



## Surgery of the Abomasal Displacement: Right or Left Flank Approach?

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### Abstract

Seventy one dairy cattle Iranian Holstein-Frisian breed, with left abomasal displacement were surgically treated by using right and left flank omentopexy and abomasopexy.

The LDA was diagnosed on min 4 days and max 30 days post partum. Different surgical techniques are used in Iran for correction of displaced abomasums but the mostly done standing in right and left flank approach. Only one-type suture materials were used to close abdominal wall and skin.

Follow up information was obtained, at regular intervals, from two hours through three months. Starting to feed intake, defecation, rumen contraction, appearance of the hair growth on the operation site, milk production, reproductive performance, surgical complication were obtained for each animal. Our results suggest performance for a right flank omentopexy in cattle with displaced abomasums is better.

### Introduction

Abdominal surgery can be performed in cattle for therapeutically and as a diagnostic tool. Abdominal operation is the most common surgical procedure performed by bovine practitioners. The visceral anatomy of the bovine abdomen can be extremely confusing to the uninitiated. A thorough knowledge of anatomy is essential since most bovine abdominal surgery is done more by feel than sight. This is particularly important viscera is greatly facilitated by selecting the correct approach.

Abomasal displacement is perhaps the single most common surgical disorder of the abdomen in modern dairy practice. The tolerance of cattle to standing surgical procedures and the general

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success of surgical therapy for many of the more common abomasal disorder tend to promote and optimistic attitude about abomasal surgery.

Although the abomasums is partially accessible through a number of surgical approaches, it cannot be fully exposed through any of them. Surgical success requires that the surgeon have a sufficient knowledge of anatomy to select an approach that provides adequate access for diagnosis and therapy without compromising safety under a wide range of conditions. There are a variety of surgical procedures described to correct abomasal displacements. The purpose of these procedures is to return the abomasums to its normal position and to prevent recurrence of the displacements.

In LDA the abomasums slides under the rumen and dorsally along the left body wall. The attached omasum and cranial duodenum are pulled after the abomasums as it moves to the left. The result is a partial impairment of abomasal out flow, leading to abomasal gas accumulation, electrolyte pooling with subsequent systemic alterations and depressed gastrointestinal motility. Clinical signs associated with left displaced abomasums include decreases in appetite, fecal output and milk production.

The left paralumbar fossa approach with abomasopexy and the right para lumbar fossa approach with omental fixation appear to be the most widely used surgical techniques. To our knowledge no prospective study comparing right paralumbar fossa omentopexy and left paralumbar fossa abomasopexy has been done. The purpose of the study reported here in was to determine in cattle with uncomplicated left displaced abomasums if either surgical procedure (two approach) was superior in term of the affected cattle return to feed intake,defecation,rumen contractions, milk production ,reproductive performance ,postoperative complication and re growth of hair in surgical area.

## **Methods**

From year 1996 until 2006 a study was carried out on seventy-one cows being operated upon because of left abomasal displacement in dairy farms in Fars province, Iran.

The patient's health state after the correction of displaced abomasum and its fixation using right omentopexy and left flank abomasopexy was recorded and accordingly evaluated.

Patients were allocated into two groups of thirty-one and forty of right and left-flank omentopexy and abomasopexy respectively.

## ***Surgical Technique***

### **Left paralumbar abomasopexy**

A vertical incision 25cm long is made in the cranial left paralumbar fossa. In the displaced position, a variable portion of the greater curvature and greater omentum will be exposed in the open incision A long segment of large-gauge suture (No 2 or 3) should be used to place six to eight bites in a continuous pattern through the serosa and muscularis parallel and 5 cm off the insertion of the greater omentum on the greater curvature as far cranially as possible on the abomasums. The bites should be placed in the center of the suture segment, leaving both ends of the suture long. Once the free ends of the suture have been tagged with a hemostat outside of the abdomen, the abomasum should be gas decompressed. The assistant surgeon applies pressure on

the body wall externally at the appropriate site for suture insertion with a finger or blunt object while the surgeon pressure from the abdominal side.

Once a site has been identified, the surgeon carries the needle in a guarded position in his hand to the selected site. The suture is rapidly pushed through the body wall and grasped by the assistant surgeon. The procedure is repeated for the caudal suture free end, placing the suture through the body wall 8cm caudal to the first suture placement and taking care not to cross the sutures or trap omentum during placement. Once the abomasum is snugly positioned against the ventral body wall, the assistant ties the suture across the skin. The incision in the body wall is then closed in a routine manner.

### **Right paralumbar fossa omentopexy**

A right paralumbar fossa exploratory laparotomy was done first, and the abomasum was identified between the rumen and the left body wall. The abomasum was decompressed and returned to normal position by sweeping it under the rumen or applying traction to greater omentum. A fold of greater omentum was identified (elephant's ear) 5-7 cm caudal to the pylorus and incorporated into the closure of the transverses abdominus muscle using 2 vicryl in a simple continuous pattern. The incision of flank is then closed in a routine manner.

Follow up was done at 8 hours, 24 hours, one week, one month and three months following the surgery. Any incisional complication (including edema, seroma formation, and infection) were recorded. Milk production for the present and subsequent lactation and reproductive performance were obtained for each animal.

### **Results and Discussion**

Because in left flank abomasopexy, blind placement of sutures through the body wall, there is an increased risk of damaging structure in the abdomen or the body wall. Also additional restraint may be necessary during suture placement.

All of the operations were done under the same condition considering anesthesia, suture material, type and length of the incision, drugs used and postoperative management. Postoperative evaluated parameters were as follows:

- 1- Starting to feed intake
- 2- Defecation in less than two hours
- 3- The number of rumen contractions in 8 hours, 24 hours, one week, one month and three months after the surgery
- 4- Appearance of the hair growth on the operation site
- 5- Milk production in time intervals of eight hours, twenty four hours, one week, one month and three months after the operation.
- 6- Observing the first post operation estrus sign

### **Data Analysis and Statistics**

The above-mentioned parameters were collected and analyzed to describe the difference between right and left flank omentopexy in cows with left abomasal displacement. Statistical analysis was performed using T test. The results showed that SD and means of the analyzed parameters in

right flank omentopexy group maintained a faster and steadier tendency to return to normal values.

Considering the results it seems that right flank approach has more benefits than the left approach because:

- 1- it requires less peritoneal cavity manipulation
- 2- it encompasses better abomasal return to its normal position
- 3- less rumen manipulation
- 4- less abomasal injuries
- 5- less trauma to other peritoneal organs such as cecum and intestines
- 6- reducing the probability of local and diffused peritonitis because no suture material is exposed to the outside of the body

Some production and health signals have been taken into consideration in the evaluation of the two methods. These signs include: resumption of the feed intake, defecation during two hours after the surgery, the number of rumen contractions in different time intervals after the end of the surgery, the rate of hair growth on the operation site, milk yield after the operation, and the first post operation estrus signs. All of these signs are indicative of the recovery and health of the animal. A reduced amount of trauma to the peritoneal cavity guarantees early post operation ruminal and intestinal contractions which is per se a valuable indication of gastrointestinal activity and animal overall health condition. Appearance of hair growth on the operation site can also be a good sign of reasonable digestion and assimilation in the GI tract.

The rapidity with which the cow resumes milk production and comparing it with before-operation milk production can also be considered as an excellent sign of normal physiological state.

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