

Urinary incontinence due to a urethro-vaginal fistula in a spayed adult female dog



A spayed 5-year-old Shih-Tzu bitch was examined for urinary incontinence not responding to medical treatment and for recurrent vaginitis. A urethro-vaginal fistula was diagnosed by genito-urinary endoscopy and was treated by vaginectomy, which resolved the incontinence.

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INTRODUCTION

A urethro-vaginal fistula is an abnormal communication between the urethra and vagina and is a cause of urinary incontinence¹. It is a widely described disorder in human medicine^{4,5,6,7,8} but rarely characterized^{2,14,15} in veterinary medicine.

A urethro-vaginal fistula is an abnormal communication between the urethra and vagina and is a cause of urinary incontinence.

Here we report a case of urinary incontinence secondary to a urethro-vaginal fistula in an adult, spayed bitch. The anomaly was diagnosed by endoscopy and treated surgically by partial vaginectomy.

CASE REPORT

After 3 years of living in a dog shelter, a 5-year old, spayed Shih-tzu bitch was brought for examination because of persistent urinary incontinence. The incontinence had been previously treated, unsuccessfully, with enrofloxacin (Baytril®, Bayer Animal Health, Milan,

Italy), administered at a dose of 5 mg/kg, *per os* every 24 hours for 2 weeks, and phenylpropanolamine (Propalin®, Vétoquinol, Bertinoro, FC, Italy) 1.5 mg/kg *per os* every 12 hours for 4 weeks.

The urine loss was moderate during the patient's normal activities, but abundant when the animal stood up after having remained in decubitus for several hours. The urine generally oozed from the vulvar fissure for 3-5 minutes.

The clinical examination, blood-chemistry tests and urinalysis did not reveal any abnormalities of note. A plain latero-lateral X-ray of the abdomen appeared normal. Abdominal ultrasonography showed a normally distended bladder with clearly demarcated walls, a free lumen and no dilatation of the ureteral openings. In order to evaluate the animal's urinary apparatus further, computed tomography was performed (Toshiba Asteion® VI, 120 kV, 150 mA, Thick/Index 5/2 mm and 2/2 mm, Scan Time 1'') but did not show any morphological or structural abnormalities, except for mild dilatation of the urethra.

Finally, the patient underwent endoscopy of the genito-urinary apparatus using a 5.9-mm diameter, flexible

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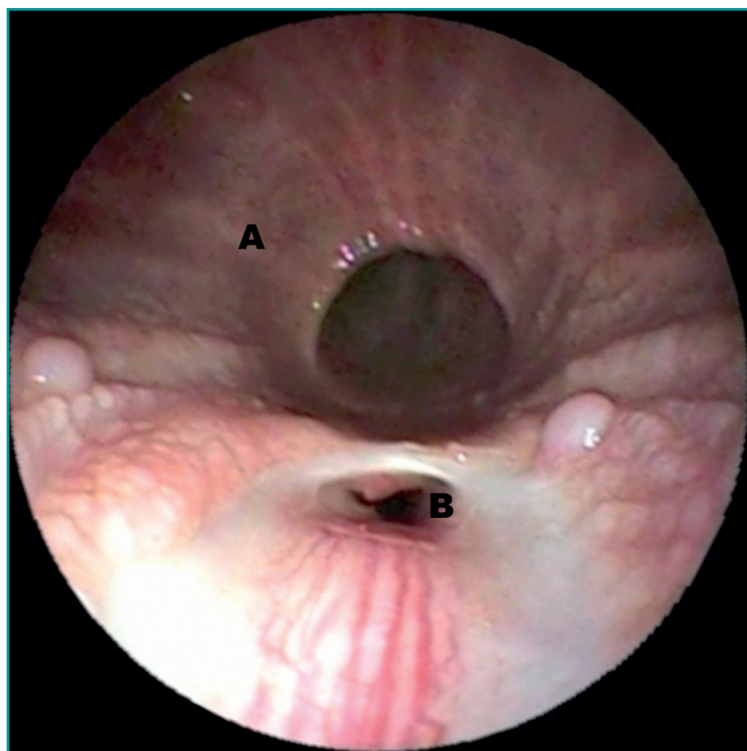


