

**Case report of two bitches with second degree perineal laceration**  
H.N. Pipe-Martin, P. Thomas  
Queensland Veterinary Specialist Centre; Brisbane, Queensland, Australia

**Summary**

This report describes the history, presenting clinical signs and treatment of two bitches that presented with perineal laceration associated with whelping. Both bitches were multiparous and had unassisted deliveries. Second degree perineal laceration was diagnosed on examination. One bitch was treated with primary intention closure, the other with second intention closure. Both bitches received prophylactic antibiotics and healed well. The bitch that was treated with second intention healing developed a vestibule stricture. The future breeding potential of both bitches had not been established at this time.

**Keywords:** Perineal laceration, second degree, treatment, antibiotics

**Background**

Perineal laceration in the dog has not previously been described in the literature and little is currently known about treatment options. While perineal lacerations in the mare are relatively common and first intention repair is broadly accepted, repair in humans by first and second intention is still in contention.

**Case presentation**

**Case 1**

A three year old, 30 kg, multiparous American Staffordshire was referred to the Queensland Veterinary Specialist hospital for evaluation of a perineal laceration. The bitch was seen at the referring veterinarian for an acute laceration of the vulva and vestibule that morning. The bitch had given birth naturally with no assistance to six pups 24 hours previously. The first pup had been passed at 0400 on April 30, 2012 and the sixth pup at 0930 on April 30, 2012. Of the six pups, one was stillborn, two suffered maternal birth trauma, and the remaining three were healthy. She had then suckled and mothered the pups well that day and did not appear to be in labor. The owners found the bitch the next morning with another dead pup in her whelping box and noticed the bitch to be bleeding from the vulva. The dead pup was found in two pieces. Routine prophylaxis (vaccination, deworming and heartworm prevention) was up to date and she had been historically healthy. She was taken immediately to the referring veterinary hospital.

On admission to the referring clinic the bitch was bright and alert. Her mucous membranes were pink and capillary refill time was less than two seconds, heart rate was 140 beats per minute and respiratory rate was 16 breaths per minute. The abdomen was swollen. Her rectal temperature was 40.4°C. There was a large amount of edema of the vulva and a hematoma present in the vagina. Initial treatment was administered at the referring veterinary clinic before referral to Queensland Veterinary Specialist. Treatment at the primary care clinic included: placement of an intravenous catheter into the cephalic vein and delivery of intravenous crystalloids at 180 ml/hr (6 ml/kg/hr), enrofloxacin 150 mg (5mg/kg) administered subcutaneously, amoxicillin with clavulonic acid 262 mg (8.7 mg/kg) administered subcutaneously and 300 µg buprenorphine (10 µg/kg) administered subcutaneously.

On presentation to the specialist hospital she was bright, alert and responsive with a heart rate of 120 beats per minute and was panting. Her mucous membranes were pink and tacky, she had a capillary refill time of two seconds and strong femoral pulses. Her estimated body condition was 6/9 and her physical examination did not reveal any other abnormalities. She urinated on presentation with no abnormalities seen. Reproductive examination revealed a macerated tear of the dorsal vulval commissure extending rostrally into the perineal body to create a cavernous dead space approximately 7 cm in diameter. There was also a communicating tunnel from the vagina to the skin of the perineal body creating a hole in the dorsal vagina that extended into the perineal body (figure 1a and b). The

injury was classified as a second-degree perineal laceration as there was tearing of the perineal body including the connective tissue and paravaginal muscle at the level of the vulvovaginal sphincter.

Blood was taken for packed cell volume and total protein analysis. Packed cell volume was 36 percent and total protein was 62 g/L (6.2 g/dL). Abdominal radiographs were taken to screen for retained fetuses. No fetuses were visualized within the uterine horns or the birth canal. A brief abdominal ultrasound examination was performed to screen for free abdominal fluid. No free fluid was noted. She was placed back on intravenous fluid therapy of intravenous crystalloid solution (compound sodium lactate; Hartman's solution) at 6 ml/kg/hr overnight. The three pups were healthy (two females and one male) and weighed 375 g, 372 g and 435 g, respectively. Pups were temporarily weaned while the bitch was hospitalized.

The bitch was re-evaluated the following morning under general anesthesia. Anesthesia was induced with alfaxalon<sup>1</sup> to effect and maintained with isoflurane; no premedication was given. A delayed primary closure method was planned. Treatment consisted of debridement of a small amount of necrotic tissue and continuation of antibiotic treatment. The bitch was maintained on 500 mg amoxicillin with clavulonic acid (16.6 mg/kg) PO BID for seven days. Instructions were given to the owner to keep the bitch rested and confined to a small inside room with appropriate bedding and to wash the external vulva three times a day with plain warm water until re-examined in 48 hours.

