

Right Displacement of the Abomasum in the Bovine — A Modified Procedure for Treatment

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Introduction

Unlike left displacement of the abomasum (LDA), right displacement of the abomasum (RDA) presents more of a challenge, and recoveries at the Purdue Large Animal Clinic until recent months have been less than 20%. By treating the last six cases with a different technique, all recovered.

It is important to recognize that in dealing with RDA a wider variety of clinical manifestations will be observed than with LDA. Some cases will present a syndrome of chronic, somewhat obscure, digestive disturbance where gas can be detected intermittently on percussion and auscultation in the area anterior to the right paralumbar fossa. Others will show evidence of abdominal pain with marked distention on the right side. The acute onset coupled with an increased pulse rate (100-120 per minute) and rapid deterioration and dehydration is usually indicative of displacement with torsion and requires immediate attention if the patient is to survive.

The presence of gas detected in the area of the right paralumbar fossa is not necessarily a sign of abnormality since gas-filled viscera are present to some extent in normal animals (14).

RDA, with or without torsion, is not restricted to the postpartum dairy cow as are most cases of LDA. We have observed cases in steers, bulls and calves under six weeks of age. One of the earliest cases was reported by Fincher in 1927, another by Danks in 1937 (4). Statistically, in the U.S. one RDA occurs for each 8-10 LDA (7). In some European countries (Denmark), the opposite is reported (5). Our own experience is less than the national average but cases seem to be increasing.

Diagnosis

In general, a tentative diagnosis of RDA can be confirmed by rectal palpation. The displaced abomasum can usually be palpated in the same general area that the gas under pressure is auscultated and percussed simultaneously. Two of the most important considerations in the differential diagnosis should be cecal dilation and volvulus of the colon. The position of the pinging sound along with rectal palpation will help distinguish between the

three conditions. Cecal dilation is usually heard at the posterior aspect of the right paralumbar fossa and feels per rectum like a distended portion of intestines 12-15 cm in diameter, which may have a flexed area in the pelvic canal or just anterior to the pelvis (14). Volvulus of the colon can involve the cecum or just the colon alone and is located anterior to the pelvis but not as far anteriorly as an RDA. If the pulse is not appreciably elevated, dilation without torsion is probably present in any of the involved organs. If the animal is showing signs of an acute abdomen and any of the aforementioned conditions are suspected, it is not advisable to spend much time theorizing; immediate right flank exploratory surgery is indicated while there is still a chance of success. Once intestinal necrosis and gangrene take place, the chances of success are nil.

Treatment

Medical treatment has been advocated for RDA (10). If the condition is not acute and the animal is not deteriorating rapidly, medical treatment is indicated and in some instances successful. Mineral oil of magnesium hydroxide in combination with the traditional gastrointestinal stimulants and parasympathomimetic injectables are indicated for therapy. If response is not noted in 24-48 hours, surgery should be considered.

The procedure that we have found most successful in recent months is a combination of the one described by Espersen (5,6) and the abomasopexy technique we use via the left flank for LDA (2).

