

# **Right Paralumbar Omentopexy for the Correction of Left Displaced Abomasum**

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## **Introduction**

Left displacement of the abomasum (LDA) is a very important disease of dairy cattle. Until effective and economical preventive measures are discovered veterinarians will be asked to treat a large number of these cases. The most effective treatment at present is surgical correction. Rolling is recommended only on average cows since about 50% of these cows redisplace in two to three days. This results in lost time and added expense especially if they eventually require surgery. Therefore, valuable cows are operated immediately. All of the highly successful surgical procedures for LDA involve correction of the displacement and fixation of either abomasum or omentum (1,2,3).

Cows are not fasted prior to surgery because the ketosis which most cows have would be aggravated and the displacement can be corrected with little difficulty from the right flank approach even if the rumen is full. Cows which are very dehydrated and/or suffering from other concurrent diseases such as metritis are also operated immediately. Attempts at building them up with fluid therapy and antibiotics is usually ineffective as long as the displacement exists.

## **Surgical Technique**

A very wide area on the cow's right side is clipped and scrubbed. An area is prepared which would be as large as that ordinarily draped for this type of procedure. A drape is not used on standing cows since slight movement of the cow causes foreign material to migrate from distant areas to the incision site. A small area two inches by ten inches in the center of the paralumbar fossa is shaved.

Anesthesia is accomplished by paravertebral block or by line infiltration of the incision site with procaine containing epinephrine and hyaluronidase. The incision is made beginning about four inches below the transverse process and ending in the V made by the last rib and the fold of internal abdominal oblique muscle. Care is taken when incising the peritoneum to not accidentally cut the duodenum. It often lies exactly adjacent to the peritoneum halfway down the incision.



*Figure 1: The sleeve is put on over the surgical glove and the strap is positioned over the surgeon's head in a manner which prevents contamination.*



*Figure 2: The needle is doubled backward when taking it in to protect the viscera.*

Prior to entering the abdomen a gas sterilized obstetrical sleeve is put on the left arm. Gas sterilization will prolong the life of the sleeve. The sleeve is put on over the surgical glove and the strap is positioned over the surgeon's head in a manner which prevents contamination (Figure 1). Saline is used to wash off the talc and to lubricate the sleeve.

A rapid but thorough exploratory laparotomy is done on all cows. This includes palpation and visualization of the uterus and liver, palpation of kidneys, ureters, reticulum, diaphragm, intestines, and lymph nodes. The abomasum is also palpated to verify that it is displaced.

The abomasum is deflated with a 14-gauge needle attached to a 3½-foot length of tubing. The needle is doubled backward when taking it in to protect the viscera (Figure 2). The hand is placed inside the incision and directed posteriorly behind the fold of omentum as it reflects off the duodenum. The hand is then directed over the uterus and under the rectum until the dorsal sac of rumen can be palpated. By following along the rumen anteriorly and laterally, the abomasum is palpated. The protected needle is then exposed and inserted on an angle into the dorsal aspect of the abomasum. The open end of the tubing is held by the right hand so that all gas is emptied to the outside. The gas has a characteristic nutlike odor. The end is directed downward so that if fluid is obtained, it will not contaminate the incision or the surgeon's hand (Figure 3). As a rule, all of the gas is removed to facilitate



*Figure 3: The end of the tubing is directed downward so that if fluid is obtained, it will not contaminate the incision or the surgeon's hand.*



*Figure 4: When all of the gas is out of the abomasum, the tubing is pinched off behind the needle to prevent leakage of fluid into the abdomen and the needle and tubing are removed.*

replacement of the abomasum. The amount of gas obtained is variable but averages about 2500 cc. When all of the gas is out, the tubing is pinched off behind the needle to prevent leakage of fluid into the abdomen and the needle and tubing are removed (Figure 4).

The abomasum is then replaced to the right side of the abdomen. To accomplish this maneuver two approaches can be taken. The arm can be inserted in the same manner as used to deflate the organ and the abomasum pushed under the rumen to the right side of the abdomen. The second method is to put the hand inside the incision and go directly ventral along the peritoneum, sliding under the rumen in the area opposite the fore udder attachment; then to the left of the rumen until the abomasum is encountered. The hand is passed anterior and dorsal between the rumen and abomasum until the dorsal aspect of the abomasum is found. The hand is cupped over it and the abomasum is pulled gently ventral and to the right. The placement of the arm beneath the rumen elevates it and makes replacement easier.

