

SURGICAL TREATMENT OF SEVERE RUMINAL IMPACTION AND DYSTOKIA IN BEETAL GOAT

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(Received, 30th October 2023, Revised 20th March 2024, Published 27th March 2024)

Abstract A goat aged 22-24 months was received with complaints of restlessness and persistent bloat at the outdoor clinic of the Department of Clinical Sciences, Faculty of Veterinary Sciences, Bahauddin Zakariya University, Multan. The goat had a four and a half month pregnancy history. Clinical examination showed normal rectal temperature. However, modest deviations towards lower limits were recorded for heart and breathing rates. Furthermore, the oral and conjunctival mucous membranes were observed to be congested. A hard mass was noticed in the rumen (anterior abdomen) on abdominal palpation. The ultrasonographic examination showed that two dead fetuses were present in the right uterine horn. A hyperechoic area (D=5cm) was also observed in the rumen. Tentatively, based on clinical evaluation and ultrasonography, impaction and dystocia were diagnosed. An exploratory rumenotomy and cesarean section were recommended after diagnosis. The surgery was performed according to standard protocol. Upon rumenotomy, the rumen was packed with 1.5 kg of calcified mass. It was composed of compressed foreign bodies (plastic bags and rope). The animal healed without incident after receiving parental antibiotics (Oxytetracycline @ 5 mg/kg), NSAIDs (Meloxicam 0.5-1 mg/kg), and fluids (NS & RL) for seven days following surgery.

Keywords: Rumenotomy; hysterectomy; physical examination; ultrasonography

Introduction

It is uncommon for small ruminants to be suffered from impaction, hence it is important to document such cases for future reference (Ali et al., 2009). When it becomes pica then various factors such as excessive confinement or boredom, nutritional or mineral imbalances, and strange objects like plastic bags, cloth, hair, leather, twine, and rope which were previously consumed as food may all be contributory to this condition (Pugh, 2002; Gilroy and Bellamy, 1998). The foreign body may build in the rumen which slows down the rate at which animals fatten by preventing the absorption of volatile fatty acids (Igbokwe et al., 2003). Diffuse peritonitis develops as a result of ingesta and bacterial pollutants spreading throughout the peritoneum due to reticulum wall perforation (Anwar and Aslam, 2013). Because cows lack highly sensitive prehensile organs, which increases the chances of consuming several undesired non-digestible things like plastic and metal. Caprine, also known as browsers, can

distinguish between food items and other indigestible foreign bodies (Ravindra et al., 2014; Desiye and Mersha, 2012). The most frequent foreign bodies in sheep and goats are indigestible trash fragments, particularly those composed of plastic, such as bezoars (Bakhiat, 2008; Martins et al, 2004; Jana and Jana, 2006; Pitroda et al., 2010). Indigestible wastes obstruct the reticular omasal aperture or the rumen reticular orifice, which might have lethal complications. They also hinder the appropriate fermentation and mixing of regular meal contents intraluminally (Pugh, 2002; Radostits et al., 2007). Radiography is the best option for diagnosing a foreign body lodged inside the alimentary canal (Hunt et al., 2004; Semieka, 2010). A straightforward haematobiochemical analysis is quite difficult to diagnose such foreign bodies in the GIT (Raofi et al., 2011). The Wither Pinch Test involves pinching the withers until the back depresses and audible tympanic noises are produced in the left

[Citation: Farooq, A.A., Murtaza, S., Ahmad, E., Lashari, M.H., Javid, M.A., Saleem, M.U., Basit, M.A., Waqas, M.Y., Asif, M., Shah, M.H., Akhtar, M.S., Ahmad, T., Nasreen, S. (2024). Surgical treatment of severe ruminal impaction and dystocia in beetal goat. *Biol. Clin. Sci. Res. J.*, 2024: 771. doi: <https://doi.org/10.54112/bcsrj.v2024i1.771>]

flank, two to three seconds before the major ruminal contraction. In small ruminants, palpate the abdomen on both sides and then listen for grunts using a stethoscope (Jackson and Cockcroft, 2002).

