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Clinical Article

SURGICAL MANAGEMENT OF HYSTEROCELE IN A PREGNANT DOE USING POLYPROPYLENE MESH HERNIOPLASTY: A CASE REPORT

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SUMMARY

The herniation of gravid uterus through a large defect in the abdominal wall is an uncommon but potentially life-threatening condition in small ruminants. This case report describes the successful surgical management of an advance-gestation doe presented lately with a large ventrolateral abdominal swelling. Upon clinical examination and ultrasonography confirmed the presence of non-viable foetus within the herniated sac. Following aseptic preparation and epidural anaesthesia, the foetus was removed and gravid uterus was repositioned into the abdominal cavity, and the abdominal wall defect (18.2 cm×12.5 cm) was reinforced using a sterilized polypropylene mesh (15 cm × 10 cm × 10 cm) 693 sutured via outlay technique. No recurrence or wound complications were observed during a three-month follow-up. This report highlights the effectiveness of polypropylene mesh hernioplasty as a safe, economical and reliable method for correcting large abdominal wall defects.

Keywords: Doe, Gestation, Hernioplasty, Hysterocele, Polypropylene mesh

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In animals, ventral hernia primarily occurs as a consequence of traumatic incidents such as kicks, blows, horn thrusts or falls on blunt objects, as well as rupture of the prepubic tendon (Preethi *et al.*, 2018). In ruminants, goats are considered more susceptible to abdominal injuries and subsequent hernia formation compared to cattle. This increased predisposition is attributed to their relatively small body size and docile temperament. Previous studies have reported that trauma accounts for approximately 71.4% of abdominal hernia cases in small ruminants (Sharun *et al.*, 2021). Furthermore, the type and nature of hernial contents are largely determined by the anatomical location of the herniation. But, they may result in serious complications, particularly during advanced pregnancy (Ali *et al.*, 2019). Hysterocele, or herniation of the gravid uterus through a defect in the abdominal wall, is a rare but life-threatening condition in does (Vijayanand *et al.*, 2012). It predisposes the dam to dystocia, uterine rupture, circulatory impairment, and even foetal mortality if left untreated. Conservative management using bandaging or slings provides temporary support but is often inadequate in advanced cases (Jettennavar *et al.*, 2010). Surgical correction remains the treatment of choice. Among surgical options, hernioplasty with synthetic meshes such as polypropylene has been widely adopted in both veterinary and human medicine due to its tensile strength, biocompatibility, inertness, and minimal tissue reaction (Seifalian *et al.*, 2023). This article presents the surgical management of a hysterocele in a pregnant doe using polypropylene mesh hernioplasty and discusses the clinical outcome.

A 4.5 old multiparous pregnant doe in its late gestation was presented with a history of progressive swelling in the right ventrolateral abdominal region over the past 4 weeks. The swelling increased in size with advancement of pregnancy (Fig. 1A) and was associated with difficulty in ambulation and recumbency during rest. On physical examination, the swelling was reducible, soft to firm in consistency and enlarged upon straining. Palpation revealed gravid uterus within the hernial sac. Ultrasonography confirmed the presence of non-viable foetus within the herniated portion of the uterus might be due to late presentation of case. Hematobiochemical parameters were within normal limits, making the animal fit for surgery.

Preoperative prophylaxis included administration of broad-spectrum antibiotics (Ceftriaxone @ 10 mg/kg, IM) and NSAIDs (Meloxicam @ 0.2 mg/kg, IM). The surgical site was shaved, scrubbed, and aseptically prepared. Epidural anaesthesia at lumbosacral region, using 2% lignocaine hydrochloride was administered. The animal was restrained on dorsal recumbency, Atransverse skin incision was made over the hernial swelling. An emergency C-section was performed and the non-viable foetus was removed (Fig. 1C) and inversion (cushing followed by Lembert) sutures were placed over uterus using polyglactin 910 size 1-0 (Kumari and Dutt, 2020) (Fig. 1B). The gravid uterus was repositioned into the abdominal cavity with minimal manipulation to avoid uterine trauma. The large hernial rent, measuring approximately 18.2 cm × 12.5 cm,

