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Case Report

SURGICAL REPAIR OF GENITAL PROLAPSE IN A TWO-YEAR OLD MUTURU CATTLE USING AN UNCONVENTIONAL SUTURE

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ABSTRACT

Genital prolapse is a common reproductive condition in ruminants, particularly, cattle, goat, sheep and buffalo. The disease is considered as an obstetrical emergency. This case was a two-year-old Muturu cow, weighing 160 kg, which was presented with prolapsed vagina and cervix which persisted after initial management (repositioning of the prolapsed organs, containment with plastic bottle, and retention of the prolapse with a purse string suture of size 2 silk suture material). The cow continued to strain until suture dehiscence occurred. On presentation, the rectal temperature, heart, pulse, and respiratory rates were within the physiological normal ranges for the cattle. The vulva, prolapsed cervix and vagina were examined. The previous sutures and plastic bottle were removed. The vagina and vulva were washed and treated with granulated sugar. Epidural and subcutaneous1% lignocaine were administered. The prolapsed vagina was pushed back into position and a2 mm copper wire was used to place a suture on the vulva. Cervicovaginal prolapse could occur following a rise in the plasma oestrogen concentration. Various techniques have been used to treat the condition, including the Caslick's, Buhner, and Halstead procedures. These procedures were not plausible in the circumstance of this present case. Metallic wires have also been reported to have been used for the surgical correction of similar conditions. However, copper is not a popular candidate. The use of copper as a suture material is associated with high intensity of tissue irritation. In this case, however, the duration of contact was short, therefore, tissue irritation was minimal. The healing was progressive. The animal recovered, and there was no complication.

Keywords: Muturu, Cervicovaginal prolapse, copper, epidural

INTRODUCTION

Genital prolapse is the protrusion of one or more of the pelvic structures, notably the uterus, cervix, vagina or urinary bladder from their normal anatomical positions through the vulva with the exposure of the vagina outside the vulva (Arthur, 2001; Hasan *et al.*, 2017). It is a common reproductive condition in ruminants, particularly, cattle, goat, sheep and buffalo (Noakes *et al.*, 2001). The disease is considered an obstetrical emergency which is of considerable clinical and economic significance because it predisposes to trauma, secondary infections, infertility, and, in severe cases, loss of the fetus (Kumar *et al.*, 2019). In cattle, the prevalence of uterine and vaginal prolapse is high in pregnant cows compared to non-pregnant animals (Kahn, 2005).

When vaginal prolapse occurs, it sometimes extends up to and includes the cervix. When the cervix is involved (cervicovaginal prolapse), it is considered as an extension of a pre-existing vaginal prolapse. Cervicovaginal prolapse appears as a smooth pink to red mass at the perineum of the animal. It occurs in two forms – the incomplete and the complete forms. The incomplete form is seen in the acute stage, where it temporarily appears when the animal is lying down due to increased intra-abdominal pressure, but disappears when the animal stands (Hassaneen, 2018). On the other hand, complete cervicovaginal prolapse does not disappear when the animal stands (Hassaneen, 2018). The cervicovaginal prolapse mass generally varies in size from a tennis ball to a melon (Fisher, 2016).

Following the occurrence of a complete cervicovaginal prolapse, the prolapsed organs start to swell and become darker in colour. As the condition advances and the prolapse remains displaced for a prolonged period of time, the prolapsed organ becomes dry, cyanotic (due to vascular compromise), and prone to injury (Fisher, 2016). Irritability and discomfort due to the displacement of the vagina and cervix progressively leads to increased straining and further increase in the size of the prolapse (Kahn, 2005). Oedema and urine retention as a result of occluded urethra further contributes to the increase in size of the prolapse (Kennedy, 2013).

A number of factors have been incriminated as underlying causes of genital prolapse in cattle. These factors include multiparity, genetic make-up, extreme cold weather, abnormal connective tissue laxity in the perineal region, hormonal imbalance, relaxation of the sacroischiatic and sacroiliac pelvic ligaments and the surrounding soft tissues (Wolfe, 2009; Peter and King, 2021). Other factors include increased intra-abdominal pressure occasioned by accumulation of intra-abdominal and perivaginal fat, prior injury to perivaginal tissues, poor vaginal conformation, incompetence of the constrictor vestibule and constrictor vulvae muscles, persistence of the medial walls of the Mullerian ducts, distention of the rumen, hilly grazing areas, hypocalcemia and grazing on phytoestrogens-rich pastures (Adams, 1990; Hafez & Hafez, 2000; Drost, 2007; Miesner & Anderson, 2008; Ennen*et al.*, 2011; Peter & King, 2021; Roberts, 2025). Complications as consequences of the cervicovaginal prolapse include dystocia. difficult urination, hardening of the cervicovaginal prolapse wall, rupture of vaginal wall, consequent peritonitis and infections in the intestines, urinary bladder and/or uterus, prolapse of other organs, and death (Veeraiah & Srinivas, 2010; Kennedy, 2013; Praveen*et al.*, 2016; Kumar *et al.*, 2019).

