

Vaginopexy: a new look at an old technique

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Abstract

Vaginal and cervicovaginal prolapse are common in cattle. Once the prolapse has been reduced, several retention methods can be employed. Each method has benefits, as well as limitations. This article introduces a novel modification to an established technique and discusses advantages and disadvantages compared to other options.

Keywords: Minchev, prolapse, vaginopexy, bovine, Bühner

Introduction

Vaginal prolapse is a common reproductive malady of cattle. Although overall occurrence of vaginal prolapse is low, with reports of less than 2% among several populations,^{1,2} breeds predisposed to vaginal prolapse include Herefords, Charolais, Limousin, and Shorthorns, as well as *Bos indicus* breeds³ and composites. Nutritional issues can predispose to vaginal prolapse, including diets deficient in calcium or too high in estrogenic compounds, as well as consumption of low-quality roughages.^{3,4} Other conditions thought to contribute include previous injury to vaginal or cervical tissues or increased abdominal pressure in late gestation due to a cow being over-conditioned, tenesmus, or chronic coughing.^{3,4} Because of the likely genetic component to the condition and the high probability of recurrence, culling should be recommended for affected cattle.³ For economic reasons, this is most commonly done after weaning their calf. An iatrogenic etiology for vaginal prolapse occurs due to hormonal manipulation performed during the superovulation of embryo donor cows.³ Just as there are many etiologies and much variation in both the presentation and severity of these cases, there are also many treatment options.

Replacement of prolapsed tissues is straightforward, but varies in difficulty depending on severity, duration of the prolapse, and whether the bladder is also prolapsed. Management of an acute vaginal prolapse allows a plethora of temporary retention techniques, as these are typically easily reduced and tissue damage is minimal. However, management of chronic vaginal prolapse is often challenging and requires more rigid fixation and stabilizing of the vaginal vault.⁴ A grading system for vaginal prolapse was established to aid decision-making regarding reduction. It is based on a scale of I-IV, as described by Wolfe, et al.⁵ A discontinuous prolapse of vaginal tissue with increased abdominal pressure (i.e. lying down) would be considered grade I. Grade II describes a persistence of vaginal prolapse that may or may not include the bladder. Grade III includes the bladder and cervix in addition to the vaginal mucosa. A grade IV prolapse classifies a grade II or III prolapse that is further affected by another process (infection, trauma, necrosis).⁵

Replacement is usually facilitated by epidural anesthesia. A pudendal nerve block or sacral paravertebral block can be utilized for more challenging cases. Following replacement, retention is most often accomplished using a method of external fixation, which involves minimizing the vulvar opening to prevent prolapse of vaginal tissues but allowing for urination. The most common retention method, the Bühner stitch, is a purse-string suture placed with the use of a specialized needle (Bühner needle).

Alternate techniques can be utilized that allow parturition while maintaining fixation. These are the Winkler (cervicopexy) technique, the Minchev (vaginopexy) technique, or one of several modifications of the Minchev, including those that utilize specialized pins. Vaginopexy, utilizing one of the variations of the Minchev technique, fits the need for temporary or “semi-permanent” retention, while allowing parturition followed by culling at a more economically opportune time. Further simplification of this procedure with the use of a Gerlach needle, as will be described, should increase utilization of this procedure.

