant clients, including time constraints, lack of demand, insufficient knowledge, low GDV incidence rates or it not crossing their mind.

Participants agreed that such conversations should happen early in a patient's life, either at pre-neuter checks, or adolescent health appointments.

3.2.3 | VP's Views on RVNs Discussing Prophylactic Gastropexy With Clients

VPs reported that an RVN engaging in these types of conversations with clients would optimise practice time and revenue, while also promoting awareness of GDV and prophylactic gastropexy. Several VP respondents also thought that it may be a way to introduce the topic to clients in a non-pressurised environment, so owners could process information and then discuss it further with a VP at later appointments. However, some respondents expressed concerns that RVNs may lack adequate knowledge about the procedure, and it may increase the incidence of unnecessary procedures being performed.

4 | Discussion

Prophylactic gastropexy is the only known method which significantly reduces a patient's lifetime risk of GDV. Most participants held a positive view of the procedure, outlining benefits such as a reduced risk of GDV, it is more cost-effective than GDV surgery and increasing the patient's quality of life by allowing them to lead a more active lifestyle. Several participants also noted that patients undergoing prophylactic gastropexy face lower anaesthetic risk than those having GDV surgery. However, respondents raised concerns about the ethical implications of the procedure, including anaesthetic and surgical risks, its invasiveness, potential interference with natural selection and its potential for encouraging the use of surgical interventions to address problems caused by irresponsible breeding practices. These findings underscore the complex nature of decision-making and ethical considerations associated with prophylactic gastropexy.

4.1 | Candidates for Prophylactic Gastropexy

The findings of this study align with previous research, with VP and RVN respondents noting that breed, history of GD, thoracic depth-to-width ratio, family history, abdominal depth-to-width ratio, a history of digestive disorders, temperament and

weight, were good indicators of a patient's increased likelihood of developing a GDV. Notably, all respondents selected multiple answers, indicating a comprehensive assessment of the patient and their medical history is needed rather than relying on one single selection criteria to recommend prophylactic gastropexy.

Based on the findings of this study, VP's opinions vary on whether dogs that have undergone splenectomy are at an increased risk of developing GDV. Some respondents believe that there is an elevated risk, while others do not agree. Existing literature does not provide a consensus on the matter. Some studies suggest that dogs that have undergone splenectomy are 5.3 times more likely to develop a GDV (Sartor et al. 2013). This has been attributed to the detachment of gastric ligaments from the spleen during splenectomy. These ligaments aid in maintaining the correct orientation and stability of the stomach in the abdominal cavity and interference with them may lead to increased stomach mobility, potentially making splenectomy patients at higher risk for developing a GDV. However, it is important to note that the most common reason for splenectomy is a splenic mass, which usually occurs in older dogs (Maki et al. 2017; Sartor et al. 2013; Grange et al. 2012). As such, participants in this study were already at a greater risk of GDV due to their age and it is likely they had other health issues, such as neoplasia, which could have contributed to their susceptibility to GDV.

Other studies have suggested that there is no evidenced-based justification to perform a gastropexy in splenectomy patients (Maki et al. 2017; Grange et al. 2012; Goldhammer et al. 2010). Recommendations of prophylactic gastropexy should be made by the VP after assessing anatomical and genetic risk factors, patient comorbidities and the reason a splenectomy was performed rather than making a blanket recommendation based on the possible link between splenectomy and GDV (Kudnig and Séguin 2022; Maki et al. 2017).

4.2 | Ethics of the Procedure

Respondents reported a lack of familiarity with the prophylactic gastropexy procedure, as such this could have skewed results and some issues or concerns caused by the procedure may not have been identified. Respondents did note that prophylactic gastropexy offers potential benefits from an animal welfare perspective. Both RVN and VP participants in this study noted its potential to enhance the quality of life and increase the lifespan of at-risk dogs. Previous studies have examined the effects of the procedure on the lifespan of patients, however, due to their limited scope and other influences, the procedure's effects on lifespan remain undetermined (Giacconella et al. 2021; Loy Son et al. 2016; Przywara et al. 2014; Sartor et al. 2013; Dujowich et al. 2010).

However, concerns were raised by both VPs and RVNs about the potential negative impact of prophylactic gastropexy on natural selection and breeding practices. Participants worried that breeding dogs with a history of prophylactic gastropexy might inadvertently increase susceptibility to GDV in subsequent generations. Participants also noted the risk of promoting surgical interventions to fix issues created by improper breeding practices, compromising the long-term welfare of dogs susceptible to GDV.

One respondent did think that the procedure may be 'similar to BOAS surgery' as it 'encourages surgical solutions to breed problems'. Similarities can be drawn from studies pertaining to brachycephalic obstructive airway syndrome (BOAS) surgery. Such procedures may perpetuate the cycle of breeding dogs with unhealthy physical characteristics, rather than promoting long-term solutions that prioritise the welfare of animals (Mitze et al. 2022; Fawcett et al. 2018).

Respondents also noted that the procedure is not without risks and can be costly, both financially and in terms of recovery, with anaesthesia concerns, post-operative complications and costs associated with the procedure noted as being issued by the respondents. The fact that the procedure is potentially unnecessary and is undertaken electively on an otherwise healthy patient was an extenuating factor for concerns noted by respondents.

