Journal of Equine Veterinary Science 35 (2015) 147–152

Contents lists available at ScienceDirect

Journal of Equine Veterinary Science

journal homepage: www.j-evs.com

Original Research

Inside-Out Continuous Suturing Technique for the Repair of Third-Degree Perineal Laceration in Mares

Arun Anand*, Simrat Sagar Singh

Department of Veterinary Surgery and Radiology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

ARTICLE INFO

Article history:
Received 15 April 2014
Received in revised form 5 July 2014
Accepted 4 December 2014
Available online 23 December 2014

Keywords:
Third-degree perineal laceration
Two-stage suturing technique
Equine
Mare

ABSTRACT

Seven mares with third-degree perineal laceration were treated by a two-stage surgical technique. The rectovestibular shelf was corrected with two layers of inside-out continuous suture technique distributed along the longitudinal axis of the vestibule, vagina, and rectum simultaneously obliterating perivestibular and perirectal space with poly-p-dioxanone. Perineal body was reconstructed in the second stage with simple continuous pattern and the skin using a horizontal mattress suture pattern. All mares completed the two-stage surgery, and healing occurred in all of them. Three mares had foaled once without any subsequent injury, one mare was in foal, and others were in regular heat. The results of the present study indicate that the inside-out continuous suturing technique appeared to be effective for repair of third-degree perineal laceration.

1. Introduction

Third-degree perineal laceration or rectovestibular lacerations are the result of lacerations from the dorsum of the vestibule into the rectum, with disruption of the muscles of the perineal body and the anal sphincter [1]. The injury occurs predominately in primiparous mares, and mares appear to be more susceptible to this injury than females of the other species because of the expulsive nature of their parturition [2]. Third-degree perineal lacerations create a common opening of the rectum and vestibule that requires surgical correction to prevent vaginitis, cervicitis, and endometritis leading to infertility [3], and the concern is the loss of functional vulvar and vestibular conformation of the vaginal vault eventually leading to infertility through endometritis. Therefore, reconstruction of the third-degree perineal laceration is necessary to return the mare to breeding soundness [1]. Careful observation with properly timed medical and/or surgical intervention could reduce the losses associated with the peripartum period [4].

Third-degree perineal lacerations are most commonly repaired by the Goetz one-stage technique, the Aanes two-stage technique, or slight modifications in these techniques. Using the Goetz technique of rectovestibular reconstruction, the edges of the rectal and vestibular flaps are sutured together using an interrupted six-bite suture pattern. The dorsal portion of this suture resembles a Lembert suture, and the ventral aspect of this suture resembles a vertical mattress suture [5]. The Aanes technique uses a continuous horizontal mattress pattern to close the defect [1]. In another study, simple interrupted suture pattern was effective in the repair of the third-degree perineal laceration on six mares in two stages 6 weeks of initial injury [6]. Third-degree rectovestibular lacerations repaired by a two-stage surgical technique with three parallel circular continuous suture rows distributed along the longitudinal axis of the vagina, and the perineal body was reconstructed with three divergent, simple, continuous rows [7]. In other studies, six-bite pattern [8] and semitransverse closure technique [9] for the repair of third-degree perineal lacerations in mares potentially reduced the failure of repair compared with the traditional

* Corresponding author at: Arun Anand, Department of Veterinary Surgery and Radiology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana 141004, Punjab, India.
E-mail address: arunanand135@yahoo.com (A. Anand).

0737-0806/$ – see front matter © 2015 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.jevs.2014.12.012

Table 1
Signalment, length of laceration, interval between injury and first-stage repair and between first- and second-stage repair and outcome in mares (n = 7) with third-degree perineal laceration.

Mares				Length of Injury (cm)	Interval Between Injury and Repair (First Stage), wk	Interval Between First- and Second-Stage Repair, wk	Outcome
No	Breed	Age (y)	Parity				
1	Indian bred	4	1st	12	6	3	In foal
2	Indian bred	3	1st	8	8	3	Not bred yet
3	Indian bred	4	1st	15	11	4	Foaled once
4	Indian bred	7	2nd	10	7	4	Foaled once
5	Indian bred	5	2nd	10	6	3	Foaled once
6	Indian bred	3.5	1st	13	7	6	Not bred yet
7	Indian bred	4	1st	12	6	3	Not bred yet

longitudinal closure technique. Therefore, various techniques have been described including repairs in one or two stages, but to the authors' knowledge, none of them used inside-out continuous suture pattern for the repair of third-degree perineal laceration. It was hypothesized that such a suture pattern would be easy to perform and would simultaneously obliterate perirectal and perivestibular dead space.