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Fig. 1. **A.** Doe presented with ventral hernia; **B.** emergency C-section performed and uterine closure by inversion; **C.** Non-viable foetus was removed; **D.** Large hernia rent measuring 18.2 cm ×12.5 cm (Hysterocele); **E.** Hernioplasty done using polypropylene mesh; **F.** Post-surgery presentation (12th day) after suture removal.

was identified (Fig. 1D). A sterilized polypropylene mesh (15 cm × 10 cm × 10 cm) was used to cover the defect via outlay technique. The mesh was sutured to the healthy abdominal wall margins were secured using Nylon size 1-0 byhorizontal mattress pattern (Fig. 1E). Subcutaneous tissue was closed using absorbable suture material (polyglactin 910) in continuous pattern. Skin was closed with non-absorbable nylonby horizontal mattress sutures. Post-operatively Antibiotics (Ceftriaxone) were continued for 5 days. Analgesics (Meloxicam) were given for 3 days. Supportive therapy included multivitamins and fluid supplementation. The doe recovered uneventfully following surgery with no evidence of wound infection or dehiscence. Skin sutures were removed after 12 days (Fig. 1F). The traumatic ventral hysterocele was successfully reduced in the goat after performing an emergency caesarean section and hernioplasty using polypropylene mesh, which provided effective reinforcement of the abdominal wall and maintained integrity throughout the healing period. No recurrence of hernia was observed during the 3-month follow-up period. The surgical site showed firm healing, and the animal resumed normal feeding and locomotor activity within a week.

A hernia occurring ventral to the stifle skin fold is classified as a ventral hernia, whereas hernias located elsewhere along the abdominal wall are referred to as lateral hernias (Sharun *et al.*, 2021). Lateral or ventral hernias are most frequently encountered along the costal arch, in the ventral abdominal wall, within the flank region either high or low, and in the intercostal space between the last few ribs (Kumar *et al.*, 2018). Hernias during late gestation in does pose significant risk to both dam and foetus. In this case, the defect was large and incapable of being corrected by herniorrhaphy alone. Therefore, polypropylene mesh hernioplasty was employed, which provided tensile strength and resisted abdominal pressure during the remaining gestation (Khan *et al.*, 2018). The size and shape of the swelling associated with a hernia can vary considerably. The diagnosis of a hernia is primarily established through a combination of case history, characteristic clinical signs, and thorough physical examination (Sharun *et al.*, 2019). Among the diagnostic features, precise identification of the hernial ring remains the most crucial step in confirming the presence of a hernia. Goats carrying multiple foetuses are particularly predisposed to developing abdominal hysterocele, with the condition being more frequently observed during the advanced stages of pregnancy (Ali *et al.*, 2019; Manjusha *et al.*, 2020). This increased susceptibility is primarily associated with the progressive stretching and weakening

of the abdominal musculature, which compromises its structural integrity and predisposes to herniation. In addition to physiological strain, external factors such as a sudden impact or trauma to the abdominal wall may also precipitate the occurrence of ventral hernia involving the gravid uterus in goats (Sharun *et al.*, 2021).

Polypropylene mesh has been reported as effective one because of exhibiting following properties like minimal tissue reaction, resistance to infection, and inertness (Seifalian *et al.*, 2023). The successful outcome in this case corroborates earlier reports of mesh hernioplasty in cattle, buffaloes and small ruminants (Kassem *et al.*, 2014). Since an "ideal mesh" has not yet been developed, the use of polypropylene mesh in this case was associated with minor local complications. Mild inflammation was observed at the surgical site following the procedure. However, these signs resolved within one week with the administration of appropriate antibiotics and NSAID drugs, similar to studies by Kassem *et al.* (2014). The favourable pregnancy outcome indicated that surgical correction during late gestation is feasible if performed with careful handling of the gravid uterus and adequate postoperative management. Early surgical intervention prevents further complications such as rupture of uterus, adhesions, or circulatory compromise.

In the present case, it is presumed that the gravid uterus contributed to weakening of the abdominal musculature following violent trauma caused by a blunt object during an automobile accident. The resulting abdominal tear, measuring approximately 19.6 cm in length, was successfully repaired through Polypropylene mesh hernioplasty, which is an effective, economical and reliable method for correction of large hysterocele in pregnant does. The technique ensures restoration of abdominal wall integrity, successful completion of gestation, and prevention of recurrence. Timely diagnosis, gentle intraoperative handling of gravid uterus, and diligent postoperative care are critical for successful outcome.

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