Figure 1 - Endoscopic image of the vagina: **A)** dilated vaginal vestibule, **B)** urethro-vaginal fistula, showing the characteristic appearance of the urethral mucosa with its evident vascular network. Altered mucosa with a micronodular appearance is present.

videoendoscope (Fujinon® EG270N5) during which a fenestration was found in the vagina, connecting the urethra and vagina about 3 cm cranially to the urethral meatus. The fistula was caused by the absence of a part of the dorsal wall of the vaginal urethra. This opening had an ellipsoid shape and was about 1.5 cm long and 0.5 cm wide (Figure 1). The vaginal mucosa appeared irregular, micronodular and tough. The micronodular-appearing mucosa was biopsied using 1.8-mm biopsy forceps with oval fenestrated cups (Endo-Technik PE1-OVAL-18-160 biopsy forceps) in order to carry out a histological examination, but because of the tough, fibrous nature of the mucosa, only small samples of tissue, sufficient for squash-preparation cytology, could be obtained¹³: this showed only squamous epithelial cells, neutrophils and sporadic, well-differentiated mesenchymal cells. The remaining part of the urethra cranially to the fistula was inspected and explored using a 2.5-mm diameter flexible cystoscope (Storz® 60003VB1), enabling the normal position and shape of the two ureteral openings in the trigone to be seen. Immediately after the endoscopic examination a latero-lateral X-ray was taken of the caudal part of the abdomen with the animal in right-sided decubitus. This X-ray showed that air introduced through the endoscope was present in the ure-

thra, bladder and vagina (Figure 2). One week later a partial vaginectomy was performed.

With the patient in dorsal decubitus a midline ventral incision was made from 1-2 cm caudally to the umbilicus to the prepubic tendon. After isolation of the uterine stump and application of traction sutures to the stump, the vaginal mucosa was exposed by a ventral incision to identify the precise position of the fistula. A partial vaginectomy was then performed with excision of the part of the vagina immediately cranial to the fistula and part of the ventral vaginal wall in order to reduce its lumen and decrease the space in which urine could accumulate. Finally, a Foley catheter was introduced into the bladder and left *in situ* for 1 week. Following removal of the catheter, the patient was discharged and during the following week the animal's owners noted a considerable decrease in urine loss and resolution of the incontinence. The improvement remained stable over the subsequent weeks. The only persistent sign is slight oozing of urine from the vulva, which occurs immediately after voluntary micturition and sometimes when the bladder is very full, for example in the morning.

An endoscopic follow-up examination performed 1 year later (Figure 3) showed normal scar formation and a patent fistula without macroscopic inflammatory phenomena.

DISCUSSION

There are only sporadic reports in the veterinary literature on urethro-vaginal fistula in the bitch^{2,14,15}. In these reports the incontinence and the fistula are associated with changes in the genito-urinary apparatus, such as an anomalous uterine cervix², presence of both male and female external genital organs¹⁴, vestibulo-perineal fistula, ventral position of the vulva and penoclitosis¹⁵. The diagnostic process is facilitated in such cases given the presence of macroscopic morphological alterations. In contrast, in our patient the only clinical sign present was the incontinence. In human medicine urethro-vaginal fistula is an uncommon disorder that presents with urinary incontinence when the bladder is full and with vaginitis as a result of the presence of urine in the vagina. A urethro-vaginal fistula in a woman can be secondary to obstetric trauma, iatrogenic surgical lesions, pelvic fractures, radio-

