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CONTROVÉRSIAS SOBRE A RESPIRACAO BOCA-FOCINHO DURANTE A RCP DE PEQUENOS ANIMAIS

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RESUMO

A técnica de respiração boca a boca, sempre foi questionada quanto a sua eficácia durante o evento de reanimação cardiopulmonar (RCP) em seres humanos. Na medicina veterinária não tem sido diferente, apesar de sua recomendação nos guias de conduta para RCP em pequenos animais RECOVER 2012 (Reassessment Campaign Veterinary Resuscitation).

Há uma série de controvérsias a respeito deste procedimento que devem ser esclarecidas antes da decisão final sobre seu uso. Mesmo com o aval da medicina, baseada em evidências para sua recomendação, não há um consenso clínico e prático sobre quais seriam as situações nas quais ela deveria ser utilizada, quais os reais riscos inerentes ao procedimento e sua validade, considerando os resultados a longo prazo que possa oferecer.

Esta revisão tem como objetivo promover uma análise crítica da literatura relacionada ao tema, sendo utilizada inclusive a literatura de outros idiomas, não contemplada pelo guia RECOVER, a fim de emitir uma opinião baseada nos princípios práticos da RCP.

Palavras-chave: RCP. Respiração boca-focinho, Via aérea de Emergência

ABSTRACT

The efficiency of mouth-to-mouth resuscitation techniques have always been challenged regarding cardiopulmonary resuscitation (CPR) in humans.

In Veterinary Medicine it has not been different despite the recommendations of the small animal CPR guideline RECOVER 2012 (Reassessment Campaign on Veterinary Resuscitation).

In spite of the support given by evidence in human medicine suggesting the use of this technique, there are several controversies about this procedure that should be clarified before the final decision on its utilization as well as the real risks, validity and long term results of the procedure.

The aim of this paper is to promote a critical analysis of the literature related and, also depict a clinical opinion based on practical principles of CPR account not only the RECOVER but also publications in other languages.

Keywords: CPR, mouth to snout, breathing, emergency airway

INTRODUÇÃO

A técnica de respiração boca a boca foi descrita na medicina humana em meados do século XVIII, sendo adotada em episódios emergenciais, onde não havia a possibilidade de acesso às vias aéreas (GUIMARÃES, 2009; MONSIEURS, 2015).

Com o passar do tempo, essa técnica foi implementada também na medicina veterinária, mas com a denominação de “boca-focinho”, tanto em ambientes hospitalares como nas situações extra-hospitalares.

Em 2012, a iniciativa RECOVER, por meio de uma análise das evidências publicadas em língua inglesa e, após um consenso entre especialistas de várias áreas, o qual não contemplou as opiniões de médicos veterinários da América do Sul e Central, recomendou o uso da manobra durante a PCR de pequenos animais.

Ainda assim, vários profissionais e sociedades de especialidade parecem não estar totalmente convencidos de que a técnica seja realmente útil em todas as situações expressas pelo guia de consenso (ARMENO; 2015; FLETCHER, 2012).

Apesar desta prática ser recomendada quando a intubação endotraqueal imediata não é possível de ser realizada, existe uma série de controvérsias, com respeito ao procedimento, principalmente quando se trata de outras espécies animais (ARNEMO, 2015).

O presente trabalho tem como objetivo expressar uma opinião clínica construída a partir da literatura veterinária em língua portuguesa e castelhana, e que complemente as evidências citadas pelo guia RECOVER.

Desta forma, visamos permitir ao médico veterinário

pertencente aos continentes não contemplados pela pesquisa de evidências do consenso, utilizar outras ferramentas para tomar a decisão sobre o uso da respiração boca focinho.

REVISÃO DE LITERATURA

A técnica de respiração boca a boca é antiga, inicialmente descrita na medicina humana por William Tossach em 1732 em uma vítima de aspiração de fumaça durante um incêndio em uma mina de carvão, em meados do século XVIII (GUIMARÃES, 2009).

A partir de então, esse procedimento se tornou rotineiro e passou a ser adotado com maior frequência nos cenários de emergência, incentivado principalmente pelos socorristas leigos, quando o paciente não se encontrava hospitalizado.

Monsieurs et al. (2015) também citam na literatura atual que nos casos onde não houver acesso às vias aéreas ou outras formas de ventilação, esta pode ser considerada para os pacientes humanos (MONSIEURS, 2015).