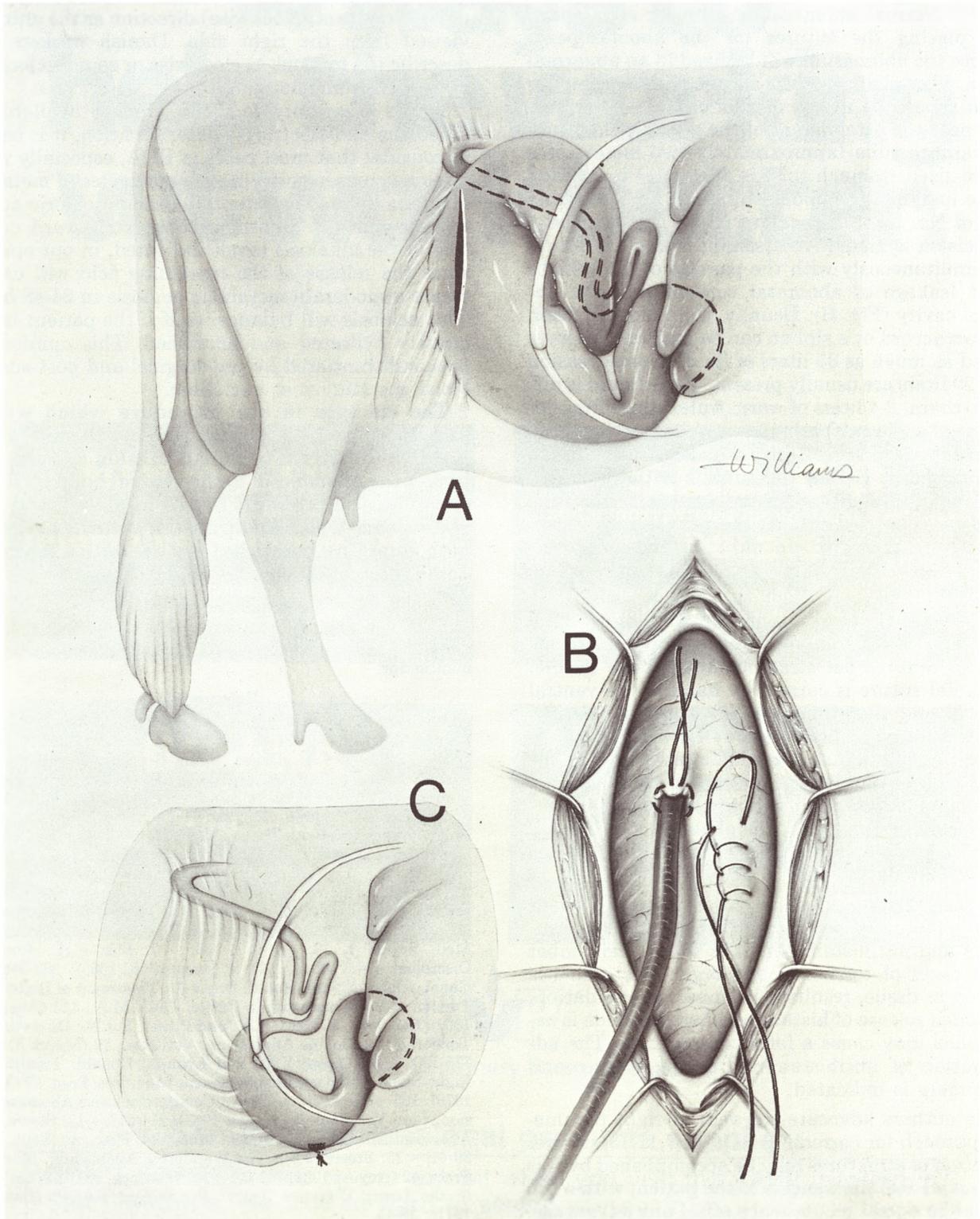
A liberal incision (20-25 cm) is made in the right paralumbar fossa the same as for a right flank omentopexy (2). The RDA can be readily detected once the peritoneal cavity is opened. The color of the serosa should be noted before any attempt at exploration or deflation is made. If the serosa appears viable and the organ is tightly distended, inserting a 12-gauge, 3-inch needle, with rubber tubing attached, into the lumen to relieve the pressure will facilitate further abdominal examination. At this point, a determination should be made as to the presence and direction of a torsion.

If the abomasum is displaced but not twisted, the

greater omentum can be seen or palpated posteriorly and ventrally as it attaches to the greater curvature of the abomasum (Fig. A). If the abomasum is twisted to the left, or counterclockwise, the greater omentum may be covering the abomasal serosa. In more severe left torsions the omentum may be pulled anteriorly between the abomasum and the omasum or com-

pletely torn from its attachments, viz.: the greater curvature of the abomasum or the left horizontal groove of the rumen (9).

