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Surgical Affections Of Rumen And Reticulum In Small & Large Ruminants Referred To Al-Muthanna Veterinary Hospital.

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Abstract

Sixteen female ruminants (4 cows, 5 ewes and 7 does) which were referred to the Al-Muthanna Veterinary Hospital, Iraq between March 2025 to October 2025 with suspicion of foreign body (sheep and goat) and traumatic reticuloperitonitis (cow).

Cows had arched backs, a sharp decrease in milk yield, and a reluctance to move, with abduction of the fore limbs with jugular vein distension and pulsation. Animals underwent rumenotomy were reviewed and information was obtained on history and physical examination findings.

Cases were categorized according to animal species into 3 groups. Group 1 included cows (n = 4), group 2 included ewes (n = 5) and group 3 included does (n = 7).

Results of this study suggest that non-metallic foreign bodies were found in the reticulorumen region of cattle and small ruminants (plastic foreign bodies, ropes and pieces of old clothes) were commonly in the clinical cases than metallic foreign bodies. Rumenotomy, revealed the presence of large amounts (5-20 kg) of non-metallic foreign bodies consisting of plastic materials and ropes. IN addition, there were varying numbers and sizes of nails and wires were found in the reticulorumen region,2 cow's cases were penetrating first one affect the heart and the other affect reticulum.

Outcome: Follow-up was available for all cases. Animals recovered completely and returned to normal production and activity according to owner's information.

Keywords: Rumenotomy, Traumatic Reticuloperitonitis, Veterinary Surgery

Introduction

Ingestion of metallic foreign bodies in adult dairy cattle can result in a wide variety of affections and syndromes that may impair reticuloruminal motility (Fubini, et al ., 1989).

Traumatic Reticulo Peritonitis (TRP) is caused by penetration of a metallic foreign body through the reticular wall causing acute perireticular inflammation, adhesions and abscesses perireticular adhesions may involve the vagus nerve resulting in impairment of reticular motility(Rehage, et al., 1995).

Traumatic reticuloperitonitis (TRP) or hardware disease is a common disease of cattle but is rarely seen in small ruminants (Akkoc, 2007). It is the most common cause of anterior abdominal pain in cattle (Waldner, et al 2009).

The ingestive behaviour of cattle predisposes them to the accidental swallowing of thin sharp piece of metal foreign objects that settle in the reticulum (Braun, et al 2009). Ingestion of a foreign body may also be associated with diseases that cause pica, such as phosphorus deficiency. Subsequently, the foreign object may enter the reticulum and (a) without clinical diseases; (b) penetrate the reticulum wall only with intra-mural inflammation; (c) perforate the reticulum wall penetrate into the peritoneal cavity, and create localized peritonitis; or (d) migrate into the peritoneal and thoracic cavities. The diaphragm, pericardium, and heart muscle are located just cranial to the reticulum (Harwood, 2004), with the liver positioned medially and dorsally and the spleen laterally and dorsally. These organs may sometimes be penetrated by foreign bodies and become involved in the inflammatory process. The importance of this disease is not only due to its higher prevalence among other digestive disorders, but also due to the difficulty in early prediction and difficulty in evaluation of its sequel by physical examination (Smith, 2009).

Therefore, present study was undertaken to find out incidence of foreign body ingestion in ruminants and effectiveness of rumenotomy as a treatment method adapted from March 2025 to October 2025 in AL-Muthanna Veterinary Hospital.

Material And Methods

Animals:

Sixteen female ruminants(4 cows, 5 ewes and 7 does) which were referred to Al-Muthanna Veterinary Hospital, Iraq between March 2025 to October 2025 with suspicion of foreign body (Sheep And Goat) and traumatic reticuloperitonitis (cow), were included in this study. One cow was pregnant. Cases were categorized according to animal species into 3 groups. Group 1 included cows (n = 4), group 2 included ewes (n = 5) and group 3 included does (n = 7).

Clinical examination was performed and pain tests were applied. Positive pain tests were indicated by grunting sound audible by placing a stethoscope on the trachea while the tests were being applied. A metal detector was used as a diagnostic tool for the presence of metallic foreign bodies.

Preoperative preparation:

Animal preparation

1.The whole dorsum of left abdominal wall should be thoroughly cleaned with soap and water to remove all the dirt and dust before further preparation for surgery is done followed by shaving of left flank with surrounding area.

2. Scrubbing should be done.

3. Again clean with soap and water.

4. Apply 70% isopropyl alcohol to the incision site.
5. After that tincture iodine is painted over the site.
6. Drapes are put over the site leaving the proposed site of incision.

Animal position

1- Standing position in cow.
2- Right lateral recumbency in ewe and doe.

