# Atresia ani et recti and its surgical correction in local begayit breed lamb

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### ABSTRACT

Congenital atresia of intestines in anus and rectum part is a common case reported in newborn calves worldwide. A day-old male Begayit lamb was presented to Veterinary Teaching Hospital, Mekelle University, Mekelle with complaints of the distended abdomen, straining, discomfort, and lack of feces. Upon clinical examination, the case was diagnosed first as Atresia ani and after surgical intervention it was confirmed as Atresia ani et recti. Emergency surgery was conducted after proper restraining of the lamb, aseptic preparation, and administering local anesthesia in the perineal region. A circular skin incision was made on the bulge of the anus and patency of opening was maintained by the application of interrupted sutures. Then, the blind rectal pouch was incised and sutured to the skin (rectopexy) using absorbable polyglycolic acid 910 (vicryl) of size 2/0. Postoperatively, the anal opening/area was cleaned and lubricated with glycerin as well as oxytetracycline spray was applied to the wound area, and analgesic was administered intramuscularly for 3 days. After two weeks, the lamb's defecation was improved and it recovered fully without any complication. Surgical correction of atresia ani et recti in local Begayit breed lamb was found suitable and successful management.

Keywords: Atresia ani et recti, Begayit, Congenital defect, Lamb, Rectopexy.

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#### Introduction

Atresia of the intestine especially anorectal anomalies are congenital defects that are present since birth. This congenital malformation of anus and rectum has been documented and reported in almost all species of animals especially in neonates (Choudhary et al., 2010; Singh et al., 2018). Mostly, genetic or environmental factors or a combination of both are considered as possible reasons behind these anomalies, yet the exact cause is poorly understood. Accordingly, environment of teratogens such as toxic plants, and viral infections during pregnancy are among the cause of this congenital anomaly (Kumar et al., 2010). Atresia ani et recti is a congenital abnormality that is clinically manifested by an absence of feces, dullness, anorexia, abdominal distension, tenesmus, colic, discomfort, and straining associated with defecation. Rectal lumen usually bulges subcutaneously at the normal site

of the anus when the abdomen is compressed (Abdelhakiem, 2020; Chauhan et al., 2011; Mana et al., 2019).

Congenital atresia of the intestine is categorized into four major types. Type I atresia is the obstruction of the mucosa within the intestinal lumen. In Type II atresia, cord atresia, the proximal segment of the intestine terminates into the blind end and the distal segment begins similarly with two ends being joined by a fibrous cord devoid of the lumen. Type III, blind-end atresia, is further subdivided into Type IIIa atresia which is similar to type II except that the proximal and the distal blind end intestinal segments are completely separated and a gap in the mesentery, and often appeared as a short small bowel whereas animals with type IIIb atresia have a coiled distal segment of the intestine. Type IV atresia involves multiple sites of atresia (Abdel-Hakiemand and Aref, 2012; Phaneendra et Congenital anomalies al., 2015). of the gastrointestinal tract occur in different species of animals with an incidence rate of 4.3% (Abd-Almaseeh et al., 2012; Choudhary et al., 2010).

Atresia ani is the most common intestinal

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defect in sheep and is believed to be due to an autosomal recessive gene. According to a study in a series of 64 cases of atresia ani in sheep, 42 (62%) were associated with defects of other body systems, especially the urogenital and musculoskeletal systems. Such deformities are commonly reported in various parts of animal body including the perineal region and this is a great concern since it affects the future generations (Mana et al., 2019; Varol et al., 2018).

According to previous studies, surgery is one of the best treatment options to manage such type of cases. In domestic animals, to correct atresia ani, various surgical techniques have been suggested (Kamalakar et al., 2015; Krishna et al., 2009). In surgical techniques, + like incision and circular incision are the most commonly used surgical methods. But, stenosis like complication has been reported to develop in the above techniques (Loynachan et al., 2006; Mana et al., 2019; Singh et al., 2018). In this case report, a rare case of atresia ani et recti (type IV atresia) in a day-old male Begayit lamb and its successful management through surgical intervention is discussed.

## Case history and Clinical observations

A day old lamb of Begayit breed weighing 5 kg was presented to Veterinary Teaching hospital, College of Veterinary Science, Mekelle University with a complaint of straining to pass feces and distended abdomen as well as lack of meconium since birth. On clinical examination, the lamb appeared dull, with an arched back, signs of tenesmus, abdominal pain and absence anus (lack of anal opening). Further detailed physical examination of the lamb revealed elevation of the normal physiological parameters including increased respiratory and heart rate but with normal body temperature. Based on the history and clinical examination, the case was tentatively diagnosed as atresia ani (Fig. 1A&B) and the emergency surgical correction was indicated to provide relief and treatment to the lamb.

