

Omentalization of Prostatic Abscesses and Large Cysts in Ferrets (*Mustela putorius furo*)

Lauren V. Powers, DVM, Dip. ABVP (Avian)

Kevin Winkler, DVM, Dip. ACVS

Michael M. Garner, DVM, Dip. ACVP

Drury Reavill, DVM, Dip. ABVP (Avian), Dip. ACVP

Suzanne N. LeGrange, DVM, MS, Dip. ACVIM

Abstract

Neutered male ferrets are occasionally presented with cystic prostatic disease or prostatic abscesses, most often secondary to elevated, circulating sex steroid hormones caused by adrenocortical disease. Useful features of the omentum, such as tissue adhesion, angiogenesis, and stimulation of the immune system, can be used for surgical treatment of large prostatic cysts and abscesses. Two cases of prostatic abscess omentalization are described. In one case, the underlying cause was a sustentacular (Sertoli cell) tumor associated with a retained testicle. In the other case, adrenocortical disease was determined to be the underlying disease. The first ferret had a residual prostatic abscess 5 months after omentalization. A small, residual prostatic cyst was detected by ultrasound in the second ferret 9 weeks after surgery. Although omentalization may be an effective technique to surgically manage large prostatic cysts and abscesses in ferrets, clinical studies comparing omentalization with other surgical and nonsurgical methods are needed in this species. Copyright 2007 Elsevier Inc. All rights reserved.

Key words: adrenocorticism; ferret; *Mustela putorius furo*; omentum; prostate; Sertoli cell tumor

A leading cause of urinary tract pathology in neutered male ferrets is disease of the prostate gland.¹⁻³ Adrenocortical disease is common in middle-aged and older ferrets and is the most frequent underlying cause of prostatic disease in this species.^{2,4-7} Adrenal disease is defined as increased circulating sex steroid hormones secreted by hyperplastic or neoplastic adrenal tissue from one or both adrenal glands or from ectopic adrenal tissue.^{6,8,9} Clinical signs result from compression of the urethra or rectum, or from manifestations of local or systemic bacterial infection.¹⁰ Complete urethral obstruction can be a life-threatening complication.^{5,11} Ferrets may be presented with purulent penile discharge, dysuria, stranguria,

pollakiuria, anuria, tenesmus, or circulatory collapse.^{2,4,5,10-12} Cystic prostatic disease is often observed in ferrets lacking other clinical signs of adrenal disease such as alopecia and pruritus.^{2,4,5,11,13} Antibiotic therapy alone usually fails to resolve ab-

From the Carolina Veterinary Specialists, Huntersville, NC 28078 USA, Northwest ZooPath, Monroe, WA 98272 USA, and Zoo & Exotic Pathology Services, West Sacramento, CA 95605.

Address correspondence to: Lauren Powers, DVM, Dip. ABVP (Avian), Carolina Veterinary Specialists, Huntersville, NC 28078 USA. E-mail: wingvet@yahoo.com

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scases because of the inability to achieve effective tissue concentrations throughout the prostate.^{3,14} Although percutaneous aspiration has been recently reported as a successful and noninvasive technique to resolve prostate abscesses and cysts in dogs,¹⁰ this method has not been investigated in ferrets. Additionally, exploratory laparotomy provides an opportunity to surgically remove diseased adrenal tissue.^{4,11,13}

Previously reported surgical techniques in ferrets for managing large prostatic cysts and abscesses include surgical excision and marsupialization.^{11,13,15,16} Marsupialization allows repeated and prolonged abscess drainage and lavage.^{2,17,18} The stoma is permitted to close by second intention. Marsupialization has a higher incidence of reabscessation when compared with omentalization in dogs.^{14,17,18} Marsupialization of a friable abscess wall can lead to septic peritonitis due to poor suture-holding strength and leakage into the abdominal cavity.^{18,19} Continued drainage from the stoma can occur secondary to persistent prostatic infection, ascending infection through the stoma, or continued secretions by the cyst lining.^{14,17,19} Additional surgeries may be required to close the stoma.^{17,18} Marsupialization of cysts that communicate with the urinary bladder or urethra can lead to continued leakage of urine from the stoma.¹³ Other reported surgical techniques in dogs include ventral drainage with Penrose drains, subtotal prostatectomy, and excisional prostatectomy.¹⁴ These techniques require intensive and prolonged postoperative care and have a higher rate of complications. Reported complications include recurrent abscessation, recurrent urinary tract infection, urinary incontinence, and urethrocutaneous fistula.¹⁴