Modification of the Minchev technique using a Gerlach needle

The suggested adaptation is a modification of the traditional Minchev technique⁶ utilizing a Gerlach needle (Figure 1; displayed with a Bühner needle for context) to pass either a length of #8 Polyamide thread suture or umbilical tape (1/4 or 3/8 inch wide) externally from within the vagina. In order to accomplish this, the cow is first prepared by cleaning the perineum and the prolapse. After cleaning, a regional anesthetic is used, most often a caudal epidural. The prolapsed tissue is then reduced. Next, the Gerlach needle is introduced into the vagina while using the thumb and forefinger to carefully guard the vaginal mucosa from the point (tip) of the needle (Figure 2). Next, the cranial aspect of the vaginal wall (near the caudal cervix, at about the 10 or 2 o'clock position) is engaged and then manipulated in such a way as to retract the tissue caudally for subsequent entry through the sacrosiatic ligament (located 4-5 cm lateral from midline and immediately caudal to the shaft of the ilium) to the exterior. As the sacrosiatic ligament forms the majority of the lateral pelvic wall, it will be engaged during this procedure. Care should be taken to avoid the rectum, sciatic nerve, and pudendal artery. Once the cranial vaginal wall is engaged and the point of exit identified, the needle is passed, only once, from inside the vagina to the exterior of the cow. A length of suture is prepared and one free end is passed through the eye of the Gerlach needle to half the length of the suture. With the two free ends maintained outside the cow, the Gerlach needle is then pulled back through into the pelvis and out through the vulva. The loop of suture is then cut to make two free ends (Figure 3). The ends are passed through each of two holes that have been previously prepared in a syringe case top (Figures 4a & 4b) and tied in order to secure the syringe case top. The authors prefer syringe case tops from Monoject™ 60 cc syringes; however, any smooth plastic disc could be functional in this use (i.e. bottom of a 500 mL fluid bottle or a sample cup lid), as long as care is taken to remove sharp edges. The syringe case tops are prepared by filing the lip down to about ¼ to ½" thickness and two holes are drilled into the top using the Gerlach needle. The slack in the suture material is then drawn taut from the exterior and tied over a gauze roll located caudal to the cow's ilium. The procedure is then repeated on the other side.

Discussion

Vaginal prolapse, a reproductive malady of the cow, can occur for many reasons. The most important issue to consider is the suggested hereditary etiology and the high likelihood of recurrence. Replacement followed by culling is the recommended management. Replacement can be accomplished in a variety of ways. The focus of this paper is a modification of the Minchev technique.

An advantage of the method, as described, over other Minchev variations, is that the Gerlach needle is easier to pass than a large S-shaped needle and less traumatic than the trocar as described in another modification.⁶ Likewise, it seems to be less traumatic and subjectively less painful for the cow than methods that utilize pins and plastic sleeves. The described procedure can also be performed as quickly as those which utilize the commercially available pins. Furthermore, the syringe cap replaces the need for rolled 4x4 gauze in the vagina of the cow, allowing for further ease during calving.

The procedure commonly referred to as the Bühner technique is easy to perform, rarely fails, and has few complications. However, it must be removed prior to parturition, which dictates very close observation of the cow by the owner/herdsman, and it is not an appropriate technique in the rare case when permanent retention is indicated. Additionally, it must sometimes be removed prematurely when tissue damage results due to the constrictive nature of what is essentially a "purse-string" suture placed in an area subject to continual fecal contamination.

Winkler's cervicopexy is the most technically difficult technique and thus, is reserved for very specific situations. As this is a permanent retention method it should only be utilized when the etiology is believed to be iatrogenic: specifically, an embryo donor cow who has had numerous superovulation treatments. In this case, the hormonal influence is implicated in contributing to the prolapse and therefore, it is not considered hereditary. A permanent fixation is then an option for treatment in order to maintain these cows as donors.

Summary

The Minchev technique and its modifications have few complications. It allows for calving without the necessity of removing the stitch. Lastly, the modification of the Minchev technique discussed here utilizes very inexpensive and readily available supplies with the only necessary purchase being the relatively inexpensive Gerlach needle.

References

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Figure 1. Gerlach needle (left) & Buhner needle (right).