This article describes a technique for a two-stage repair of third-degree perineal laceration in mares, which involves inside-out continuous suture pattern in standing mares under epidural anesthesia.

2. Materials and Methods

Seven mares were admitted to the Veterinary Teaching Hospital with third-degree perineal laceration during the period of study. The mares had a mean age of 4.35 years (range, 3–7 years). In mares, all the injuries occurred during foaling. Five of the seven mares were primiparous, and two were in second parity (Table 1). At the time of presentation, the wound was dressed with framycetin ointment (1% locally, three times a day; Sanofi India Ltd, Goa, India), systemic antibiotic ceftriaxone (20 mg/kg IV, two times a day; Neovet, Intas Pharmaceutical Ltd, Matoda, Ahmedabad, India) for 7 days, and analgesic meloxicam (0.2 mg/kg intramuscularly [IM], once a day; Neovet, Intas Pharmaceutical Ltd) for 3 days. Surgery was delayed for at least 6 weeks in all the mares until second intension healing of the rectovestibular wound had occurred (Fig. 1A and 1B). Owners were instructed to feed the animals on green grass so that the fecal consistency was soft by the day of surgery.

Feeding was withheld for 24 hours before surgery. Mares were restrained in stock and sedated with xylazine HCl (0.5 mg/kg; Indian Immunologicals Ltd, Hyderabad, India) administered IV. The dose was repeated whenever necessary. Taking aseptic measures, the first intercoccygeal epidural anesthesia was induced with a combination of 0.17 mg/kg of xylazine HCl and 0.22 mg/kg of lidocaine HCl (Neon Laboratories Ltd, Andheri, Mumbai, India) diluted in 10 mL of 0.9% sodium chloride solution [10]. The tail was wrapped and secured dorsally. Fecal material from rectum, vagina, and vestibule was removed manually. Length of defect in perineal area was measured from cranial aspect to anal sphincter. The lacerated vagina, vestibule, and the perineal regions were cleaned and scrubbed thoroughly with chlorhexidine solution. A continuous IV drip of 0.9% sodium chloride was maintained throughout the surgery.

2.1. Surgical Technique

Rectal and vestibular shelves were divided after giving U-shaped horizontal incision on lacerated rectovestibular shelf and continued caudolaterally between the ventral aspect of the rectum and the dorsal aspect of the vestibule, using a scalpel, in such a way so as to create equally thick

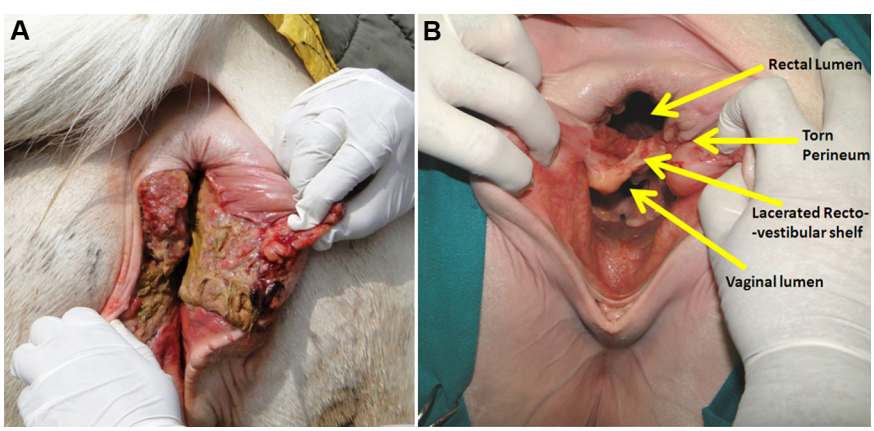

Fig. 1. Third-degree perineal laceration at the time of injury (A), edema and inflammation of vulvar lips and torn perineum body. Condition of perineal laceration 6 weeks after injury (B), inflammation, edema has subsided, and edges of rectal lumen, torn perineum, lacerated rectovestibular shelf, and vaginal lumen are clear.