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## Perineal hernia in large animal: A review

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### Abstract

The majority of ruminants suffering from perineal hernia are female. The entrapment of the bladder may cause the animal to develop stranguria and tenesmus. Perineal hernia is sufficient to diagnose by physical examination in ruminants. Upon palpation, the hernial swelling seems to be a soft, reducible, and painless unilateral swelling on the vulval lip. Using epidural anesthesia, the perineal herniorrhaphy can be easily performed in standing animals. No or minor complication reported following surgery.

**Keywords:** Perineal hernia, herniorrhaphy, cattle, surgical management

### Introduction

A hernia occurs when the contents of a body cavity protrude through a regular or atypical compromise in the cavity wall, either to lie beneath the skin that is still intact or to occupy a different body cavity (Tyagi and Singh, 1996) [21]. An abdominal or pelvic viscera protruding through the pelvic diaphragm, which supports the rectal wall, is called a perineal hernia (Ferreira and Delgado, 2003) [4]. While the precise etiology of muscle weakness remains unknown, several variables, including neurogenic or senile muscle atrophy, myopathies, and hormonal changes, have been suggested (Hedlund, 2002) [7]. Perineal hernia is very common in small animals and uncastrated male dogs (Weaver, 1981 and Kumar *et al.*, 2016) [10, 23] but rarely reported in buffaloes (Malik *et al.*, 2012) [12] and cows (Tyagi and Singh, 1996) [21]. In most cases, a physical examination is sufficient to diagnose perineal herniation in ruminants (Singh *et al.*, 2017, Gill and Barstad, 2018 and Kelmer, 2020) [5, 9, 18]. Unlike other types of hernias, the contents of this one are not covered by the peritoneum (Priyanka *et al.*, 2018) [15].

### Incidence

It has been noted that ruminants, particularly cattle and buffalo, rarely suffer perineal herniation. The majority of ruminants suffering from perineal herniation are female (Prasad *et al.*, 2015, Singh *et al.*, 2017 and Vadalía *et al.*, 2017) [14, 18, 22]. Perineal hernias are typically diagnosed early in pregnancy or shortly after parturition (Singh *et al.*, 2017) [18], hence it might be associated with estrogen and relaxin hormones. Perineal herniation in ruminants has also been associated with pregnancy (Sobti *et al.*, 1994 and Singh *et al.*, 2017) [18, 19]. Perineal herniation in an equid has not been reported previous to the report by Torad *et al.* (2020) [20].

### Perineal anatomy

Together with perineal fascia, the coccygeous and levator ani muscles comprise the pelvic diaphragm, a key component of the perineum. The medial coccygeous muscle, levator ani, and external anal sphincter to form the ischioanal fossa. The superficial gluteal muscle laterally and the internal obturator muscle ventrally (Tyagi and Singh, 1996) [21].

### Etiology

It used to be thought that tenesmus and chronic diarrhea weaken the pelvic diaphragm, and that any subsequent trauma causes the pelvic viscera, including the bladder and large intestine loop, to herniate (Prasad *et al.*, 2015) [14]. Although the precise origin of muscle weakness is unknown, a number of causes have been suggested, including anuria from any inflammatory condition, obstruction of the urinary tract, difficult parturition, endometritis, and accidental falls into hard surfaces (Singh *et al.*, 2017) [18].

Research has indicated that during pregnancy, the corpus luteum, deciduas, and placenta produce the greatest amounts of relaxin in the female reproductive system. Thecal cells, mammary gland parenchymal cells, and endometrial glands are among more, less well-known sources of relaxin (Bani, 1997 and Sherwood, 2004) <sup>[1, 16]</sup>.

### Clinical sign

Tearing of the pelvic diaphragm muscle causes herniation. The herniated structure appears as a reducible swelling close to the anus and resides in the ischioanal fossa. Upon palpation, the hernial swelling seems to be a soft, reducible, and painless unilateral swelling on the vulval lip. It is present next to the vulval lips or the anus (Tyagi and Singh, 1996) <sup>[21]</sup>. At times, the entrapment of the bladder may cause the animal to develop stranguria and tenesmus (Singh *et al.*, 2017, Gill and Barstad, 2018 and Kumar *et al.*, 2021) <sup>[5, 11, 18]</sup> or at times with normal defecation (Priyanka *et al.*, 2018) <sup>[15]</sup>.