Further re-checks were performed 8, 23, and 30 (figure 1c) days after initial presentation. Healing was evident at all re-checks and primary closure was not performed. The laceration was healed by second intention alone. Uterine involution was regular and no abnormalities in defecation or urination were noted. The re-check 30 days after initial presentation revealed a mostly healed vulva, however the vestibule was rolled out on a small area dorsally. A vestibular stricture was present with an internal diameter of 1cm. The vulva was healed well when the patient was examined eight weeks after presentation, however the vestibular stricture remained (figure 1d).

## Case 2

A three year old Maltese cross 4.7 kg maiden bitch was presented to a referring practice for a perineal laceration. The bitch had whelped during the night and delivered four live pups with no assistance. The bitch had been feeding the pups and mothering them well after birth. The owner noticed a wound in the perineal region in the morning and presented the bitch to the referring veterinarian.

On presentation she had a temperature of 39.0°C, a heart rate of 200 beats per minute and was panting. Mucous membranes were pink and moist with a capillary refill time of less than two seconds. The abdomen was enlarged but palpation did not elicit pain. The vulva was flaccid and intact with no hemorrhage or obvious trauma. There was a laceration in the perineum that connected with the vestibule (figure 2a). A rectal examination was performed and no rectovaginal fistula was found. The injury was classified as a second-degree perineal laceration as there was tearing of the perineal body including the connective tissue and paravaginal muscle.

Immediate closure for primary intention healing was performed. A 22 gauge catheter was placed in the right cephalic. Anesthesia was induced with intravenous alfaxalon to effect and maintained with isoflurane; no premedication was given. Intravenous fluid therapy of compound sodium lactate at 70 ml/hr (10 ml/kg/hr) was administered. The perineal wound was in the shape of an inverted "u". The epidermal edges and subcutaneous tissues were torn and had jagged edges. The epidermis and subcutaneous tissues were debrided. The superficial perineal fascia was closed with simple continuous sutures using 3-0 monofilament glyconate. The epidermis was closed with simple interrupted sutures of 3-0 polymerized caprolactam (figure 2b). Post-operative palpation of the rectum and vagina revealed no stricture or fistula. Meloxicam (0.2 mg/kg) administered subcutaneously, amoxicillin with clavulonic acid (12.5 mg/kg) and metoclopramide (0.48 mg/kg) were administered post-operatively. Metoclopramide was given to stimulate prolactin release; it acts by blocking dopamine from inhibiting the production of prolactin and therefore has been used to increase milk production.<sup>2</sup> The bitch was discharged and the owners were instructed to administer amoxicillin and cluvulonic acid (11 mg/kg q 12 hr for seven days), enrofloxacin (5.4 mg/kg q 24 hr PO for three days), and meloxicam (0.1 mg/kg q 24 hr for five to seven days), and to wash the perineum with chlorhexidine once or twice daily. Several rechecks of the wound were performed and sutures were removed 14 days after surgery. No impairment of urination or defecation was noted;

uterine involution appeared to be within normal limits. Re-examination 14 days after surgery revealed scarring of the dorsal vaginal wall. No further follow-up was recorded.

## Discussion

This report describes the signalment, history and clinical presentation of two cases of perineal laceration that occurred at the time of whelping. The author was unable to find other case reports describing perineal laceration in dogs (or other small animals). Perineal lacerations are commonly encountered in equine and human medicine and are divided into four categories. First degree lacerations can be described as tearing of the vulvar lips only and second degree lacerations as tearing of the perineal body including the connective tissue and paravaginal muscle at the level of the vulvovaginal sphincter.<sup>3</sup> Third degree lacerations are described as cloaca formation from a tear extending through the rectovaginal shelf, perineal body and sphincter and vulvar lips. Fourth degree lacerations are characterized by communication between rectum and vagina without disruption of the perineal body, anal sphincter, or vulvar lips.<sup>3</sup> The two cases described in this report were classified as second degree lacerations using these definitions.

Two types of repair were used, primary closure was used in case 2 and secondary intention closure was used in case 1. In humans closure of first and second degree spontaneous perineal rupture by suturing (primary) or not suturing (secondary intention healing) was compared.<sup>4</sup> These authors found no clinical difference in pain or wound complications between women that received primary closure compared to those that healed by second intention.<sup>4</sup> They also noted that analgesia use was higher in women that received primary surgical closure.