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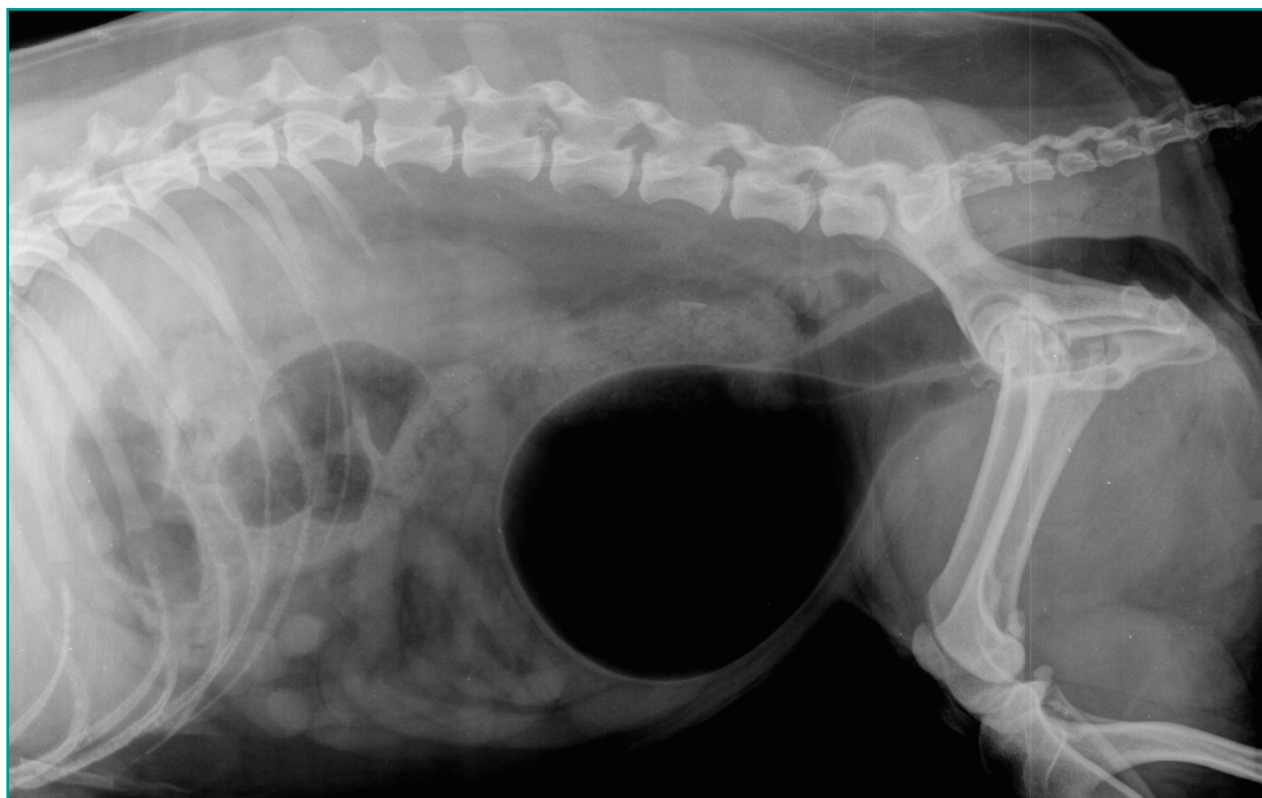


Figure 2 - Latero-lateral X-ray of the abdomen in right decubitus: air can be seen in the bladder, urethra and vagina.

therapy and tumours of the urethra or genitals^{3,4,5,6}. Very rarely the condition can be congenital⁸.

In our patient urinary incontinence was the predominant clinical sign and had characteristics similar to those seen in women. In fact, the greatest urine loss oc-

curred when the patient stood up. Probably the urine that had accumulated in the vagina flowed spontaneously under the effect of gravity and as a result of the patient's walking movements. Furthermore, vaginal alterations seen during endoscopy suggested that the

