

Subtotal penile amputation and preputial urethrostomy in a dog

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Case Description—A 6-year-old castrated male Shih Tzu was evaluated because of intermittent bleeding during urination.

Clinical Findings—Necrosis of the cranial portion of the penile shaft extended distally from the preputial fornix. Penile necrosis secondary to strangulation from paraphimosis was diagnosed.

Treatment and Outcome—A midline preputiotomy incision was used to expose the penile shaft; amputation was performed caudal to the preputial fornix. The terminal portion of the urethra was anastomosed to the preputial mucosa, which allowed the dog to urinate through the preputial orifice.

Clinical Relevance—Unlike the more conventional urethrostomy procedures performed in dogs, preputial urethrostomy eliminates the potential for local skin irritation during urination. Preputial urethrostomy is also easier to perform in those dogs in which penile amputation is required adjacent to the preputial fornix. A release incision cranial to the prepuce can be used to facilitate caudal displacement of the preputial mucosa, which facilitates urethral anastomosis to this structure. A midline preputiotomy incision provided excellent exposure of the penile shaft for this surgical procedure. (*J Am Vet Med Assoc* 2007;230:375–377)

A 6-year-old 5.4-kg (12-lb) castrated male Shih Tzu was referred to the Angell Animal Medical Center for assessment of penile trauma secondary to paraphimosis. The owner had noticed a small amount of bleeding during urination, which was associated with the strangulated penile segment. The penis was swollen and necrotic. The necrotic penile segment subsequently sloughed, exposing a portion of the os penis (Figure 1).

The dog was alert and responsive, and a general physical examination revealed no other abnormalities. During sedation with hydromorphone (0.05 mg/kg [0.023 mg/lb], SC), the prepuce was retracted; penile necrosis was observed to the level of the preputial fornix. Hydromorphone administration was continued every 6 hours thereafter. A fentanyl patch (25 µg/h) was applied over a small area of skin clipped of hair on the left side of the thorax. Oral administration of amoxicillin-clavulanic acid (10 mg/kg [4.5 mg/lb], PO, q 12 h) also was initiated.

Results of CBC, serum biochemical analysis, and urinalysis were within reference ranges. Prior to anesthetic induction, the dog was premedicated with hydromorphone (0.05 mg/kg, IM), glycopyrrolate (0.005 mg/kg [0.002 mg/lb], IM), and acepromazine (0.025 mg/kg [0.011 mg/lb], IM), followed by anesthetic induction with thiopental sodium (10 mg/kg, IV). The dog was intubated, and anesthesia was maintained with isoflurane and oxygen. Lactated Ringer's solution was administered at a rate of 5 mL/kg/h (2.3 mL/lb/h) until completion of the surgical procedure. The caudal portion of the abdomen was clipped and prepared for surgery. The prepuce was thoroughly flushed with a 1:40 chlorhexidine and saline (0.9% NaCl) solution.

A full-thickness, ventral midline preputiotomy incision was performed over the central third of the prepuce to gain access to the penis and preputial cavity. Penile amputation was performed with a carbon dioxide laser (3 W) with an 8-mm ceramic tip, caudal to the preputial fornix (Figure 2). The exposed cavernous tissue on the incised penile surface was closed with 4-0 absorbable interrupted mattress sutures.

As an alternative to performing a prescrotal urethrostomy with resection of the prepuce, anastomosis of the spatulated end of the terminal portion of the urethra to the adjacent preputial mucosa was performed with 4-0 monofilament absorbable sutures in a simple interrupted pattern (Figure 3). A 2-cm release incision was created cranial to the preputial orifice to facilitate caudal retraction of the prepuce. A sterile urinary catheter was inserted and secured to the preputial orifice with 2 suture loops applied to the skin of the ventral portion of the abdomen, cranial to the prepuce. The remainder of the preputial mucosa was closed with 4-0 monofilament absorbable sutures in a simple interrupted pattern (Figure 4), followed by closure of the preputiotomy skin incision with interrupted 3-0 monofilament nylon sutures. The release incision was subsequently closed with simple interrupted skin sutures.