Anesthesia

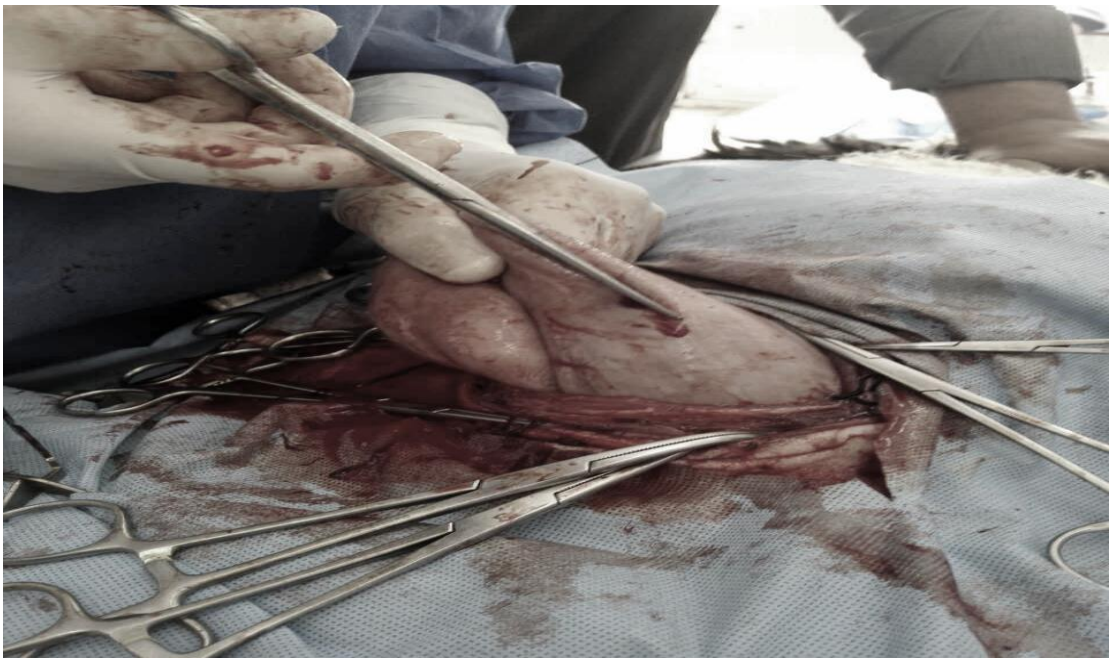
Rumenotomy performed under liner subcutaneous infiltration of flank region using lidocaine 1ml for each 1cm .in some cases using xylazine for sedation.

Surgical Procedure:

1. The skin is incised with a smooth but firm motion. The pressure on the scalpel should be adequate enough to ensure complete penetration of the skin.
2. Dissection of the subcutaneous fascia and oblique muscles continues to expose the glistening aponeurosis of transverse abdominis muscle.
3. Different muscles from outside to inside are incised one by one along with their fascia after grasping them with Allis tissue forceps. In the last peritoneum is grasped with allis tissue forceps and then it is incised taking care not to cause any injury to underlying rumen.
4. The length of incision from skin to the peritoneum should be in descending order to facilitate closure.
5. The skin incision should be long enough to allow the surgeon's arm inside the abdomen.
6. If the rumen is not full, the walls of rumen and abdomen separate out spontaneously to facilitate exploration.
7. The abdominal cavity should be thoroughly explored to examine the wall of diaphragm, outer wall of reticulum, spleen and liver for any pathological lesion.
8. A thorough search is made by inserting hand in the abdominal cavity through the incision and rolling over the rumen on all sides to rule out any herniation, abcessation or foreign bodies.
9. No attempt should be made to break down the firm adhesions if present.
10- Rumenotomy:

If the rumen is grossly distended, aspiration is done by piercing a 16" needle on dorsal aspect. A fold of rumen is exteriorized. For better exteriorization, retention and to avoid contamination of abdominal cavity with ruminal contents and using ruminal fixation techniques (Stay suture technique). After laparotomy, the rumen has to be pulled out gently out of the laparotomy incision and rumen walls were anchored to the incision dorsally, ventrally, cranially and caudally by placing four or more sutures between ruminal walls and skin by using no.2 silk or nylon as suture material.

After fixation, the rumen is incised longitudinally in the vertical direction on the dorsal compartment(Fig.1).



(Fig.1).The rumen is incised longitudinally in the vertical direction on the dorsal compartment, after fixation.

Some of the ruminal contents may be evacuated. If complete rumen is emptied fresh cud or microflora should be kept in rumen before its closure. The hand is then inserted in the rumen and entire rumen and reticulum, if any foreign body is present, it is removed (Fig. 2).