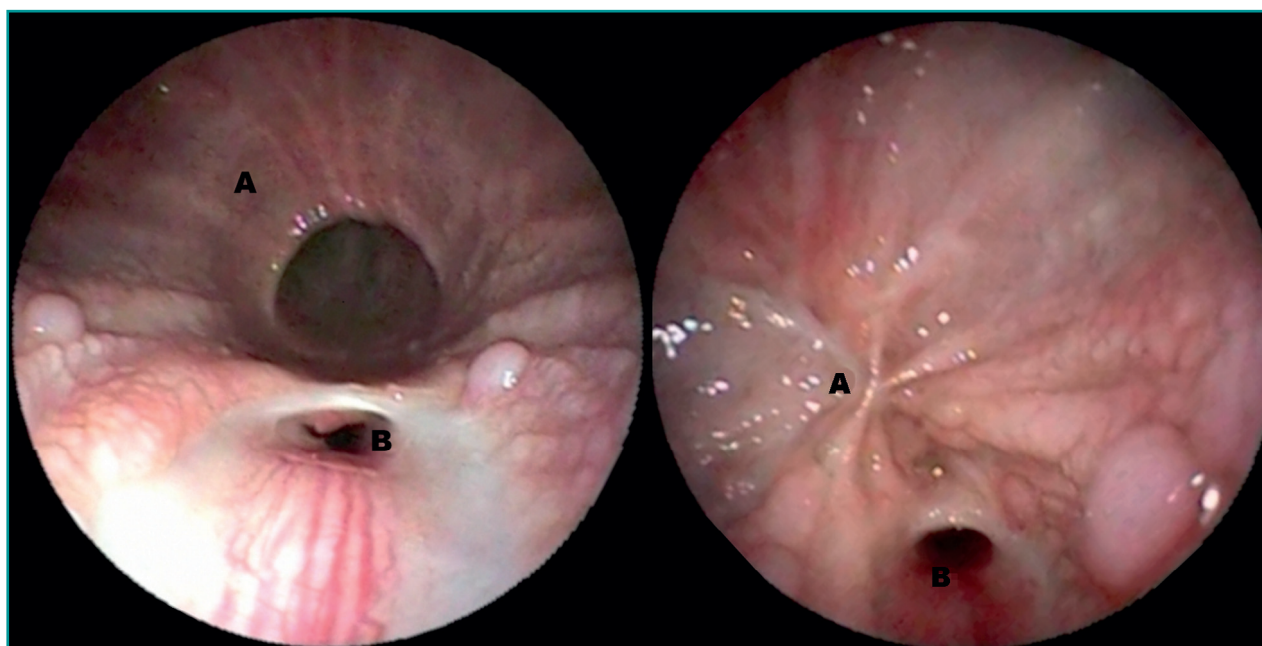


Figure 3 - Endoscopic image of the vagina before (right portion) and after vaginectomy (left portion). **A)** vagina, where the urine accumulates; **B)** urethro-vaginal fistula, urethral mucosa can be recognized by the submucosal vascular markings. The rounded nodular appearance of the vaginal mucosa can be seen to the right of the fistula in both images.

vaginal mucosa had been in chronic, persistent contact with urine.

Since the past clinical history of our patient was unknown, it was not possible to determine whether the fistula was congenital or acquired. However, a congenital defect is more probable, given that the dog had not undergone any diagnostic or therapeutic procedures involving the genito-urinary apparatus in the 3 years during which it had been in the dog shelter; furthermore, urinary incontinence is a plausible reason why the dog was abandoned.

The gold standard for the diagnosis of a urethro-vaginal fistula in human medicine is vaginoscopy^{8,9}. Likewise, endoscopy was the most effective method for making the diagnosis in our patient, since it enabled us to identify the fistula and explore the lower urinary tract. Ultrasonography did not reveal abnormalities of the urethra or bladder, partly because ultrasound examination of the urethra and of the caudal region is prevented by the presence of bones¹⁰. Plain radiography did not provide information useful for the diagnosis. Contrast radiography was not performed and this was a major deficit in our diagnostic work-up. Since the main abnormality seen on radiographs performed immediately after endoscopy is the presence of air in both the vagina and bladder, it can be supposed that contrast studies of the urinary tract would have shown the passage of dye into the vagina as a result of the fistula.

The decision to perform a vaginectomy was based on the surgeon's greater confidence with this operation.

Correction of the fistula by vaginal urethroplasty or a graft of autologous fascia lata¹¹ would have been equally appropriate procedures, although both procedures carry the risk of post-operative urethral stenosis¹². Furthermore, urethroplasty would have been reconsidered if the symptoms failed to resolve. The main purpose of the vaginectomy was not to restore the normal anatomy of the urethra, but to minimise the space in which the urine could accumulate and thereby reduce the incontinence as much as possible. The result was considered very satisfactory by the owners and subsequent clinical and endoscopic controls demonstrated that the improvement was stable over time.

The main purpose of the vaginectomy was not to restore the normal anatomy of the urethra, but to minimise the space in which the urine could accumulate.