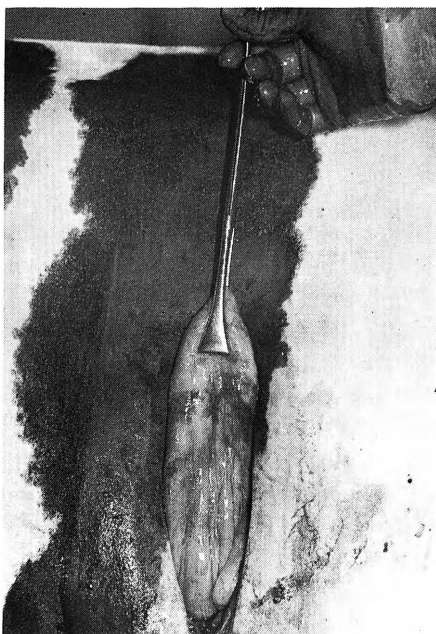
When the abomasum has been completely replaced, excess loose omentum can be seen just inside the incision (Figure 5). The omentum is easily identified by its origin on the ventral border of the duodenum. The superficial layer of the greater omentum is grasped and pulled gently in a hand-over-hand manner in a ventral and anterior direction. This eventually brings the pyloric portion of the abomasum into view (Figure 6). A small tag or flap projects from the omentum about six



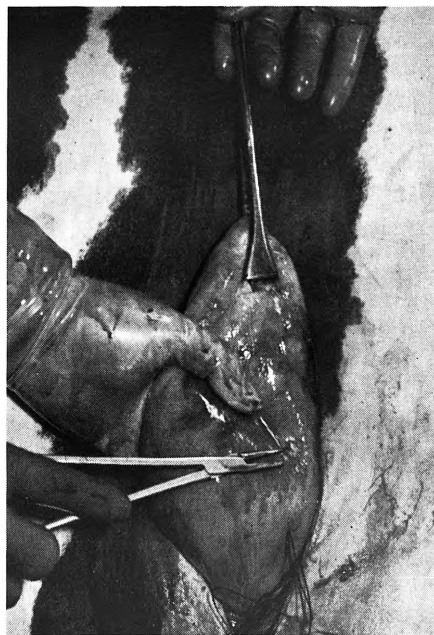
*Figure 5: After the abomasum has been completely replaced, excess loose omentum can be seen just inside the incision.*



*Figure 6: Pulling the omentum in an anterior and ventral direction eventually brings the pyloric portion of the abomasum into view. The attachment of omentum to the abomasum is a sharp demarcation and is easily identified.*



*Figure 7: The omentum is positioned so that the pylorus will be about three inches below the bottom of the incision. The omentum is then measured from this point to the top of the incision and held with a vulsellum forceps or suture.*

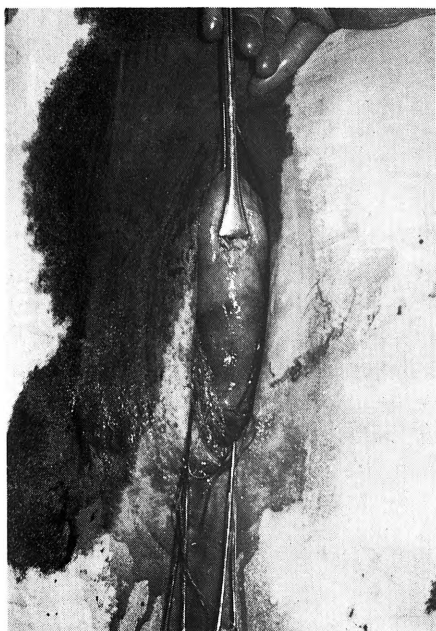


*Figure 8: The surgeon's hand is placed behind the omentum to prevent accidental inclusion of the duodenum in the stay suture.*

inches from the pylorus and is a helpful landmark. The attachment of the omentum to abomasum is a sharp demarcation and easily identified. The line of attachment of the omentum to pylorus is crescent shaped. The pylorus can be identified by palpation. The abomasum is fixed by suturing the omentum in this area to the incision. The omentum is positioned so that the pylorus will be about three inches below the bottom of the incision. This insures that there is no blockage or interference with motility. The omentum is measured from this point to the top of the incision and held with a vulsellum forcep or suture (Figure 7).