The omentum has a number of properties useful for surgical applications, including angiogenesis, tissue adhesion, immune surveillance, hemostasis, peritoneal lymphatic drainage, and fibrinolysis.²⁰ Omentalization is currently the surgical technique of choice in the management of prostatic abscesses and cysts in dogs. Omentalization is a simple and effective surgical method with minimal postoperative care and a low rate of complications.¹⁴ Omentalization of ferret prostate abscesses and cysts has been described,^{2,4,11,21,22} although no clinical cases have been reported.

Clinical Cases

Case 1

A 1.48-kg male ferret of unknown age raised at a private breeder was presented for stranguria and pollakiuria. The ferret had reportedly been previously neutered at a nearby veterinary practice, al-

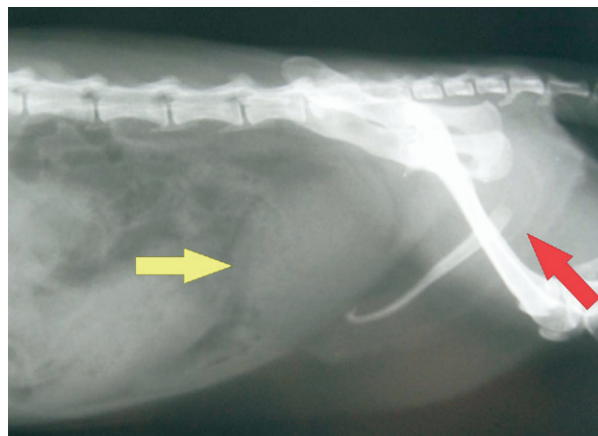


Figure 1. Lateral survey radiograph of a ferret presented with stranguria. The urinary bladder is distended beyond normal size (*yellow arrow*), and the visible length of the urethra appears filled with radiopaque material (*red arrow*).

though the date of the surgery was not known. On physical examination, the urinary bladder was greatly distended and painful. The ferret was sedated with isoflurane (Isoflo; Abbott Laboratories, Abbott Park, IL USA), and multiple attempts to catheterize the urethra were unsuccessful. A serum biochemical panel was within normal limits. Hematology was not performed. Survey radiographs showed a greatly distended urinary bladder. The visible length of the urethra was filled with radiopaque material (**Fig 1**). A urinalysis showed hematuria, pyuria, bacilli, and a moderate number of struvite crystals. A urine culture was declined. The ferret was anesthetized with isoflurane and an exploratory laparotomy was performed. An enlarged left adrenal gland (7×11 mm) was identified and removed. The right adrenal gland and area of the prostate appeared normal. A cystotomy was performed, but the catheter could not be passed normograde beyond the os penis. A scrotal urethrostomy was then performed. Postoperative therapy included cefazolin (20 mg/kg every 8 hours intravenously, cefazolin sodium USP; West-Ward Pharmaceutical Corp., Eatontown, NJ USA), butorphanol (0.3 mg/kg every 6 hours subcutaneously, Torbugesic, 10 mg/mL; Fort Dodge Animal Health, Fort Dodge, IA USA), and intravenous lactated ringer's solution (4 mL/kg/h). The ferret was sent home on clavulanic acid potassium-amoxicillin trihydrate (20 mg/kg every 12 hours orally for 4 weeks, Clavamox; Pfizer Animal Health, Exton, PA USA) and butorphanol (0.3 mg/kg every 6 hours subcutaneously for 3-5 days). Multifocal nodular adrenocortical hyperplasia of the left adrenal gland was identified on histopathologic evaluation.

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