This clinical case suggests that a urethro-vaginal fistula should be included among the possible differential diagnoses in the case of urinary incontinence. Endoscopy was the most useful diagnostic investigation for identifying the fistula. Vaginectomy was found to be a simple and effective method for resolving the clinical signs, although urethroplasty is considered a better surgical approach to this condition in human medicine.

KEY POINTS

- A urethro-vaginal fistula is an abnormal communication between the urethra and vagina and is a cause of urinary incontinence.
- The main clinical signs are urinary incontinence when the bladder is full and vaginitis secondary to the presence of urine in the vagina.
- A urethro-vaginal fistula may be secondary to obstetric trauma, iatrogenic surgical lesions, pelvic fractures, radiotherapy, and urethral tumours. Exceptionally it may be a congenital condition.
- A urethro-vaginal fistula should be included among the differential diagnoses of urinary incontinence.
- Endoscopy was the most useful diagnostic investigation.
- Vaginectomy is a simple and effective operation to resolve the clinical signs.

REFERENCES

1. Brown, SA. Fisiopatologia e terapia delle malattie dell'apparato urinario. In: Slatter D. Ed. Trattato di chirurgia dei piccoli animali. 3rd ed. vol. 2. Philadelphia, Pennsylvania: WB Saunders, 2003, p. 1591.
2. Ladkin A. Urethral ectopia and anomalous cervix in a dog. *Veterinary Records* 104 (24):555, 1979.
3. Gray LA. Urethrovaginal fistulas. *American Journal Obstetric Gynecology* 101 (1, May):28-36, 1968.
4. Symmonds RE. Incontinence: Vesical and urethral fistulas. *Clinical Obstetric Gynecology* 27:499, 1984.
5. Lee RA, Symmond RE, Williams TJ. Current status of genitourinary fistula. *Obstetric Gynecology* 72:313, 1988.
6. Ralph G, Tamussino K, Lichtenegger W. Urological complications after radical hysterectomy with or without radiotherapy for cervical cancer. *The Archives of Gynecology and Obstetrics* 248 (2):61-5, 1990.
7. Hilton P, Cromwell DA. The risk of vesicovaginal and urethrovaginal fistula after hysterectomy performed in the English National Health Service—a retrospective cohort study examining patterns of care between 2000 and 2008. *British Journal of Obstetrics and Gynaecology* 119(12):1447-1454, 2012.
8. Rigatti P, Camerota TC. Fistole urinarie e urologia funzionale. In: R. Dionigi, Ed. *Chirurgia. Basi teoriche e chirurgia generale*. 5th ed. Milano, Italy, Elsevier, 2011, pp. 1573-1574.
9. Taneja SS. Management of urinary fistulas. In: Taneja SS, Ed. *Complications of Urologic Surgery: Prevention and Management*. 4th ed. Philadelphia, Pennsylvania: Saunders Elsevier, 2010, pp. 263-276.
10. Davidson AP, Westropp JL. Diagnosis and management of urinary ectopia. *Veterinary Clinician North American Small Animal Practice* 44(2):343-53, 2014.
11. Atalan G, Cihan M, Sozmen M *et al*. Repair of urethral defects using fascia lata autografts in dogs. *Veterinary Surgery* 34(5):514-8, 2005.
12. Kowalik C, Stoffel JT, Zinman L *et al*. Intermediate outcomes after female urethral reconstruction: graft vs flap. *Urology* 83(5):1181-1185, 2014.
13. De Lorenzi, D, Bertonecello, D, Bottero, E. Squash-preparation cytology from nasopharyngeal masses in the cat: cytological results and histological correlations in 30 cases. *Journal of Feline Medicine and Surgery* 10, 55-60, 2008.
14. Jackson DA, Osborne CA, Brasmer TH, Jessen CR. Non neurogenic urinary incontinence in a canine female pseudohermaphrodite. *Journal of the American Veterinary Medical Association*. 15; 172(8):926-30, 1978.
15. Connery NA1, Spotswood T. An unusual case of urinary incontinence in an intersex West Highland white terrier. *The Canadian Veterinary Journal* 53(11):1195-8, 2012.