

A New Treatment for Abomasal Bloat in Calves

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Summary

Abomasal bloat in calves can be a rapidly progressing, life-threatening disease. Gas must be removed from the tympanic abomasum as fast as possible to prevent the calf from choking. It is very difficult to reach the abomasum with a stomach tube and in most cases it is also not possible to remove all gas from the abomasum by a single puncture in the distended right flank. A report is given about a way of abomasal puncture that can remove all abomasal gas by one single puncture. The calf is turned upside down and a puncture is done with a 1.4x50 mm needle medial on the highest point of the distended abdominal wall just between the navel and xiphoid. Between 1985 and 1992, twenty of twenty one calves that were suffering from abomasal tympany could be healed, without further complications, by one single puncture. When the state of health is getting worse or when the calf is bloating again within 2 or 3 hours after the puncture, a diagnostic laparotomy must be done, in order to recognize and to treat a possibly twisted abomasum.

Introduction

Abomasal bloat in calves often takes a peracute course with dramatic disturbances in the general well-being, making quick veterinary treatment a necessity. The bloated abomasum wanders dorsally, either along the left (less common, dislocation abomasi sinistra, left-side displacement of the abomasum (LDA)) or right abdominal wall (Dislocatio abomasi dextra, right-side displacement of the abomasum (RDA)). As in the case of RDA in adult cattle, the right-side displaced abomasum can twist to varying degrees around an axis formed by the abomasal fundus and the pylorus/duodenum, so that in extreme cases a complete twisting-off of the displaced organ occurs, resulting in severe impairment of the blood supply (abomasal volvulus).

Diagnosis

The collection of gas in the abomasum of calves can be demonstrated by the typical tympanic or fluid-splashing sounds heard during ballottement or percussion with simultaneous auscultation of the unilaterally (left or right side), or in extreme cases bilaterally distended abdomen (fig. 1). Introduction of

a large-bore stomach tube or nasoesophageal tube generally only releases a small amount of gas from the rumen, without a considerable reduction in the silhouette of the patient. Colic and rapidly progressing deterioration in the general well-being are indications for torsion of the abomasum.

Figure 1. Bilaterally distended abdomen in a calf with acute abomasal bloat.



Abomasal bloat must be differentiated from ruminal tympany (by passing a stomach tube), cecal dilatation (which can also occur together with abomasal tympany), torsion of the intestines, and peritonitis due to perforated abomasal ulcers (in which case gas and fluid are not only found in the abomasum, but also in the abdominal cavity). Differential help is also provided by analyzing the color and pH of an abdominal punctate: abomasal contents have a pH value below 4 (usually 1.5-3). Ruminal contents have the same color and pH value as samples obtained with a stomach tube (pH>4-7). Watery black-brown punctate with a pH value around 6-7 points to a perforated abomasal ulcer, whereas cloudy red punctate with a neutral pH value is typical for transudates in ileus conditions.

Therapy

A stomach tube can only be passed into the abomasum through the closed reticular groove. The reticular groove reflex, however, is difficult to induce,¹ so that the release of gas by puncture from the flank or a laparotomy with puncture or repositioning of the abomasum under visual control are the primary methods of treating the often life-threatening abomasal bloat. According to literature references, percutaneous puncture of the abomasum can be made caudally from the right costal arch^{3,4} or cranially from the right stifle fold of skin² on the standing animal (figs. 2 and 3).

Figure 2. Puncture site on the right flank. The distended abomasum could not be emptied of all gas from this point, even with repeated puncturing. After being delivered to the clinic, abomasal bloat was relieved by a single puncture in dorsal recumbency.



Puncture from the mentioned points does bring relief to the sick animal, but it is difficult to remove all of the gas from here, because the contacting abomasum sinks ventrally due to the weight of the abomasum. The puncture needle can only follow the moving organ to a certain degree, so that it can easily slip out of the abomasum.

Figure 3 and 4. If a highly distended abomasum is punctured from the right flank (fig. 3), it collapses and is then pulled ventrally by its own weight. The cannula can easily slip out of the abomasal wall, so that several punctures are required. Since the abomasum is still under pressure, gas and abomasal contents can escape through the hole into the abdominal cavity (fig. 4).