Dystocia is described as the inability of the uterus to progress from one stage of labour to the second stage of labour or as the occurrence of parturition or when the second stage of labour takes more than thirty minutes (Ahmed et al., 2017; Kumar et al., 2016). The initial phase of parturition, often known as labour, is characterized by decreased appetite, sign of impending parturition, being separated from the group, restlessness, vulva and udder swelling, and the onset of early uterine contractions (Majeed and Taha, 1993). The second stage of parturition is the expulsion of the fetus or the delivery of the newborn. Fetal-maternal disproportion, numerous fetuses within the pelvic canal, insufficient cervical dilation, and uterine inertia are the causes of dystocia in small ruminants (Dalal et al., 2017; Reddy et al., 2016). When a large male mates with a little female, the result is dystocia of feto-maternal disproportion. Because the fetus or infant is enormous, and the birth canal is narrow in this circumstance, the birth of the fetus does not take place normally through it (Hafez et al, 2013; Tripathi et al., 2016). The only treatment only treatment of such type of dystocia is a cesarean section, which is followed by systemic antibiotic and non-steroidal anti-inflammatory medication therapy. Although single-layer cesarean section closure verifies zero leakage it must be performed in two layers. There is less chance of a fetal-maternal disproportion in sheep and goats than in cattle hence cesarean section (C-sections) is less frequently needed in small ruminants (Kachiwal, 2000; Bhattacharyya et al, 2015).

Case history

A beetal goat, aged between 22 to 24 months, arrived at the outdoor clinic Department of Clinical Sciences, Bahauddin Zakariya University, Multan. The goat had presenting complained of being melancholy weak, and depressed. Moreover, it had been suffered with bloat from the last two days. Additionally, the goat had a history of pregnancy.

Clinical examination

Preliminary clinical examination showed that the heart and breathing rates were below the normal range, on the other hand, the rectal temperature was normal. The physical examination showed a firm palpable mass in the belly, sparse hard feces with red mucous over fecal pellets, ruminal atony, congested oral and conjunctival mucus membrane, and dehydration. The clinical examination and ultrasonography revealed the presence of a hard mass in the rumen and two dead fetuses in the uterus. The observation led to the possibility of a foreign body in the rumen simultaneously showing toxemia

due to dead fetuses in the uterus. Based on the diagnosis, cesarean section and rumenotomy was recommended and performed.

Materials and methods

The surgical site is prepared aseptically after obtaining the owner's consent. After the epidural anaesthesia, local anaesthetics were also injected around the incision site using 2% lidocaine hydrochloride. The animal was placed in a right lateral recumbency, the laparotomy and cesarean section were performed following standard protocol (Muller and Dollar, 1903), and the incision was made in the left ventrolateral side in an oblique direction (Fig-1).

Results

During performing laparotomy, the rumen was seen severely damaged. After a rumenotomy, it was observed that the rumen was packed full of plastic material, (plastic bags and rope), which weighed about 1.5 kg (Fig-2). The ruminal contents were also evacuated, and the debris was cleaned up properly. The rumen was then closed with Cushing's sutures, followed by a cesarean section, during which the uterus was impregnated with two dead fetuses. The gravid uterine horn was gently exteriorized to prevent perforation, and a holding suture was applied to hold the uterine horn outside the abdominal cavity. An incision was made on the gravid horn's larger curvature, and the fetuses were extracted from the uterine horn by holding their heads and anterior limbs while their umbilical cords remain intact (Hussain and Zaid, 2010). The umbilical cord was detached from each fetus. The fetal fluid was aspirated and fetal membranes were removed (Fig-3). Utilizing the Chromic Catgut number 2 with the Cushing suture pattern, a single-layer closure was accomplished. The animal's recovery was accomplished with remarkable efficiency since the 1.5mm suture gap prevented any uterine leakage during the perforation check. The uterus was cleaned using regular saline to get rid of any foreign objects and blood clots (Majeed and Taha, 1992). To prevent secondary bacterial infections, 1gm Penibiotic (Nawan Laboratories) containing Procaine Penicillin, Benzyl Penicillin, and Streptomycin Sulphate was put into the abdominal cavity and uterus. With chronic catgut number 2, the simple continuous suture was applied to the subcutaneous layer and a simple interrupted suture was applied to the muscles. Silk number 2 suture material was used to apply a simple interrupted suture pattern on the skin. Polyamide, size-1 (Trulone, Sutures India) was then used to close the skin (Fig-4).