Ao longo do tempo a manobra (boca a boca ou boca-focinho) também foi incorporada na medicina veterinária, seja no ambiente extrahospitalar ou no intrahospitalar.

Porém persiste a dúvida sobre sua real eficiência e sobre sua adoção preferencial nos casos de parada cardiopulmonar, (PCR) apesar de sua atual recomendação pelo RECOVER (Reassessment Campaign on Veterinary Resuscitation), o guia mais atualizado sobre RCP em pequenos animais baseado em evidências (ARNEMO, 2015; FLETCHER, 2012).

Por ser uma manobra de urgência, onde temos pouco tempo para agir, devemos tomar cuidado para não deixar de aplicar os protocolos de treinamento do controle dos agentes infecciosos, destacando principalmente uma correta higiene das mãos com sabonete, uso de luvas e máscaras de proteção para as vias aéreas. (JAVMA, Vol 247, No. 11, December 1, 2015)



Figura2. Demonstração da respiração boca focinho, com auxílio de uma máscara. Foto acervo pessoal (2016).



Para realizar a ventilação boca-focinho, o reanimador deverá manter a boca do animal firmemente fechada, colocando sua boca sobre as narinas do paciente, vedando completamente o contato com o focinho e, em seguida, ventilar o ar pelas narinas, para alcançar uma normal elevação do tórax, como apresentado na Figura 1.

Figura 1. Demonstração da manobra ventilação boca focinho, onde o pescoço do animal deve ficar esticado. Adaptado de: Fletcher,2012.

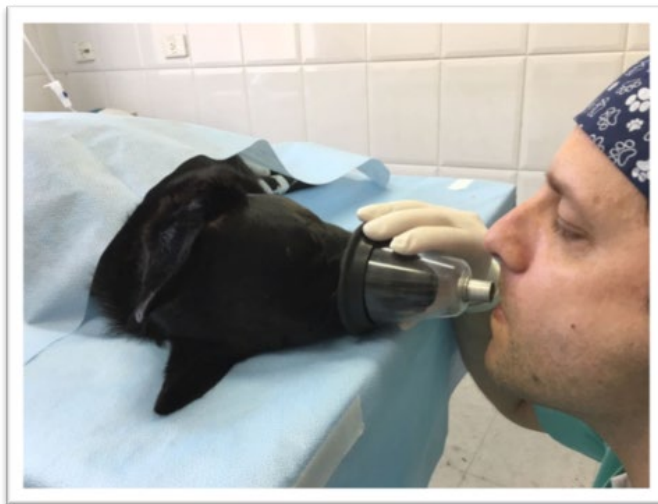


Figura3. Demonstração do suporte ventilatório, com auxílio do Ambu, conectado a uma sonda endotraqueal. Foto acervo pessoal (2016).

Para Fletcher et al. (2012), a técnica de respiração boca-focinho é recomendada em uma relação de 30 compressões torácicas intercaladas por 2 ventilações rápidas em ciclos de 2 minutos, sendo que nesse tempo deve ser trocado o socorrista para evitar a fadiga. Para a realização do procedimento, o reanimador deverá manter a boca do animal firmemente fechada, colocando sua boca sobre as narinas do paciente. Em seguida, deve-se ventilar o ar pelas narinas como objetivo de inflar o tórax. Esses autores admitem o uso da técnica sem discriminar o ambiente, intra ou extra hospitalar, mas com a ressalva de que a intubação precoce seria mais adequada (FLETCHER, 2012; RABELO, 2014; KATHRYN, 2014).

No caso do suporte emergencial extra-hospitalar, o socorrista deve sempre buscar ajuda ao iniciar as massagens torácicas com precocidade e, caso a ajuda não chegue até o final do segundo ciclo (ao redor de 4 minutos de massagem torácica), deve iniciar a sequência 30:2 (trinta compressões torácicas para cada 2 ventilações boca-focinho). É importante ressaltar que o próprio consenso ILCOR Humano não obriga o procedimento em 100% dos casos, portanto deverá ser realizado somente se admitir “conforto” para sua realização, e se houver dispositivos de proteção adequados (FLETCHER, 2012; RABELO, 2012).

Embora essa prática esteja recomendada quando a intubação endotraqueal imediata não é possível, ainda há uma série de controvérsias sobre a sua eficácia, principalmente quando ela se generaliza para qualquer espécie animal (ARNEMO, 2015).