A magnet may be introduced and swept over rumen and reticulum to retrieve any metallic substance.

After surgical intervention the surgeon rescrubs his hands and the edges of rumen incision are thoroughly cleaned and re-drapped.

(Fig.2) Removed non-metallic foreign bodies from rumen.

The rumen incision is closed by double row of continuous inverting sutures using chromic catgut no. 2 or 3 (Fig.3).

(Fig.3)The rumen incision is closed by double row of continuous inverting sutures

The suture site and exposed area is irrigated with suspension of antibiotic. Rumen fixation instruments or sutures are removed and all the soiled substances are discarded. The surgeon scrubs again before starting the suturing of peritoneum, muscle and skin incision. Suturing of skin by placing series of simple interrupted or interrupted mattress sutures leaving 3-4

stay sutures to apply the gauge piece or bandage piece to cover the wound.

Postoperative care:

1- Course of antibiotic coverage for 5-7 days.

2- Anti-inflammatory/analgesics drugs for 2-3 days.

3- Dressing on alternate days for 7-10 days.

4- Fluid therapy, if required.

5- Light diet to animal for few days after the surgery.

6- Removal of Skin sutures on 8th to 10th day post operation day.

Results and Discussion:

Sixteen female ruminants (4 cows, 5 ewes and 7 does) which were referred to the Al-Muthanna Veterinary Hospital, Iraq between March 2025 to October 2025 with suspicion of foreign body (sheep and goat) and traumatic reticuloperitonitis (cow). Cows had arched backs, a sharp decrease in milk yield, and a reluctance to move, with abduction of the fore limbs with jugular vein distension and pulsation.

Results of this study suggest that non-metallic foreign bodies were found in the reticulorumen region of cattle and small ruminants (plastic foreign bodies, ropes and pieces of old clothes) were commonly in the clinical cases than metallic foreign bodies. Rumenotomy, revealed the presence of large amounts (5-20 kg) of non-metallic foreign bodies consisting of plastic materials and ropes. IN addition, there were varying numbers and sizes of nails and wires were found in the reticulorumen region, 2 cow's cases were penetrating.

Ruminants are notorious for ingestion of foreign bodies related to nutritional deficiencies and feeding management of the animals. They are the root causes for various problems in different organs of the animals (Kahn et al., 1999). The entry and migration of foreign bodies through the body tissues lead to many complications based on nature of the foreign body entrance into the tissues (Calfee and Manning, 2002).

Among the numerous diseases of foreign body syndrome in ruminant species, traumatic reticuloperitonitis (TRP) and traumatic pericarditis (TP) are the most common. TRP is a sporadic disease in ruminants caused by perforation of the reticulum due to ingestion of foreign materials, which is a common cause of abdominal surgery in cattle. Cattle are more susceptible to foreign body syndrome than small ruminants because they do not use their lips for prehension and are more likely to eat chopped feed (Braun, 2003).

Lack of oral discrimination in cattle may lead to ingestion of foreign bodies that would be rejected by other species. Moreover, the honeycomb-like structure of the reticulum provides many sites for fixation of a foreign body, and contractions of the reticulum may be sufficient to push a sharp foreign body through the wall, inducing the disease (Ghanem, 2010).

The increase in the intra-abdominal pressure due to the pregnancy and ruminal tympany may facilitate the penetration of the foreign bodies into the reticular wall (Torki et al., 2011).

Environmental pollution is one of the growing problems for grazing animals due to absence of recycling industries, cleaning of environment cultures, improper disposal of plastic bags; free grazing animals eat plastic bags especially in towns and villages. These plastic bags are indigestible and their accumulation in the rumen of grazing animals may lead to adverse effect on health (Ghurashi et al., 2009); plastic bags resist to biodegradation and pollute for decades and centuries and pose great risk to human health and environment (Ramaswamy and Sharma, 2011).

Non-metallic foreign bodies were found in the reticulorumen region of cattle and small ruminants (plastic foreign bodies, ropes and pieces of old clothes) were commonly in the clinical cases which referred to the AL-Muthanna Veterinary Hospital from March 2025 to October 2025 this agree with (Hailat, et al., 1996)

Outcome: Follow-up was available for all cases. Animals recovered completely and returned to normal production and activity according to owner's information.

Conclusions and Recommendations:

1- The commonest cause of rumenotomy in clinical cases of ruminants referred to the AL-Muthanna Veterinary Hospital was non-metallic foreign bodies.
2- Animals recovered completely and returned to normal production and activity post operation.
3- Owner must be constructed and well known to feed their animals in places clear from plastics and metal materials and keep them away from garbage.

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