After surgery, the wound was wrapped with povidone-iodine ointment and dressed with 2% povidone-iodine. An analgesic Meloxicam at dose rate of 0.5 mg/kg body weight (Melonex, Intas

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harmaceuticals), Parenteral antibiotics, xytetracycline at dose rate of 5 mg/kg body weight (Oxynex, Zudys AHL), and injections of NS and RL 500 ml (10– 20 ml/kg body weight) were given to the animal during the postoperative period. Additionally, an oral probiotic bolus was administered to guarantee the restoration of

ruminal microflora. The animal was shown up ten days after the procedure, and its sutures were still in place. The animals had resumed eating normally, and they had healed without incident. Current study showed that our clinical findings were confirmed on rumenotomy and cesarean section, where presence of hard mass (rope) and dead fetuses were found.



Fig-1: Animal under Surgery



Fig-2: Ruminal Content after Surgery



Fig-3: Dead Fetus

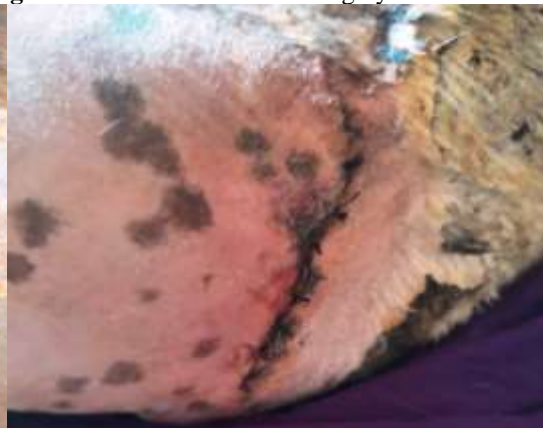


Fig-4: Sutures on skin after Surgery

Discussion

Ruminant ingestion of indigestible foreign materials is a widespread issue that has been documented in many regions of Ethiopia about both cattle and small ruminants (Tiruneh and Yesuwork, 2010; Fromsa and Mohammed, 2011; Negash et al., 2015; Fasil, 2016). This is the first record of beetal goats ingesting foreign bodies, plastic bags, cotton rope, and two dead fetuses in the uterine horn, all of which led to severe impaction and an almost morbid state in the goat-affected. The hairball (foreign body) in the angora breed of goat in English was also documented by Baillie and Anzuino (2006). The current situation is consistent with Desiye and Mersha (2012) findings in India, where, similar to Ethiopia, goats are typically left to forage on their review sentence. This increases the risk of ingestion of undesirable materials (Roman and Hiwot, 2010). Additionally, Jana and Jana (2010) found that stray ruminant

animals that are malnourished or undernourished, and improperly fed have higher propensity to inhale polythene and other undesirable materials, which may lead to impaction.

Radiography is the preferred method for diagnosing foreign body syndrome, yet its application is restricted because it exposes personnel and patients to radiation and is challenging to set up in the field. Ultrasonographic examination is thought to be the most effective hand-held device for disease detection and may distinguish a sick animal from a pregnant one, allowing for prompt treatment decisions (Abdelaal and Maghawry, 2014). An ultrasound machine was utilized in this stance as a diagnostic confirmation technique. Because there was a risk of toxemia due to a dead fetus with a history of pregnancy his case seemed difficult. Hence, surgery was decided immediately to save the life of the animal. As a result, the incision site was placed in a

ventrolateral oblique position, which allowed it to reach both the uterus and the rumen to make surgical manipulation feasible.