Following recovery from anesthesia, the dog's urine output was monitored for 24 hours by use of a closed collection system. After removal of the urinary catheter, the dog urinated without difficulty, with urine passing out of the preputial orifice in a slow, steady stream. A small amount of bleeding from the preputial orifice was noticed prior to discharging the dog from the hospital. The dog received carprofen (12.5 mg, PO, q 12 h) for 10 days following surgery; the fentanyl patch was removed 72 hours after surgery. Skin sutures were removed 14 days later.

Follow-up conversations during the 15-month period following surgery indicated the dog was doing

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Figure 1—Photograph of a penis with severe necrosis secondary to paraphimosis with penile strangulation in a dog.



Figure 2—Photograph of penile amputation with a carbon dioxide laser in the dog in Figure 1. A preputiotomy incision was used to gain access to the penile shaft. The urethra was identified and catheterized.



Figure 3—Photograph of anastomosis of the terminal portion of the urethra with the caudal aspect of the preputial mucosa (at the point of catheter insertion) in the dog in Figure 1.

well, and the dog urinated normally from the preputial orifice without dribbling urine over the adjacent skin. The owner indicated that the dog appeared normal, despite the loss of the penis.



Figure 4—Photograph of closure of the preputial mucosa in the dog in Figure 1. The skin was subsequently sutured along with the release incision immediately cranial to the prepuce. A urinary catheter easily passed through the anastomotic site and into the urinary bladder.

Discussion

The location for penile amputation is dictated by the area of the penis that is diseased or irreparably damaged secondary to trauma or circulatory compromise. Partial penile resection normally includes a variable portion of the shaft between the preputial fornix and the tip of the penis. The urethra is spatulated and sutured to the perimeter of the penile tunic after partial amputation.¹ Subtotal penile amputation or ablation of the external male genitalia is normally performed in the area between the preputial fornix and the ischium. This procedure entails resection of the penis; prepuce; and in some cases, the adjacent scrotal tissue. Usually a urethrostomy is performed as a side-to-side anastomosis with the adjacent skin.¹

In many cases, male dogs will function satisfactorily with a permanent urethrostomy, although urine dribbling with skin scalding occasionally occurs in the inguinal and inner thigh regions.² Irritation to the skin and a persistent urine odor will be noticed if routine grooming and cleansing of the area are not performed by the owner. Preputial urethrostomy can be performed along with penile amputation in the area caudal to the preputial fornix; a preputiotomy incision (preputial splitting technique) gives direct access to the penile shaft.³ A release incision cranial to the prepuce will facilitate caudal displacement of the prepuce and urethral anastomosis without undue tension. Preputial urethrostomy may not be useful for those dogs in which penile amputation must be performed closer to the level of the ischial arch. Use of this technique can be determined during surgery, and ablation of the penis and prepuce can be performed if preputial urethrostomy is not possible.

A modified perineal urethrostomy performed by use of the preputial mucosa has been reported⁴ for use in cats and has the potential advantages of preventing urine scalding and hair ingrowth associated with the conventional perineal urethrostomy procedure. The preputial mucosa may serve as a natural defense mechanism in the prevention of ascending urinary tract infections.⁴ However, this novel procedure has not gained

wide acceptance largely because most cats do quite well when treated with the simpler, conventional feline urethrostomy technique. Use of the prepuce as a site for urethral anastomosis has been reported⁵ in 2 dogs that required a prepubic urethrostomy secondary to intrapelvic urethral trauma with subsequent stricture formation. The dogs urinated through the preputial orifice, avoiding the potential for urine scalding associated with urethral anastomosis to the adjacent skin. In the dog reported here, preputial urethrostomy provided a more normal route of urination, while avoiding the potential complication of urine dribbling and skin scalding that infrequently is associated with more conventional urethrostomy procedures. Preputial urethrostomy also was technically easier to perform, compared with urethrostomy following ablation of the penis, prepuce, and adjacent skin. Although the dog of this report has not had a urinary tract infection, it is not yet known wheth-

er this technique provides a more effective barrier to ascending urinary tract infections, compared with conventional canine urethrostomy techniques.

References

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