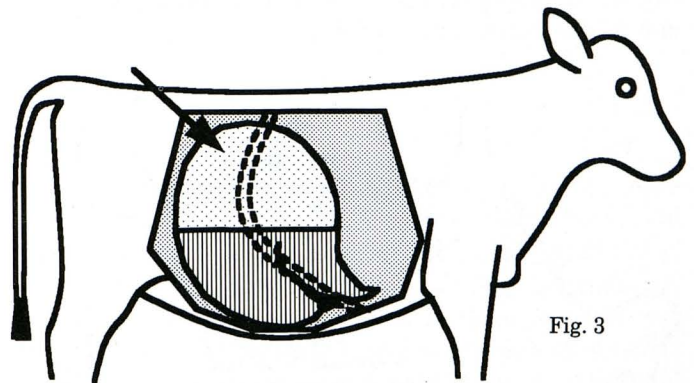


Fig. 3

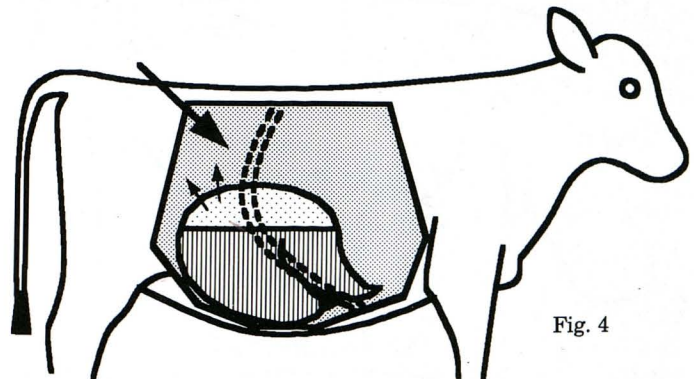


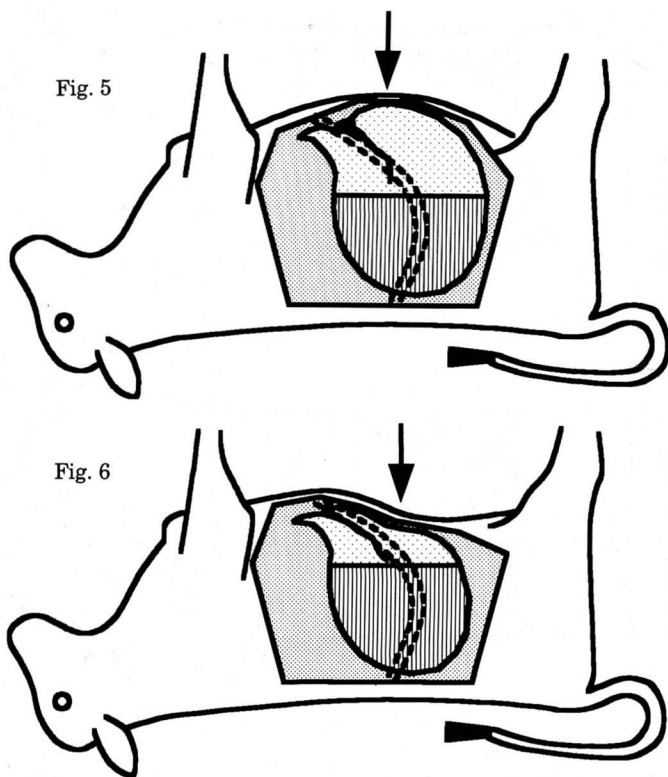
Fig. 4

As a result, not all of the gas can be removed, even with repeated puncturing. Gas and abomasal contents can leak through the opening, increasing the risk of peritonitis (fig. 4).

Calves with abomasal bloat have been treated in this clinic since 1985 with a practice-proven method. The animals are placed dorsal recumbency, and the abomasum is punctured on the highest point of the distended abdomen, median between the navel and xiphoid cartilage (figs. 5 and 6). After shaving and disinfecting the site, the puncture is made with a disposable cannula (1.4 x 50 mm). A 10 ml syringe without plunger is attached to the cannula to allow better control of the puncture and the evaluation of the punctate. As a supporting measure, the animals receive an antispasmodic (Buscopan Comp.[®], Boehringer Ingelheim Vetmedica) and are taken off milk replacer for 24 h. The procedure is intentionally done without sedation, because further developments in the general well-being cannot be judged surely in sedated animals. Furthermore, certain sedatives (e.g. Xylazin) inhibit intestinal motility long after the sedation has worn off,

hindering the emptying of the congested abomasal contents.

Figure 5 and 6. If the calf is on its back when the bloated abomasum is punctured (fig. 5), the gas bubble always remains directly under the highest point of the distended abdominal wall until the operation is finished (fig. 6). By applying light pressure to the flank the gas can be evacuated more quickly.



To date a total of 21 calves (14 female and 7 male) with acute abomasal bloat and ranging in age from three weeks to four months ($x = 7.3$ weeks) have been treated according to this plan. The majority of the patients were German Black Pied ($n = 9$) and German Red Pied ($n = 8$) cattle. In all 21 cases the gas trapped in the abomasum could be completely evacuated with a single puncture. Eight calves with abomasal bloat without major disturbances in the general well-being and 12 of 13

calves, in which symptoms of colic and tachycardia ($>130/\text{min}$) indicated a possible torsion of the abomasum, then passed feces within 24 h and were of generally undisturbed well-being. One calf bloated again within three hours and was then laparotomized. A right-side displacement of the abomasum with torsion 360° to the left was seen. Following surgical reposition of the abomasum, the animal returned to normal. During their stay in the clinic, which averaged one week, none of the treated calves showed symptoms of peritonitis, such as abdominal tension or free gas in the abdominal cavity. One calf bloated again one week after being released from the clinic and died within several hours.

Laparotomies were not routinely performed on the calves examined, so that it is not possible to say exactly in how many cases a torsion of the abomasum was actually present. The puncture technique described here is by no means meant to replace the surgical method of repositioning a highly twisted abomasum. It has, however, proven to be an effective method for relieving high intraabdominal pressures associated with acute abomasal bloat in calves. It is also clearly less risky than puncturing the right flank. The completely collapsed abomasum apparently returns to its physiological position in the abdomen spontaneously, so that surgical treatment of the patients in this clinic was only necessary in single cases. A diagnostic laparotomy has to be performed when calves rebloat within two to three hours or if the general well-being continues to worsen. Laparotomy allows the correction of severe torsions or those which have been present for extended periods, and easy recognition of peritonitis due to perforated abomasal ulcers, which is commonly seen in this clinic and has a poor prognosis.

References

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