All of the suturing is done with number three chromic gut. First, two stay sutures are placed which attach the omentum to either side of the incision. The largest taper needle available is used and is placed through all muscles and peritoneum on one side, and through a fold of omentum. The surgeon's hand is placed behind the omentum to prevent accidental inclusion of the duodenum (Figure 8). As much omentum as possible is included in this suture. The needle is then passed back through the peritoneum and all muscle layers and the two ends of the suture are held with a forcep. The opposite side of the incision is sutured to the omentum in an identical manner (Figure 9).

The peritoneum and transversus abdominus muscle are sutured with a continuous pattern. This suture also includes a large bite of omentum from between the two stay sutures (Figure 10). The

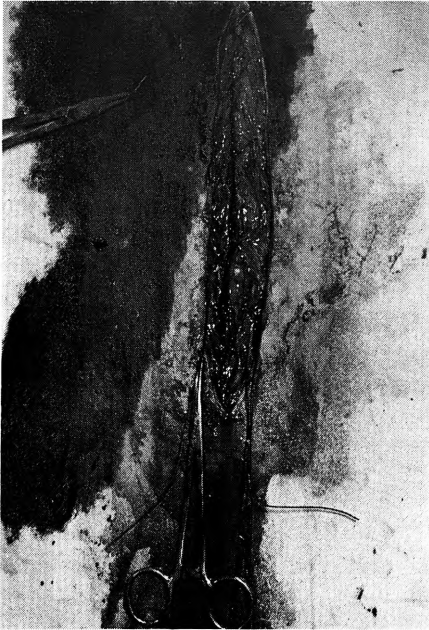


*Figure 9: The opposite side of the incision is sutured to the omentum in an identical manner and the preplaced sutures are held with forceps.*



*Figure 10: A simple continuous pattern is used to close the peritoneum and transversus abdominus muscle. This suture also includes a large bite of omentum from between the two stay sutures.*

omentum is included in this continuous suture for the full length of the incision. This improves the adhesion formed and makes a large and strong attachment to the abomasum. Healing does not seem to be impaired if omentum bulges between the two edges of peritoneum. The internal and external oblique muscles are sutured separately with a simple continuous pattern (Figure 11). Once the external oblique muscle is closed, the two stay sutures are tied. The skin is closed with Vetaphil in a cruciate, continuous interlock, or continuous vertical mattress pattern.



*Figure 11: The internal and external oblique muscles are sutured separately with a simple continuous pattern.*

### Post Operative Care

Post operative treatment is very minimal in most cases. Procaine penicillin G is used b.i.d. for three days. This antibiotic is chosen because of the five day withdrawal period for slaughter. Ketosis is treated with intravenous glucose and cows which are very dehydrated are given five to ten gallons of balanced electrolyte solutions orally. Cows that have metritis are treated with antibiotic infusions and estrogens. The owner is advised to keep the cow in a box stall for one week and to feed all the good quality hay and grain she will eat.

There are several advantages to this method: (1) the standing position is more comfortable for both cow and surgeon; (2) aseptic technique is more easily maintained than when a cow is in dorsal recumbency; (3) a complete exploratory laparotomy can be performed; (4) the surgery is easily and quickly completed; and (5) the procedure is very successful.

The method described is a slight modification of that originally reported by Gabel et al. (2). The 174 cases reviewed by Gabel had a

long term success rate of 86%. Since 1964 over 600 cows have been operated by this method at the Ohio State University Veterinary Hospital and the present success rate is similar. It is believed that the operation is almost always successful. Cows that die or never become profitable again do so because of other concurrent diseases such as metritis, traumatic reticulitis, or fatty degeneration of the liver.

#### References

1. *Ames, S.* Repositioning Displaced Abomasum in the Cow. *J.A.V.M.A.*, 153, (December 1, 1968): 1470-1471. – 2. *Gabel, A. A. and Heath, R. B.* Correction and Right-Sided Omentopexy in Treatment of Left-Sided Displacement of the Abomasum in Dairy Cattle. *J.A.V.M.A.*, 155, (August 15, 1969): 632-641. – 3. *Lowe, J. E., Loomis, W. K. and Kramer, L. L.* Abomasopexy for Repair of Left Abomasal Displacement in Dairy Cattle. *J.A.V.M.A.*, 147, (August 15, 1965): 389-393.