Perineal lacerations are frequently encountered in equine obstetrics. In mares, repair of second degree lacerations by surgical closure of the perineal body and vulvar lips is advised to prevent urine pooling and pneumovagina formation.<sup>3</sup> In some cases urethral extension may be required to correct pooling of urine in the cranial vagina.<sup>3</sup> Delayed primary closure of third degree perineal lacerations is advised and has been well-documented in the horse by the use of a single or two stage technique.<sup>5</sup>

It is uncertain from these two cases if there are any underlying risk factors that may have contributed to the perineal lacerations. Both dogs were multiparous, had multiple pups, unassisted deliveries and were of differing breeds. In humans several predisposing factors have been identified including nulliparity, increased birth weight, assisted delivery and ethnicity. Further research in small animals may help identify risk factors for perineal laceration in dogs however parity, birth weight, litter size and breed warrant investigation.

Both cases were treated with prophylactic antibiotics. Case one was treated with a single dose of enrofloxacin (5 mg/kg) and a seven day course of amoxicillin and clavulonic acid (16.6 mg/kg – dosed due to tablet convenience). The second case was treated with amoxicillin and clavulonic acid for seven days and enrofloxacin for three days. Prophylaxis for prevention of infection of perineal laceration has been advised in human medicine.<sup>4</sup> Duggal et al, 2008, compared patients who received a single dose of an intravenous cephalosporin prior to primary closure to those that received a placebo and found that patients who received prophylactic antibiotics had lower rates of wound complications than those who did not.<sup>6</sup>

Future breeding potential of these two bitches is currently unknown as it is too early to rebreed them. Follow-up examinations will be necessary to determine if complications that will impede mating and whelping are present.

In conclusion, perineal lacerations are an uncommon condition in bitches but can be treated similarly to perineal laceration in humans. There does not seem to be any significant difference between closure by primary intention or secondary intention in the dog. Broad spectrum antibiotic use was indicated in both cases and no subsequent infections were encountered. However, a single dose of intravenous cephalosporin may be all that is indicated in cases of primary closure.<sup>6</sup> Predisposing factors for perineal laceration and future breeding potential of both bitches are uncertain at this stage and warrant further investigation.

## Learning points:

- Primary intention or secondary intention healing were both successful mechanisms of closure
- Closure by secondary intention may lead to stricture formation

- Broad spectrum antibiotic use prevented secondary infections in both cases
- Single dose of intravenous cephalosporins prior to primary closure may be sufficient to prevent infection



- A. Dorsal vulval commissure  
B. Perineal body

Figure 1a. Case 1 at presentation. Macerated tear of the dorsal vulval commissure extending rostrally into the perineal body.



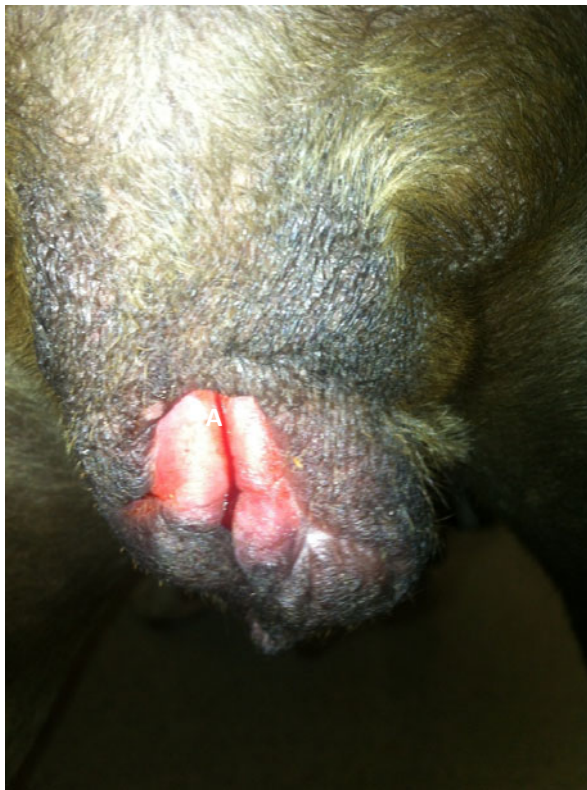
- A. Dorsal vulval commissure  
B. Vestibule  
C. Ventral vulval commissure

Figure 1b. Case 1 at presentation. Cavernous dead space present within the perineal body.



- A. Vestibule
- B. Ventral vulval commissure

Figure 1c. Case 1 at four week re-check. The vestibule was rolled out on a small area dorsally.



- A. Vestibule

Figure 1d. Case 1 at eight week re-check. The vulva and vestibule are healed however a vestibular stricture remained.





- A. Perineal body
- B. Vestibule
- C. Vagina

Figure 2a. Case 2 at presentation. Laceration of the perineal body that connects with the vestibule.



- A. Dorsal vulval commissure
- B. Ventral vulval commissure

Figure 2b. Case 2 post-operatively.

## References

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(Editor's Note: The photographs in this report appear in color in the online edition of *Clinical Theriogenology*.)