Entre as dificuldades e riscos que a respiração boca – focinho pode oferecer, há registros de que grande parte do ar gerado pela manobra, não se direciona completamente para as vias aéreas e

chega também ao trato gastrointestinal via esôfago, ocasionando a distensão gástrica por aerofagia, independentemente da experiência do socorrista (BONAGURA, 2014).

Ademais, é importante considerar que o ar administrado por esta manobra possui a composição de 16 a 18% de oxigênio e de 3,4 a 4% de dióxido de carbono, enquanto o ar ambiente, com a administração por meio de uma bolsa de reanimação tipo ambú, possui uma carga maior de oxigênio (21% e menos dióxido de carbono).

Portanto, quando comparadas as duas possibilidades, a que tem maior eficácia comprovada no tocante à quantidade de oxigênio ofertada ao animal e à menor quantidade de CO₂ inspirado será a inalação do ar ambiente. Além disso não é possível controlar ou calcular o volume corrente utilizado na técnica, o que pode aumentar o risco de volutrauma e barotrauma (CARDOSO, 2009).

Existem ainda outros efeitos adversos importantes a serem considerados como a exposição do socorrista a diversos riscos durante a respiração boca-focinho, tais como contato direto com patógenos zoonóticos eventualmente existentes no animal, até acidentes graves por mordedura, decorrentes de reflexo do animal ou até mesmo de uma possível recuperação espontânea (ARNEMO, 2015).

Apesar dos fatores de risco descritos para a prática, ela ainda é recomendada por fontes importantes em algumas situações, como já citado, pelo estudo RECOVER de 2012, que se baseia em um único relato de caso ocorrido em 2007, quando um cão apresentava mielopatia cervical traumática. Neste caso, o paciente evoluiu para uma parada respiratória e enquanto estava sendo transportado para um hospital veterinário local sem o au-

xílio de nenhum equipamento de intubação, foi realizada a respiração boca-focinho, sendo esta aparentemente bem-sucedida, segundo reporte do tutor (FLETCHER,2012; SMARDICK, 2007; KATHRYN,2014).

Cooper e Muir (2007) citam que esse procedimento é ineficiente, mas é facilmente realizado e pode salvar a vida de filhotes ou animais adultos em situações de angústia respiratória aguda, após a remoção de qualquer material estranho que possa estar presente de via aérea superior (COOPER, 2007; MUIR 2007).

CONCLUSÃO

Em síntese, por todas as questões descritas acima, a técnica de respiração boca a boca ou boca-focinho, principalmente no ambiente intrahospitalar, não é recomendada por estes autores e deve ser utilizada em situações muito restritas, especialmente no caso do ambiente extra-hospitalar (RABELO, 2012).

É imprescindível que dentro de um ambiente hospitalar estejam sempre presentes os equipamentos de auxílio e de acesso rápido, como tubos endotraqueais com diferentes diâmetros juntamente com gases e seringas para inflação do manguito; laringoscópio, com lâminas pe-

quenas e grandes, para facilitar a manobra, entre outros equipamentos (MURTAUGH, 2006).

Além disso, Rabelo (2012) aponta que é indispensável realizar treinamentos para toda a equipe, a fim de capacitá-la a realizar procedimentos altamente técnicos em situações emergenciais (RABELO, 2012).

O uso da manobra, somado ao fato desse método requerer uma pausa na compressão torácica, só deveria ser aceito quando da ausência de equipamentos ou pessoas treinadas e, em ambiente extrahospitalar (RABELO, 2016).

Todo local, seja um centro de referência ou uma clínica, deve admitir pacientes críticos e lidar corretamente com qualquer situação grave (KUNZLER 2014).

A facilidade de entubar cães e gatos no ambiente intrahospitalar praticamente obriga o profissional a realizar este procedimento para obtenção de vias aéreas não obstruídas, ao invés de realizar ventilações boca-máscara ou boca-focinho (RABELO, 2014).

Portanto, podemos concluir que, de acordo com as doutrinas ora apresentadas, a manobra boca focinho somente deve ser utilizada em casos extremos, onde não haja condições ou equipamentos necessários ao salvamento da vida animal.