Every case of cervicovaginal prolapse is unique and should be approached and treated with a special consideration to its circumstances (Anya *et al.*, 2006, Kumar *et al.*, 2019). There is a wide range of treatment options for dystocia in cattle ranging from simple manual replacement followed by retention sutures (such as Bühner's method or Caslick's operation) to more complex surgical procedures (Hosie, 1993; Makhdoomi *et al.*, 2010; Lakde *et al.*, 2014; Fubini & Ducharme, 2017). In spite of these plethoras of surgical techniques, recurrence remains a challenge, particularly under field conditions where resources are limited. This case report describes the surgical repair of a cervicovaginal prolapse in a Muturu cow using an unconventional technique that involved higher epidural anaesthesia(S5 – Cx1), reduction of oedema,repositioning of the prolapsed organs, and use of copper wire for retention, thereby showcasing the effectiveness of improvisation in surgery under inadequate facility.

CASE REPORT

The case was a two-year-old non-pregnant, non-lactating female Muturu breed of cattle reared in an intensive system. The cow was recently introduced to the herd, and reproductive history was not available. The cow weighed 160 kg and was presented with prolapsed vagina and cervix which persisted after management. The initial prolapse occurred two days before, while initial management was done the day before. History revealed that diazepam and lignocaine were administered, and the vagina and cervix were returned into position by propulsion. A plastic bottle was placed in the vagina to serve as a prolapse retainer and a purse string suture was placed around the vulva and the neck of the bottle using size 2 silk suture material. The cow continued to strain until there was suture dehiscence (Figure I).

Figure I: Rear of cow showing retention of cervicovaginal prolapse with plastic bottle and nylon suture (blue arrow)

On presentation, the rectal temperature, heart, pulse, and respiratory rates were within the physiological normal ranges for the bovine species. The vulva, prolapsed cervix and vagina were examined. The previous sutures and plastic bottle on the vulva and vagina respectively were removed. The vagina and cervix prolapsed again and appeared oedematous. The vagina and vulva were washed with 0.9% saline and granulated sugar was sprinkled directly on the prolapsed mass. Oedematous fluid dripped from the prolapsed organs. Subsequently, 5mls of2% lignocaine hydrochloride was administered subcutaneously around the vulva and another 2 mls. administered epidurally (S5 – Cx1). After about 30 minutes,

straining subsided and the prolapsed vagina was pushed back into position with more ease. A copper wire, 2 mm in thickness was sharpened at one end. The wire was used to make a horizontal suture on the vulva, taking bites on the hairy portion of the vulva, and knotted (Fig II). A rectal prolapse was also observed (Figure II: blue arrow) which resolved spontaneously.

Figure II: Repair of the cervicovaginal prolapse with cupper suture (white arrow). Mild rectal prolapse was also observed (blue arrow).

The cow was placed on penicillin and streptomycin injection at doses of 10,000 IU/kg body weight (bwt) and 10 mg/kg bwt given intramuscularly for four days. Straining resolved and the cupper suture was removed on the fourth postoperative day (Figure III and IV). The vulva was cleaned with 0.3% chlorhexidine (Purit ®, Saro Lifecare Ltd, Ibadan, Nigeria) and there was no reoccurrence of the prolapse.

Figure III: Vulva of cow on postoperative day 3. Straining had ceased. Vulva and rectal swelling had resolved. Note the copper wire still in position.

Figure IV: Rear view of the cow. The copper suture material had been removed and the cow had resumed normal activity.

DISCUSSION

The case presented was a case of poor management of cervicovaginal prolapse in a cow. The previous management of the case involved the insertion of a plastic bottle into the vagina and supporting it with a Halstead suture using silk suture, size 2, placed on the hairless portion of the vaginal commisure. There are previous reports of mismanaged cervicovaginal prolapse in cows. Varudharajan *et al.* (2019) described cases where glass bottles and stainless-steel vessels were inserted into the vagina and anchored to the vulva as means of retaining vaginal prolapse in cattle. They reported that the insertion of either glass or stainless-steel materials into the vaginal led to further straining and failure of the prolapse to resolve. The prolapse in this case presented may have reoccurred due to the presence of the plastic bottle in the vagina and suture in the hairless portion of the vulva, both of which may have irritated the vaginal wall and vulva, making the cow to strain continuously in an effort to expel the foreign body. A similar situation was reported by Peter & King, (2021). This continued straining is postulated to have caused an increase in tension at the suture sites, leading to tear of the suture material from the vulvar tissue, and subsequently leading to failure of the procedure.

Buhner stitch and Caslick's procedures are reliable procedures for cervicovaginal prolapse retention. However, the two procedures have the disadvantage of needing the presence of an assistant during parturition (Peter & King, 2021). Also, bootlace and Halstead techniques have the same disadvantages. In addition, vulva oedema occurs with Halstead technique (Peter & King, 2021). Methods which cause adhesion of the vagina with adjacent/subjacent structures have been developed and advocated, as they prevent recurrence of cervicovaginal prolapse. However, patients could sustain varying degrees of injury during parturition (Coulthard, 1991).