# Procedure

The lamb was restrained in dorsal recumbency with its hind legs raised high on a table and the perineal region below the base of the tail was scrubbed with salvon and povidone-iodine. The perineal area was desensitized by local infiltration of 5ml of 2% lidocaine hydrochloride subcutaneously at the proposed site of incision below the sacral margin. After achieving the sufficient level of desensitization at the site, a surgical opening of the anus was made by removing a circular piece of skin from the bulge of the anus to form the normal anatomical/ topographical opening.

The case was first diagnosed as atresia ani and then after opening the anus nothing came out. Thus, the incision was continued through this opening and a gentle incision was made on the rectum after proper positioning of the blind rectal pouch (rectal sac) and the meconium came out immediately. Then the area was cleaned with isotonic saline solution and made aseptic prior to suturing. The rectal mucosa was sutured to the skin (rectopexy) by simple interrupted sutures using absorbable polyglycolic acid 910 (vicryl) size 2/0 so as to make a permanent anal orifice.

Post-operatively, the surgical wound was cleaned and dressed regularly with isotonic saline solution and diluted povidone-iodine was applied daily till recovery. Besides, the owner was advised to closely follow-up the lamb and to lubricate the anal opening daily with glycerin. The lamb showed a good prognosis and successfully recovered on the 10<sup>th</sup> post-operative day.

# Discussion

Embryos are more susceptible to chromosomal aberrations between 14-42 days age leading to mutations (Bademkiran et al., 2009). Atresia ani et recti is one of such congenital and hereditary anomalies at embryonic period resultant of the autosomal recessive gene (Loynachan et al., 2006). Though other reasons like environmental teratogens, plant toxins, and viral infections were stated as a causative factor of atresia ani in calves (Loynachan et al., 2006; Singh et al., 2018). Similarly, the cause of the present case report is unknown and could not be ascertained. This is in line with the previous report of different authors from various species of animals (Abd-Almaseeh et al., 2012; Choudhary et al., 2010; Dubey et al., 2015; Johnson, 1986).

Atresia ani et recti is a common congenital anomaly that has been reported in all domestic animals and is one of the most frequently recorded defects of intestine among sheep (Choudhary et al., 2010; Kumar et al., 2010). According to a study by Hossain and his colleagues, the prevalence of atresia ani is higher in the indigenous breed (71.74%) of calves than crossbred calves (28.26%) in Bangladesh (Hossain et al., 2014). The retrospective study on different species by Remi-Adewunmi and his colleagues in Nigeria revealed that the prevalence of atresia ani is higher in male (77.8%) than females (22.2%) where 50% of the case was reported in a bovine while 16.7% of the case were reported in porcine, caprine and ovine (Remi-Adewunmi et al., 2007). Similarly, the current case of atresia ani et recti was reported in male indigenous lamb

According to previous studies and reports, surgical intervention is the only means of treating this condition (Singh et al., 2018; Varol et al., 2018). Local infiltration anesthesia was used to desensitize the site of incision sufficiently before surgical intervention. In the current case report, successful surgical correction of atresia ani et recti was performed and the lamb showed marked improvement in defecation. This finding was in line with the previous studies in terms of the procedures and case handling but in different species of farm animals (Bodinga et al., 2019; Dubey et al., 2015; Phaneendra et al., 2015; Singh et al., 2018; Varol et al., 2018).

There are four major types of atresia ani (type-I, II, III, and IV). Type IV atresia involves multiple sites of atresia involving another organ blockage. The current case report was of complex one that involves the other parts of the intestinal segment that is the rectum; similar findings were reported in lambs and calves by some authors (Abd-Almaseeh et al., 2012, Bodinga et al., 2019, Choudhary et al., 2010 and Dubey et al., 2015). However, this report slightly varies from the previous reports where type I atresia ani was reported in calves and lambs (Varol et al., 2018, Bademkiran et al., 2009, Chauhan et al., 2011, Kumar et al., 2010 and Kamalakar et al., 2015).

The atresia ani et recti was associated with depression, anorexia, abdominal distension, and lack of feces. The diagnosis of intestinal atresia is often presumptive based on age, history, and physical examination findings. Atresia ani can be diagnosed by visual inspection of the perineal region or by limited digital palpation if a vestigial anal opening is present. Further diagnostic testing or surgery is required for confirmation of intestinal atresia in a more proximal location. In lambs and calves with either small intestinal atresia or atresia coli, the intestinal portion proximal to the atretic segment is distended with gas and ingesta (Bodinga et al., 2019; Choudhary et al., 2010; Kilic and Sarierler, 2004; Singh et al., 2018). These findings are comparable with the current case report in terms of observed clinical signs and diagnostic approaches.

Accordingly, atresia ani et recti is a rare congenital anomaly in local Begayit breed lambs that can be easily diagnosed based on the history, age, and clinical presentation of the lamb. It could be successfully managed by prompt surgical intervention by circular incision on the proposed site of anal opening and performing rectopexy. Besides, the application of anal lubricants such as glycerin has a better effect in facilitating the healing process and prognosis of the case. This surgical protocol may be used as a preliminary strategy for managing such rare cases of atresia ani et recti in lambs under field conditions.

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