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**Recurrent Gastric Dilatation in a Labrador Dog
Long-term management with a Gastric Tube; two and half years follow-up
Case Report
Dilatación Gástrica Recurrente en un canino Labrador
Manejo a largo plazo con un Tubo Gástrico; dos años y medio de seguimiento
Reporte de caso**

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ABSTRACT

Objective – To describe the long-term successful clinical management by using a permanent gastric tube of a Labrador dog with recurrent life-threatening gastric dilatations refractory to gastropexy.

Case Summary – An 11-year-old male Labrador was presented with a recurrent life-threatening gastric dilatation even after incisional gastropexy. A complete set of diagnostic test, including endoscopy, canine total T4, glycemia, lipid profile and acetylcholine receptor antibody, were performed to rule out all possible treatable underlying conditions that may disturb gastric motility or outflow obstruction reporting all within normal limits. After three life-threatening gastric dilatations that presented over a period of 21 hours, a permanent gastric tube was placed in order to deflate the stomach in the event of a new bloating episode. The patient lived for 2.5 years after the original acute episode dying eventually of an unrelated cause, an oral melanoma. The factors that contributed to the presentation of the chronic gastric dilation in this patient were mostly unknown and remain to be determined.

New or Unique Information Provided –To the best of our knowledge, this is the first case report of a permanent gastric tube successfully managing recurrent gastric dilatation in a dog over a two and a half-year period. Permanent gastric tube is a practical way of prolonging these patients' lives with excellent quality of life and no serious complications.

Keyword: Gastric dilatation-volvulus, gastropexy, permanent gastric tube

RESUMEN

Objetivo – Describir el manejo clínico quirúrgico exitoso de un paciente Labrador que presentaba dilataciones gástricas recurrentes severas refractarias a la gastropexia.

Resumen del caso – Un canino macho Labrador de 11 años de edad presentó episodios de dilatación gástrica graves incluso después de realizada la gastropexia. Se realizan una serie de diagnósticos clínicos incluyendo endoscopía, T4 total canina, glicemia, perfil lipídico y anticuerpo para el receptor de acetilcolina para descartar todas las posibles causas tratables que pudieran afectar la motilidad gástrica o obstruir el vaciado gástrico. Todos resultaron dentro de los límites normales.

Luego de tres dilataciones gástricas graves con compromiso vital que se presentaron en un periodo de 21 horas, se realiza la colocación de un tubo gástrico permanente para poder vaciar el estómago en la eventualidad de un episodio de dilatación. El paciente vivió 2.5 años más luego de dicho procedimiento cuando fallece de una causa no relacionada (melanoma oral). Los factores que contribuyeron a la presentación de dilatación gástrica crónica recurrente en este paciente no pudieron ser identificados.

Información nueva aportada - según nuestro conocimiento, este es el primer reporte de caso del manejo exitoso de la dilatación gástrica recurrente mediante un tubo de gastrotomía permanente con una sobrevida y seguimiento de dos años y medio. La colocación de

un tubo gástrico permanente es una forma práctica de prolongar la vida de estos pacientes con una calidad de vida excelente y sin complicaciones serias.

Palabras clave: Vólvulo dilatación gástrica, gastropexia, tubo de gástrico permanente

INTRODUCTION

Gastric dilatation-volvulus (GDV) is an acute medical and surgical condition caused by several pathophysiologic events that occur secondary to gastric distention and anatomic malpositioning. The pathophysiologic mechanisms of dilatation are not yet completely comprehended since volvulus has been diagnosed in patients without gastric dilatation and gastric dilatation has also been diagnosed in dogs without volvulus ^{1,2}.

Gastric dilatation-volvulus is most commonly seen in large and giant breed dogs. Several risks factors have been identified. Dogs older than 5 years of age have a greater risk for GDV and the incidence increases, as they grow older. Animals with a fearful or “unhappy” personality are approximately 2.5 times greater risk of getting GDV and stress factors may also play a role in precipitating GDV. Lean body condition and deep narrow thorax is a host-risk factor in some breeds. ^{3,4,5,6}

Rapid rate of eating, eating from a raised bowl, being fed one large meal daily and restricting water intake before and after eating are considered by some as valid GDV risk factors. The size of food particles was also reported as a risk factor; diet containing particles of food > 30 mm in size had a lower risk of GDV than dogs fed a diet containing only particles < 30 mm in size. ^{5,6,7}