The cervicovaginal prolapse in the case presented was oedematous and was sprinkled with granulated table sugar to reduce the oedema. Applying granulated sugar to the surface of the prolapsed genital organ or treating it with hypertonic saline have been reported as methods of resolving oedema and reducing prolapse (Njoku *et al.*, 2014; Roberts, 2025). Different other methods have been employed to reduce oedema following cervicovaginal prolapse in cattle. These include the use of anti-inflammatory drugs (Garden *et al.*, 1990; Juneja *et al.*, 2022), oxytocin (Garden et al, 1990), and magnesium sulphate (Lau & Rijhsinghani, 2008, Makvendi *et al.*, 2025), astringents, lubricants, and oxytocin. Granulated sugar reduces tissue oedema by dissolving in the tissue fluid on the mucosa, thereby creating a hypertonic environment at its point of application. This causes the movement of edema fluid from the interstitial tissues to the mucosa, thereby reducing the volume of the organs, relieving pressure, improving blood flow, and allowing for easy replacement of the organs (Tnakgamani *et al.*, 2022).

In this case, high epidural anaesthesia, at the sacrococcygeal space (S5 – Cx1) was employed using 2% solution of lignocaine hydrochloride, with the aim of relieving pain, causing relaxation of the muscles, preventing straining, and facilitating the repositioning of the prolapsed organs. The dose of 1 ml/ 800 kg provided sufficient analgesia and muscle relaxation for the perineal area, facilitating the manipulation of the organs. The onset of analgesia for manipulation of the prolapsed organs commenced within ten minutes and lasted for about one hour, within which the prolapse had been reduced and suturing completed. This is in tandem with observations of Ismail (2016) and Kumar *et al.*, (2019). Caudal epidural anaesthesia (between Cx1 and Cx2) have also been used for correction of cervicovaginal prolapse in cow (Fubini& Ducharme, 2017). However, cranial epidural anaesthesia is said to offer more profound relaxation of the vagina, cervix, and perineal structures compared to caudal epidural block (Njoku *et al.*, 2015; Fubini & Ducharme, 2017).

Copper wire was employed in this case for retention of the prolapsed organs following repositioning of the cervix and vagina. The use of copper is unconventional. Copper was chosen in this case because silk was previously used and had failed, and no other conventional materials like umbilical tape or stainless steel was available within the local community. The copper wire provided adequate tensile strength and rigidity to maintain closure under the constant pressure associated with the straining. The use of metallic suture is an old practice (Tzimtzimis & Papazoglou, 2017). In third-world economies, various metallic wires, including stainless steel and occasionally copper, have been used for tissue apposition or prolapse retention due to their availability, strength, and resistance to breakage(Tzimtzimis. & Papazoglou, 2017).

The biological response of bovine tissue to copper is of important consideration. Copper is a biologically active trace element involved in enzymatic processes, collagen synthesis, and angiogenesis (Finney *et al.*, 2009). However, when placed in direct and prolonged contact with tissue, copper can undergo corrosion and release ions that may elicit local tissue reactions (Szczesny *et al.*, 2025). Studies on copper implants in animals have demonstrated a dual effect. At low, controlled levels, copper ions exhibit antimicrobial activity and may even promote angiogenesis. However, at higher concentrations or in prolonged exposure, copper may cause inflammatory responses, fibrosis, and foreign-body reactions (Peng *et al.*, 2019; Cao *et al.*, 2021).

Compared to stainless steel, copper is less inert, more prone to corrosion, and more reactive with tissue proteins (Szczesny *et al.*, 2025). This could explain potential risks such as localized inflammation, delayed healing, or suture tract discharge. In this case, however, no marked adverse tissue reaction was noted during the postoperative period, suggesting that short-term use of copper wire as retention suture material may be tolerated in bovine tissue. Nevertheless, caution is required, and more inert metallic wires (e.g., stainless steel) are generally preferred for long-term implantation.

CONCLUSION

Vaginal prolapse occurs in pregnant and non-pregnant cows as a result of relaxation of perivaginal muscles following increase in blood oestrogen levels. The condition can be treated by repositioning of the prolapsed organs and retention of vagina in position by a suture material. Application of granulated sugar to the oedematous tissues helped caused a reduction in size of the tissue to nearly the normal anatomical size. Epidural anaesthesia ensured the relaxation of the vagina and resolution of straining, which facilitated the repositioning of the organs. Proper repositioning of the prolapsed organs also helped in resolving straining. Finally, placement of strong sutures (copper wire) around the vulva prevented the vagina from re-prolapsing. This case did not show any obvious adverse reaction to the copper suture. Short-term application of copper wire is therefore recommended for the retention of cervicovaginal prolapse in the absence of conventional suture materials. Copper wire is cheap and readily available.

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