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Congenital eventration and epitheliogenesis imperfecta in a male goat kid: A case report

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Abstract
A four hours old goat kid was presented with protrusion of a transparent peritoneal sac containing congested stomach and intestines from a ventral abdominal defect at the umbilical region. Based on clinical examination the case was diagnosed as eventration with epitheliogenesis imperfecta. A small linear incision was made at the cranial aspect of the abdominal defect following which the kid started gasping. Despite immediate efforts to manage the condition the kid succumbed. This communication reports the occurrence of congenital eventration with epitheliogenesis imperfecta in a male goat kid.

Keywords: Congenital, eventration, epitheliogenesis imperfecta, anomaly, goat kid

1. Introduction
Congenital anomalies are defined as the structural and functional deformities present at the time of birth [1]. While the precise reason behind congenital defects in small ruminants remains unclear, several factors have been suggested as probable causes during gestation, including inheritance, genetics, and the environment (Toxic, infectious, and nutritional) [2]. Congenital anomalies like atresia ani, umbilical hernia, dermoid cyst, urethral diverticulum, monster kid, epitheliogenesis imperfecta, eventration, urethral dilatation, ectopia cordis, double monster, etc. can be observed in small ruminants [2, 3, 4]. In goats, congenital eventration with epitheliogenesis imperfecta is a rare congenital anomaly [1].
Congenital eventration refers to the protrusion of visceral organs contained in a serous sac as a result of incomplete closure of the abdominal wall during fetal development [5]. Epitheliogenesis imperfecta is a congenital discontinuity of squamous epithelium which is seen as lack of skin in specific areas of the body at the time of birth [6, 7]. It is commonly seen in pigs while it is uncommon in sheep, dogs and cats. It is well described in cattle (autosomal recessive trait) and horses [6]. Diagnosis is usually made on the basis of history and clinical findings. This communication reports the occurrence of congenital eventration with epitheliogenesis imperfecta in a male goat kid and discusses the probable reasons for its demise.

2. Case Report
A four hours old male goat kid was presented with protrusion of viscera from the umbilical region. The kid suckled initially but eventually it stopped. It passed scanty urine but showed absence of defecation. Clinical examination revealed the presence of a transparent peritoneal sac protruding from the defect in the ventral abdomen to which it was attached at the umbilical region. The sac had remnants of the umbilical cord ventrally and contained a congested abomasum and intestines which showed no motility (Fig 1 & 2). Based on clinical examination, the case was diagnosed as eventration with epitheliogenesis imperfecta. As these cases have a better prognosis when corrected promptly to prevent contamination and injury to the organs [5], the decision for surgical correction was made. The surgical site was prepared aseptically and 2% lignocaine hydrochloride was infiltrated at the site of the abdominal defect. A 1 cm linear incision was made at the cranial margin of the abdominal defect following which the kid started gasping.

Despite immediate efforts to manage the condition the kid succumbed. Gasping immediately after making a small abdominal incision might be suggestive of communication between thoracic and abdominal cavities.

Fig 1: A four hours old male goat kid with a peritoneal sac containing viscera protruding from a ventral abdominal defect at the umbilical region. Note the remnants of the umbilical cord attached to the peritoneal sac.

Fig 2: A close-up view of the transparent peritoneal sac containing a congested abomasum, small and large intestines. Note the attachment of the peritoneal sac to the abdominal wall at its base.

3. Discussion

Umbilical hernia refers to the displacement of organs or part thereof through a defect in the abdominal wall at the umbilical region where the skin overlying the protruded organs is intact [8] whereas in congenital eventration there is protrusion of visceral organs with their serous sac from a ventral abdominal defect because of incomplete closure of the abdominal wall at the stage of fetal development [5]. Congenital defects were observed to be more common in calves and lambs born of dams from their first pregnancy while they were common in goat kids born from second pregnancy. Most small ruminants with congenital defects were produced by multiparous does or ewes [9]. Conversely, in the present case, the kid was born to a 1.2 years old doe in her first gestation.

Saradamma *et al.* (2000) reported congenital eventration of intestine, liver and abomasum in a kid whereas Gangwar *et al.* (2014) recorded congenital eventration of intestine and spleen in a kid. Senna *et al.* (2003) found only two cases of epitheliogenesis imperfecta with congenital eventration of intestine and omentum in two cases—a day-old female mixed breed lamb and a kid out of 120 cases while Giggin *et al.* (2022) observed a similar condition involving whole intestine and liver in a day old male crossbred kid. Veena *et al.* (2011) observed congenital eventration of congested abomasum and intestinal loops in newly born male buffalo calf whereas Praharee, (2023) recorded eventration of intestine in a five hours old female crossbred Jersey calf.

In the present case, despite aggressive efforts to manage the condition, the goat kid did not survive as it started gasping immediately upon making a small abdominal incision which might be suggestive of communication between thoracic and abdominal cavities, resulting in fall of negative pressure in the thoracic cavity. As post-mortem could not be performed due to noncompliance of the goat owner, the possibility of other developmental anomalies involving the diaphragm or other organ systems which might have caused the kid's demise could not be ruled out. This is the first reported case of congenital eventration with epitheliogenesis imperfecta in goat kid in Gondia district of Maharashtra, India.

4. Conclusion

Congenital eventration with epitheliogenesis imperfecta is a rare congenital anomaly in goats that might coexist with other conditions. Diagnostic techniques such as X-ray and ultrasonography will help differentiate these conditions and provide accurate diagnosis, ultimately improving clinical outcomes.

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