Other factors as delayed gastric emptying sometimes associated with high plasma gastrin levels may cause GDV.⁹ In a study using radiopaque particles mixed with food, 90% gastric emptying time was significantly (P less than 0.05) increased

after gastropexy in dogs with GDV, compared with healthy dogs after the same surgical procedure and recovery period. Whether delayed gastric emptying in affected dogs after surgical treatment and recovery was the result or the cause of GDV was not determined.¹⁰

Recurrence is common for GVD. Incisional gastropexy (IG) is routinely performed as either a prophylactic procedure to avoid occurrence of gastric dilatation-volvulus or at the time of surgical correction of GDV to prevent recurrence. One study showed that out of 136 dogs that had surgery for gastric dilatation-volvulus, 4.3 % of those that did have gastropexies had a recurrence, while 54.5 % of those without the additional surgery recurred. The median survival times were significantly greater for cases that had gastropexies 547 days if compared to 188 days of those without gastropexies. ¹

In a prospective, double-blind, multicenter, randomized, controlled, clinical trial the recurrence rate was 9% after IG. ² Another report retrospectively evaluated 61 medical records of dogs undergoing IG for treatment of GDV or as a prophylactic procedure. Recurrence of gastric dilatation alone was noted in 3 of 34 patients (8.8%) undergoing IG during surgery for GDV and in 3 of 27 patients (11.1%) treated prophylactically with IG. ³

Gastric dilatation alone can be as life threatening as GDV. Aerophagia is believed to be the major cause of gastric dilatation. When intragastric pressure increases, it likely compresses the lower esophageal sphincter against the diaphragm and interferes with its opening thus preventing eructation. Further gastric distention may also arise from intragastric bacterial fermentation.

Gastric pressure in spontaneous GDV ranges

from 9 to 62 mmHg with a mean of 22.9 mmHg. Severe gastric distension results in compression of the abdominal caudal vena cava shunting blood into collateral circulation to the intervertebral and azygos veins and reflux filling of the iliac, deep circumflex iliac, and renal veins that at the end are unable to handle the normal venous return. Gastric distension also obstructs the portal vein supplying blood to the liver.

Severe shock results from decreased venous return and cardiac output as well as hypotension. Experimental studies that dilated the stomach to 30 mmHg showed a decrease in cardiac output of 64% and a decrease in mean arterial pressure of 48%. The increased release of norepinephrine and epinephrine induces increased total systemic peripheral resistance and decreased coronary blood flow, which results in poor perfusion and oxygen delivery to the periphery and possible myocardial ischemia that is responsible for the arrhythmias seen in clinical GDV. Severe gastric dilatation also impairs the excursion of the diaphragm during inhalation, consequently also interfering with gaseous exchange. This could also contribute to the hypoxic and acidotic overall state.

Prompt correction of circulatory collapse by early goal directed therapy and decompression of the stomach are key factors for increased survival. Recurrent gastric dilation is associated with increased mortality, as a result of death for severe shock and euthanasia.

CLINICAL CASE

An 11-year-old male Labrador was presented at the clinic after having been treated twice in a 15 days period for gastric dilatation without volvulus by a different practitioner in another city. Those

episodes were managed by orogastric intubation that successfully decompressed the stomach solving the main clinical the problem; at that point, gastropexy was not recommended to the owner. We performed a complete blood count, renal and hepatic profile and an abdominal ultrasound; the only abnormal finding at presentation was a mild gastric inflammation on the ultrasound. Omeprazole 20 mg/ 24hs and Domperidone, as well as small feeding the dog 4 times-a-day were prescribed at that time.

Eight days later the dog was presented for massive gastric dilatation without volvulus. The patient was in shock, with increased heart rate of 140/min and capillary refill time (> 2.5 sec) and severely compromised respiration. An IV catheter was placed and fluid therapy was started with a bolus of 15ml/kg in 3 minutes of lactated ringer (LR) prior to induction. Tramadol (4mg/kg) was given IV and anesthesia was inducted with ketamine and diazepam (a mixture of 2.5cc of 50% ketamine + 2.5 cc of 5% diazepam in the same syringe given to effect), endotracheal intubation was performed in order to protect the airway and an orogastric tube was placed to manage the gastric dilation. Gas was immediately released along with few food pellets and a small amount of water. Fluid therapy was tailor to the end goals of heart rate of 90-100/min, RR 20-25/min, systolic arterial pressure of 100mmHg and mean arterial pressure of 80mmHg, 40 ml/kg of LR were administered during the first 40 minutes to achieve these goals.