Impaction is typically asymptomatic in small ruminants (Hailat et al., 1998). The affected animal has an enlarged rumen without faeces and ruminal abnormalities (Abdullah et al., 1984). With a few exceptions, the clinical signs and symptoms of foreign body affection in this case were almost identical. These signs included inappetence, foamy salivation, dull, progressive weight loss, debilitation, reduced milk production, no faeces, and firm, distended, hard, bloated rumen that could be felt when the patient was recumbent on their left flank. Part of the rumen is partially blocked by a buildup of foreign substances mixed with the ruminal flora, such as plastic bags and other undigested debris weighing between 1.5 and 4.5 kg. Some of the rumen papillae are even stunted and sloughed off (Abdel-Mageed and Abbas, 1991), similar to the present findings. The animal's heart rate was below normal in this condition, and its respiration was extremely shallow, which is inconsistent with the findings of previous studies on ruminants (Mozaffari, 2009; Ghurashi et al., 2009). It could be because gluconeogenesis cannot meet the body's substantial energy needs for creation and maintenance, and ruminal dysfunction causes a sharp increase in energy consumption. Perhaps a long-standing case of a foreign body inside the rumen that moved from the original lodging region and blocked the reticular opening of the rumen is also to be blamed. This situation is extremely serious and can be fatal if surgical intervention is delayed.

According to Ghurashi et al. (2009), impaction in the goats' rumen had no discernible effect on their cardiac or respiratory rates, suggesting that there is no connection between the presence of a foreign body in the rumen and these parameters. When a foreign body applies physical pressure on the chest, it affects both heart rate and breathing. According to the signs and symptoms in this case, an exploratory rumenotomy was recommended following Ali et al. (2009). Small ruminants that have been subjected to different-sized mix breed herding at the same location frequently experience dystocia due to fetal-maternal disproportion. This condition has been successfully treated with a cesarean section followed by the use of non-steroidal anti-inflammatory drugs (NSAIDs) such as flunixin meglumine therapy and broad-spectrum antibiotics, such as quinolones and cephalosporins. This information was illustrated by Ahmed et al., (2017). If a cesarean section is performed too late, the fetus may die, which may result in either mummification or maceration. Hence, it may lead to a low body condition score in the animal, which in turn causes the goat to die from a

systemic infections reported in other studies (Ismail and Zuhair Bani, 2017; Kachiwal, 2000; Gupta and Chhavi, 2020). The primary cause of this kind of dystocia, which also happened in this case, was the natural matting of both large and small breeds. It is imperative to maintain homogeneous breeds in a herd rather than mixed breeds in one location to prevent this kind of dystocia.

Conclusion

It is concluded that foreign body impaction and dystocia are occasionally seen and are difficult to treat without proper diagnosis and standard surgery operation. There is a significant health risk to free-grazing ruminants in metropolitan areas, where the prevalence of foreign bodies has increased. These materials include plastic, cloth, metal, rope, and stone. To conserve such animals, farmers need to be educated on animal husbandry practices, particularly in metropolitan settings, and correct animal nutrition. Finally, treatment is never preferable to prevention.

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Statements and Declarations

Funding

N/A

Acknowledgements

N/A

Author Contributions

Farooq AA, Murtaza S, Akhtar MS, and Ahmad T. conceptualized the study; Farooq AA, Murtaza S, Akhtar MS, Ahmad T, designed the methodology; The original draft was written and edited by Farooq AA, Murtaza S, Ahmad E, Lashari MH, Javid MA, Saleem MU, Basit MA, Waqas MY, Asif M, Shah MH, Akhtar MS, Ahmad T and Nasreen S.

Informed consent

N/A

Ethical Approval

Current study is approved from concerned ethical review committee

Competing interests

The authors have no competing interests.

Data availability statement

All data has been given in manuscript.

Submission declaration and verification

The work is not been published previously, and it is not under consideration for publication elsewhere.



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