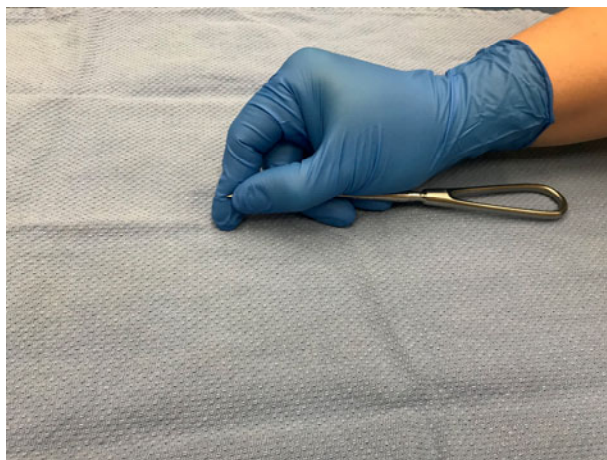


Figure 2. Operator's hand holding Gerlach needle in a guarded position for introduction into the vaginal cavity.

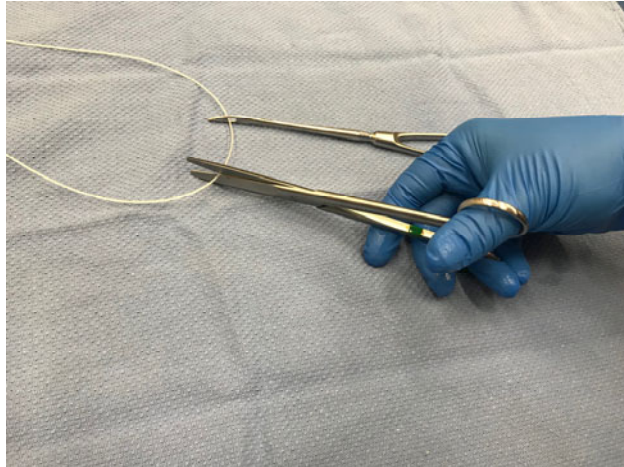


Figure 3. Suture in Gerlach needle being cut by the operator.

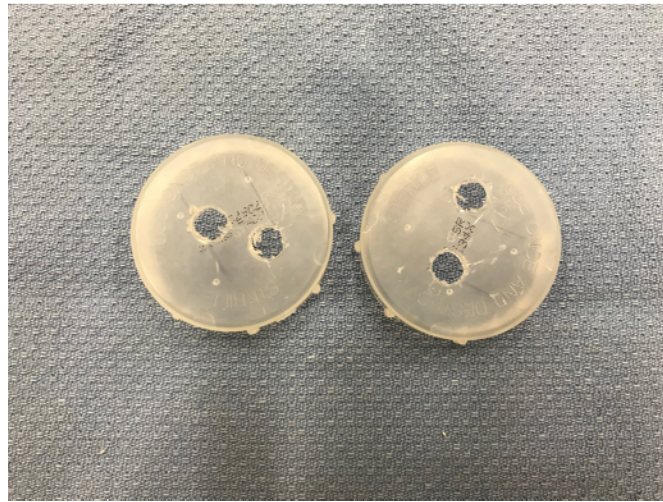


Figure 4a. "Syringe case tops" prepared for use.

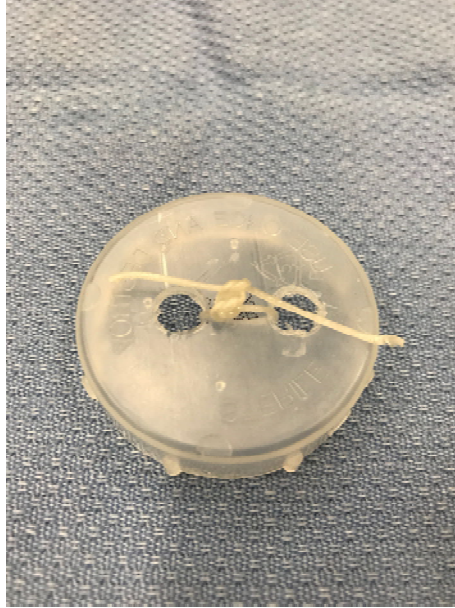


Figure 4b. Suture threaded through the holes in the “syringe case top” and tied in a knot.



Figure 5. External view of bilateral completed modified Minchev technique; stay sutures tied over gauze externally.

(Editor’s note: Online edition of the manuscript has color photographs)