The patient was scheduled for a GI endoscopy to rule out any anatomic abnormalities that might be surgically treated and also for a gastropexy. The endoscopic examination revealed a normal esophageal mucous membrane and no evidence of hiatal hernia or distal dilatation; mild stomach dilatation with low content; normal folds without

outstanding mucosal membrane overt alterations, normal pyloric outflow and no further anatomic abnormalities as well as no apparent duodenal alterations. Abdominal exploration and gastropexy was performed during the same anesthetic procedure, no anatomic abnormalities that could be impeding the stomach outflow were found on the stomach or surrounding organs. Gastropexy was performed by the incisional technique. With the stomach in normal position, a 3 – 4 cm incision through the seromuscular layer of the pyloric antrum, parallel to the longitudinal axis of the stomach and midway between the greater and lesser curvatures was performed. An equal length incision through the peritoneum and superficial musculature of the right ventrolateral body wall was made caudal to the last rib and 6 cm right of midline. The gastric and abdominal wall incisions were apposed with 2-0 nylon sutures in a simple continuous suture pattern.

Forty-eight, eighty-one and ninety eight days later the dog presented additional episodes of massive gastric dilatation that required percutaneous

gastric centesis as well as induction and orogastric intubation.

Additional diagnostic tests were performed in order to rule out other possible underlying causes of impaired gastric motility. Myasthenia gravis was ruled out by acetylcholine receptor antibodies - Myasthenia Gravis (905) performed by the Muscle Laboratory, San Diego School of Medicine, University of California with a result of 0.13 nmol/l (canine normal serum titer: <0.6 nmol/l; canine positive serum titer: >0.6nmol/l). After a gastroenterological consult, a complete lipid profile, TSH and T4, glycemia and urine analysis were performed; all of them were within normal values (table 1). Mild gastric dilatation was present the day of the blood collection, being treated by percutaneous puncture and cisapride (0.5mg/kg TID) at that time.

No significative clinical difference was observed with cisapride versus domperidone treatments. The patient would always present some degree of gastric dilation with mild to moderate episodes that sometimes required percutaneous gastric puncture.

Test	Patient results	Reference values
Canine TSH	0.14ng/ml	None – 0.5 (standardized by purified canine TSH, chemiluminescence technique)
Canine Total T4	2.21 µg/dl	1.3 - 2.9 µg/l (RIA)
Triglycerides	64 mg/dl	10 – 100 mg/dl
Total cholesterol	234 mg/dl	80 – 280 mg/dl
HDL cholesterol	174 mg/dl	70 – 140 mg/dl
LDL cholesterol	39 mg/dl	40 – 90 mg/dl
VLDL cholesterol	21.3	
HDL/LDL	4.4	
Glycemia	98 mg/dl	

Table 1. Laboratory results

One hundred and thirty four days after gastropexy the patient developed one episode that required induction and orogastric intubation. The dog presented a second and a third episode 17 and 21 hours later and the owner was presented then with two alternatives: euthanasia or a permanent gastric tube to be able to evacuate the gas in the event of dilatation; the owner elected the latter.

A left lateral percutaneous gastrostomy tube was placed followed by a permanent gastropexy. Briefly, the patient underwent general anesthesia and the left flank area was prepared for aseptic surgery. A large-bore, plastic tube was orally placed into the stomach. A small skin incision was performed on the dorsal paralumbar fossa a few centimeters caudally from the last rib; the subcutaneous tissues and abdominal muscles were bluntly dissected to expose the stomach

wall. The orogastric tube was localized and held stable in order to place 2-0 PDS uninterrupted sutures from the stomach serosal wall to the body wall to firmly pexy the stomach in place to avoid or diminish the chances for peritoneal contamination with stomach contents. An 11-scalpel blade was used to puncture the stomach wall by pressing the blade into the lumen of the orogastric tube. The gastric mucosa was suture to the skin to create a permanent gastric fistula. The stoma was only wide enough to pass a 14 French gastric feeding tube (GFT). The GFT was placed into the lumen of the stomach, the bulb was inflated with 15 ml of sterile saline and gentle traction was placed on the GFT to bring it against the stomach wall. The holding GFT device was then sutured to the skin. The dog was sent home 24 hours later on normal oral feeding.