In general terms, if a left or counterclockwise torsion is present, as viewed from the rear, the pylorus will be displaced medially. If the torsion is to the right or clockwise, the pylorus will be displaced



laterally and will be usually found against the right body wall. The degree of torsion can vary between 90° and 450° on its long axis. A certain amount of anterior or posterior torsion may also be present due to the constricting influence of the lesser omentum and the hepatic duct.

It is advisable, but not essential, to correct the torsion before a tube is inserted for draining the liquid contents. Normal abomasal positioning is essential before placing the sutures for the abomasopexy, otherwise the abomasum will be fixed in an abnormal position. The placing of the interlocking sutures for fixation should be in the middle of the greater curvature near the attachment of the greater omentum. The drainage tube (approximately two meters of a medium-sized stomach tube is adequate) is inserted into the lumen of the abomasum after a purse-string suture of No. 1 chromic catgut is put in place and a stab incision is made. An assistant draws the suture tight simultaneously with the passage of the tube to prevent leakage of abomasal content into the abdominal cavity (Fig. B). Usually, the fluid will drain of its own accord or a siphon can be created. We have removed as much as 35 liters of fluid on one occasion but 10-20 liters are usually present. If the liquid is difficult to drain, 2-4 liters of warm water containing 30-60 grams of sodium bicarbonate can be pumped in to facilitate removal and effect pH neutralization of the remaining fluid. Before the tube is withdrawn, instillation of 2-3 liters of mineral oil into the abomasum is carried out. As the tube is withdrawn, the purse string is tied. In most instances no oversewing is necessary if the edges of the stab incision are inverted properly.

At this point the two ends of preplaced interlocking suture (Fig. B) of non-absorbable material are attached to a 10-12 cm straight cutting edge needle. The cranial suture is carried by hand to the ventral body wall and the straight needle inserted through the body wall in an area midway between the *linea alba* and right subcutaneous abdominal vein and the xiphoid and the umbilicus. The caudal suture is placed approximately 6-8 cm behind the cranial suture. After it is determined that the abomasum is in close apposition to the body wall, the sutures are tied by an assistant outside the ventral body wall (Fig. C).

The right flank incision is closed and the patient given any indicated supportive therapy including antibiotics and antihistamines. It is well to remember that in cases of torsion of any organ, histamine is produced in tissue, resulting in impaired circulation. The sudden release of histamine when detorsion is accomplished may cause a fatal consequence. The administration of antihistamines before, during and after surgery is indicated.

Some authors advocate the ventral right paramedian approach for correcting RDA (3,7,11,13). Better orientation of structures may be accomplished by this route but we feel the dangers to the patient with a full abdomen in dorsal recumbency offset any advantage.

One author (3) advocates the ventral approach for the less severe cases and the standing approach for those where torsion is suspected.

Discussion

In reviewing the literature, some confusion exists as to the direction and degree of torsion. English workers (9) feel that torsions occur in an anterior (clockwise) or posterior (anti-clockwise) direction as the animal is viewed from the right side. Danish workers (5,6) describe the torsions as clockwise or counterclockwise as viewed from the rear.

Where laboratory facilities are not available for blood gas and electrolyte determination, it is helpful to consider that most cases of RDA, especially where torsion is present, will have some degree of metabolic alkalosis due to the retention of hydrochloric acid in the abomasum. Treatment directed toward correction of the alkalosis is not indicated, in our opinion, since the release of the remaining acid will usually create a moderate metabolic acidosis in 24-48 hours. This acidosis will balance itself if the patient is adequately hydrated and nourished. This opinion has been substantiated by pre-surgical and post-surgical blood gas studies at our clinic.

The changes in our procedure which we feel have increased our success rate are the mineral oil instilled directly into the abomasum and the fixation of the abomasum to the ventral body wall. The fixation sutures should be left in place for at least two weeks. Upon removal, the sutures are cut at both emerging points but are not pulled for fear of damaging the abomasal wall.

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