Most veterinary professionals who participated in the study agreed that the procedure could be undertaken concurrently with neutering. Performing a prophylactic gastropexy at the time of neutering may allow owners and veterinary professionals to address multiple health concerns under a single anaesthetic, which may be more convenient and cost-effective for both the owner and the VP. This approach of performing a prophylactic gastropexy alongside neutering, would also significantly reduce the chances of dogs that have had the procedure being used for breeding. However, with both procedures being completed under one anaesthetic, this may also lead to longer periods under anaesthesia and prolonged recovery times (Pinto Filho et al. 2014; Rivier et al. 2011).

In situations where VPs have limited access to the stomach and cannot perform an incisional gastropexy during neutering, such as in cases of orchiectomy, laparoscopic gastropexy offers a minimally invasive alternative, shorter recovery times and reduced postoperative pain (Loy Son et al. 2016). Despite requiring specialised equipment and training, the benefits of laparoscopic gastropexy over other methods include minimal invasiveness, enhanced recovery times and reduced post-operative pain, making it an attractive option. VPs should consider the feasibility and potential benefits of laparoscopically-aided procedures in routine practice or opt for referral when necessary.

4.3 | Making the Decision

Both RVNs and VPs inferred that the decision to perform a prophylactic gastropexy should be made based on the individual circumstances of the patient, rather than as a routine procedure for all patients. Factors that should be included are the potential benefits and risks the procedure poses, ethical implications and the owner's perspective. VPs and RVNs have a responsibility to ensure that the owner is provided with all the information they may need to make an informed decision. Furthermore, the decision to recommend the procedure rests with the VP and should be made in alignment with their views on the procedure, and ethical considerations and with the intention to prioritise the safety and welfare of the patient. It is evident that the willingness to offer preventative measures, such as prophylactic gastropexy, is also dependent on the VP's degree of familiarity with the procedure and their exposure to the cases of GDV, with

respondents based in referral and ECC settings being more likely to have conversations around prophylactic gastropexy.

4.4 | Role and Scope of the RVN

VP respondents (77%, $n = 33$) mostly agreed that an RVN could effectively discuss prophylactic gastropexy with a client. Respondents who agreed reported that clients may feel more comfortable discussing the topic in a non-pressurised environment and it would be a more efficient use of practice time and revenue.

However, some respondents expressed concerns about the potential for unnecessary procedures being performed. It is important to note that recommending the procedure remains at the discretion of the VP. Considering this, VPs could refer owners to RVN-led clinics post-recommendation to further discuss the matter with an RVN. However, RVN participants in this study reported a 'lack of knowledge about the procedure' was currently hindering their involvement in such discussions. Further education for RVNs on the topic is therefore warranted.

4.5 | Limitations

The findings of this study must be interpreted considering some limitations. Primarily, the small sample size of 43 VPs and 46 RVNs which represent only 1.31% and 3.78% of VPs and RVNs, respectively, in the ROI in 2022. This may have introduced sampling bias and error, limiting the generalisability and statistical power of results (Martinez-Mesa et al. 2014). The calculated margin of error for this study was 10.34% with a confidence interval of 95%, reflecting the increased variability resulting from the small sample size. Despite this limitation, this study provides an initial insight into veterinary professionals of prophylactic gastropexy, serving as a foundation for future research.

In addition, as the study relies on data from 2023, and as opinions are subject to change, the findings may not represent current views. Acknowledging this limitation highlights the need for ongoing research to understand any changes in veterinary professionals' views on prophylactic gastropexy.

4.6 | Further Study

Conducting additional research involving a greater number of participants could confirm the consistency of these findings. Further studies examining the client's perspective would also be beneficial, as they are a key stakeholder in decisions around prophylactic gastropexy. Understanding their perspectives may also aid communication between the client and the veterinary professional when discussing the procedure.

5 | Conclusions

While this study may not be representative of the larger population, it serves as a starting point for further research into veterinary professional's attitudes toward prophylactic gastropexy. While there was a consensus that prophylactic gastropexy may

be beneficial to dogs susceptible to GDV, ethical considerations regarding its impact on natural selection and breeding practices were also identified.

Further exploration of the owner's perspective is necessary. As it was not accounted for in this study, data analysis and the robustness of the study may have been impacted. Further research should prioritise incorporating owner perspectives on prophylactic gastropexy to deepen understanding of decision-making dynamics surrounding the procedure.

Author Contributions

Hannah Donnelly conceived and designed the study, disseminated the surveys, analysed the data, drafted the manuscript and prepared the figures and tables. Karen Dunne assisted with study design, provided guidance to the primary author during manuscript drafting, reviewed multiple drafts and contributed to manuscript editing for publication.

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Ethics Statement

This project was granted ethical approval by the Dundalk Institute of Technology Human Resources Ethics Committee.

Consent

The authors have nothing to report.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Please see appendix 1 for the VP survey and appendix 2 for the RVN survey that were used as part of this study. The dataset generated from this study is available from the author on reasonable request.

Peer Review

The peer review history for this article is available at <https://www.webofscience.com/api/gateway/wos/peer-review/10.1002/vms3.70377>

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