Figure 1. The patient (Jumbo) after 2 years and 2 months

Figure 2. Gastric tube close-up and incision close-up after 2 years and 2 months



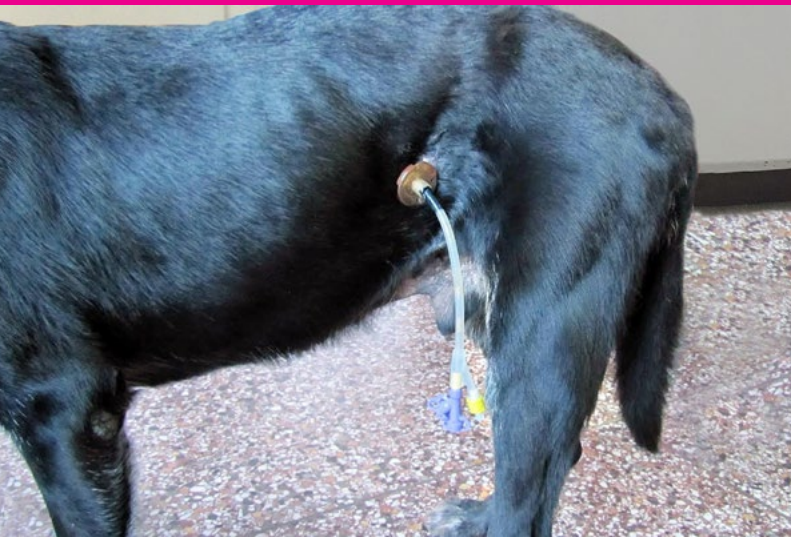


Figure 3. Body condition score of 4 and Muscle condition score of mild muscle loss

Since the procedure the patient was usually fed orally 4 times a day. In the event that the owner perceived some bloat, the cap of the feeding tube was removed and gas was released. Depending on stress circumstances and other not totally identified factors, the dog may not require any assistance for days while some other times it required unbloating 3 or 4 times a day.

Skin fold dermatitis developed under the GFT holding device 7 – 10 days after the surgery, the stitches were removed and the skin was locally treated with an antiseptic. The gastric tube holding device was not sutured into place again, but a butterfly tape was crafted at the middle length of the tube and sutured to the skin.

During the next 30 months of follow-up, the gastric feeding tube was changed 9 times after the lumen bulb broke. Tube changes were performed with the patient awake after careful lubrication of the tip; the bulb was then filled with water and pulled against the stomach wall.

Ten months after the first placement the patient developed skin pruritus, that was culture positive to polymicrobial flora with predominant *Staphylococcus*

intermedius and the patient was treated in accordance to sensitivity with Enrofloxacin for 7 days.

During this 2.5 years period of follow-up the patient underwent a 2nd finger amputation from its left forearm; histopathology reported deep abscess. It was also treated for a mild cystitis with struvite crystals. Renal and Hepatic profiles remained normal and the patient was able to function as a normal otherwise happy pet.

He developed a small polyp-like black mass on the right lip commissure that after complete removal was histopathologically diagnosed as oral melanoma. The owners declined chemotherapy or vaccination. He died 4 months later

CONCLUSION

The veterinary medical literature on managing and/or treating recurrent gastric dilation after gastropexy is scarce and present limited clinical options to the every day practitioner. In this particular report we describe a clinical case in which a dog with incisional gastropexy had recurrent bloating in a 134 days period. Incisional gastropexy (IG) does prevent gastric volvulus and has proven to increase median survival rate when compared to those that did not undergo this procedure but does not completely prevent gastric dilatation.¹⁻² Recurrence of gastric dilatation alone was reported in 8.8 - 9% of patients undergoing IG during surgery for GDV and in 11.1% patients treated prophylactically with IG.^{2,3} The dog described in this case report, presented three acute massive gastric dilatation episodes requiring three anesthesia induction events and oral gastric intubation in less than a 24 hour period. The treatment option was to place a permanent gastric tube (GT). Permanent gastric tubes have been

reported for feeding purposes but, to the best of our knowledge, this is the first report that describes the use of a GT for the long-term treatment of recurrent gastric bloating. The patient was followed-up for two and a half years reporting a good quality of life with virtually no clinical complications dying only as a result of an unrelated pathology.

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