### Diagnosis

Diagnosis of perineal hernia is mainly based on history, clinical, per rectal, radiographic and sonographic findings (Dean and Bojrab, 1996) <sup>[3]</sup>. During a physical examination, palpation is crucial for classifying the degree of atrophy and determining the integrity of the pelvic diaphragm muscles (Ferreira and Delgado, 2003) <sup>[4]</sup>. On palpation the swelling appears to be soft, painless and reducible in nature with defined hernial ring (Shridhar, 2011, Priyanka *et al.*, 2018, Gosai *et al.*, 2019 and Torad *et al.*, 2020) <sup>[6, 15, 17, 20]</sup>. Perineal herniation in dogs and ruminants can usually be diagnosed by using physical examination alone (Singh *et al.*, 2017, Gill and Barstad, 2018 and Kelmer, 2020) <sup>[5, 9, 18]</sup>. Ultrasonography revealed a hyperechoic hernia sac and a hypoechoic homogenous hernia content (Torad *et al.*, 2020 and Kumar *et al.*, 2021) <sup>[11, 20]</sup>.

### Treatment

Perineal herniorrhaphy is carried out mostly in standing position (Vadalia *et al.*, 2017, Priyanka *et al.*, 2018, Gosai *et al.*, 2019, Torad *et al.*, 2020 and Kumar *et al.*, 2021) <sup>[6, 11, 15, 20, 22]</sup> and is rare cases in sternal recumbency (Prasad *et al.*, 2015) <sup>[14]</sup>. The large animal is withheld feed and water for 24 hours prior to operative procedure. Most of the time, standing anesthesia is used during the surgical process, along with local infiltration anesthesia using 2% lidocaine hydrochloride and caudal epidural anesthesia. In order to prevent contamination, a gauze plug is typically inserted around the anus before a purse string suture is applied (Shridhar, 2011, Singh *et al.*, 2017, Priyanka *et al.*, 2018, Gosai *et al.*, 2019 and Torad *et al.*, 2020) <sup>[6, 15, 17, 18, 20]</sup>. A linear incision over hernial swelling is the most common approach (Vadalia *et al.*, 2017, Priyanka *et al.*, 2018, Gosai *et al.*, 2019 and Torad *et al.*, 2020) <sup>[6, 15, 20, 22]</sup> while elliptical incision (Shridhar, 2011) <sup>[17]</sup>, Semilunar incision starting at the level of anus and extended upto the margin of vagina (Singh *et al.*, 2017) <sup>[18]</sup> has been used in large hernias. The hernial contents were identified as omentum and urinary bladder (Priyanka *et al.*, 2018) <sup>[15]</sup>, urinary bladder and retroperitoneal fat (Dabas *et al.*, 1996, Mathur, 2003 and Shridhar 2011) <sup>[2, 13, 17]</sup>, urinary bladder and loop of large intestine (Prasad *et al.*, 2015) <sup>[14]</sup>, urinary bladder, peritoneal fat, rectum and loops of intestines (Singh *et al.*, 2017) <sup>[18]</sup>. The uterus is occasionally entrapped within perineal hernias of ruminants (Singh *et al.*, 2017) <sup>[18]</sup>. It was discovered that the contents could be moved readily and were devoid of adhesions. Direct ventral sutures between the

external anal sphincter and the internal obturator muscle have also been reported, as has herniorrhaphy with suture placement between the external anal sphincter and the levator ani, coccygeus, or both muscles (Shridhar 2011, Hedlund, 2012, Singh *et al.*, 2017, Priyanka *et al.*, 2018, Gosai *et al.*, 2019 and Torad *et al.*, 2020) <sup>[6, 8, 15, 17, 18, 20]</sup>. The medium-sized defect was found to be well repaired using the traditional technique of anatomical re-apposition of muscles, with no postoperative problems. However, massive perineal hernias in cattle and buffalo have been successfully treated by hernioplasty using a synthetic mesh; however, prosthetic mesh is necessary to achieve the tension-free closure of the defect (Sobti *et al.*, 1994, Dabas *et al.*, 1996 and Malik *et al.*, 2012) <sup>[2, 12, 19]</sup>.

### Complication

Following perineal hernia repair, wound infection and dehiscence, clinical indicators such as fecal and tenesmus incontinence persisting, rectal prolapse, urinary tract dysfunction, sciatic paralysis, and hernia recurrence are among the common problems seen in dogs (Hedlund, 2012) <sup>[8]</sup>. These complications are not reported in large animal (Shridhar, 2011, Singh *et al.*, 2017, Priyanka *et al.*, 2018, Gosai *et al.*, 2019 and Torad *et al.*, 2020) <sup>[6, 15, 17, 18, 20]</sup>.

### Conclusion

Thus, we reach the conclusion that perineal herniation in dairy cows is not frequently documented. Moreover, it only affects female and is typically detected early in pregnancy or a few days after parturition. Palpation is a simple method of diagnosis, and ultrasonography is rarely used. Using epidural anesthetic, the perineal herniorrhaphy can be easily performed in standing animals with minimal difficulties after the procedure.

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