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## Cystolithectomy for large calculi in a German shepherd dog

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### Abstract

A six years old male German shepherd dog presented with a history of intermittent painful hematuria since six months. Upon clinical examination the animal was found emaciated and anemic. Ultrasonography revealed large oval hyperechoic structure in urinary bladder. Radiographic examination confirmed a large oval calculi (50×48mm) in urinary bladder. Urinary tract was clear and no abnormalities were found. Cystolithectomy was carried out and retrieved 52.31gm single large calculi was retrieved from urinary bladder. Due to long course of malady bladder wall was found thickened. Postoperative medicinal treatment was carried out for five days. On 12<sup>th</sup> post operative day sutures were removed and dog recovered uneventfully.

**Keywords:** Cystolith, cystolithectomy, German shepherd, hematuria

### Introduction

A Cystolithiasis and cystolithectomy refer to development of urinary bladder calculi and their removal, respectively. Cystotomy is a surgical incision into the urinary bladder (Fossum *et al.*, 2007) [3]. Most canine uroliths are found in middle age group inside bladder or urethra and they may be multiple small or single large (Rafee *et al.*, 2014) [4]. Struvite uroliths are most commonly encountered stones worldwide associated with UTI (Yadav *et al.*, 2011) [6]. Present report showed successful removal of large cystolith by cystolithectomy.

### History and clinical findings

A six years old, 19.25 kg male German shepherd dog was presented with a history of intermittent painful hematuria since six months. It was anorectic with symptoms of mild colic. Upon clinical examination animal was found emaciated, anemic and stranguric. Passing of catheter revealed clear urinary tract. Temperature (103.6 °F), heart rate (132 beats/minute) and respiration rate (38 breaths/minute) were slightly elevated. Conjunctival mucus membrane was pale pink. Haemoglobin (11.7 gm/dl), blood urea nitrogen (25 mg/dl) and creatinine (1.2 mg/dl) were in normal range.

**Ultrasonographic examination:** B-mode ultrasonography using 3.5-5.0 MHz transducer revealed large oval hyperechoic structure in urinary bladder with acoustic shadowing (Fig. 1).



Fig 1: B-mode ultrasonography showing hyperechoic structure inside urinary bladder

**Radiographic examination:** Radiographic examination confirmed highly radio opaque large oval calculi (50mm×48mm) in urinary bladder (Fig. 2).



**Fig 1:** Radio opaque urolith inside urinary bladder

### Surgical intervention

Cystolithectomy was carried out under general anaesthesia using ketamine @ 5 mg/kg. Body wt. and diazepam @ 0.5 mg/kg. Body wt. intravenously. Anaesthesia was maintained by mixture of Ketamine+Diazepam @ 1/3 of induction dose. Paramedian incision near penis was applied to approach urinary bladder. After abdominal incision, urinary bladder was exteriorized and packaging of abdomen was done. The bladder was filled with single large calculi, which was removed by taking incision on dorsal curvature of bladder. The urinary bladder wall was found thick and inflamed. The diameter of calculi was 50 mm × 48 mm with weight of 52.31 gm (Fig. 3). Then bladder was sutured in two layers using Vicryl#2-0 in cushioning followed by lebert suture patterns. Then peritoneum and muscles were closed in continuous lockstitch pattern using Vicryl#0. Subcuticular suture were carried out in simple continuous suture pattern. Skin was sutured in cross mattress pattern using braided silk#1. Post operative follow up was done with antibiotic (Inj. Ceftriaxone @ 20 mg/kg. wt.), NSAID (Inj. Meloxicam @ 0.3 mg/kg. wt.), Inj. NS 250 ml, Inj. Tribivet 3 ml were given intravenously and antihistaminic (Chlorpheniramine maleate @ 0.2 mg/kg. wt.) intramuscularly was given for five days.



**Fig 3:** Large cystic calculi weighing 52.31 gm

### Result and Discussion

The uroliths retrieved from the urinary bladder was tentatively diagnosed as struvite based on their morphological appearance. Struvite urolith is most common type of urolith in dogs (Yadav, *et al.*, 2011) [6]. Hematuria occurs because the stone rub against the bladder wall, irritating and damaging the tissue causing bleeding and inflammation (Rafee *et al.*, 2014) [4]. Stranguria was associated in males with bladder stones and urinary retention phenomena, which was agreed to the findings of these case (Codreanu *et al.*, 2017) [1]. As a single cystic calculi was present, it did not obstruct urine flow and case went undiagnosed for long time. In the present case, ultrasonography revealed highly echogenic mass localized intraluminal with thickening of urinary bladder wall. Similar findings were also noticed by Codreanu *et al.* (2017) [1]. Radiography of lateral pelvis revealed distended urinary bladder containing radio opaque single big calculi in conjunction with Saibaba *et al.* (2015) [5]. Dehmiwal *et al.* (2016) [2] has diagnosed and surgically managed three cases of cystolith. On 12<sup>th</sup> post operative day ultrasonography revealed normal urinary bladder wall and skin sutures were removed. Dog regained its normal appetite and urination.

### Conclusion

Successful surgical management of single large cystic calculi was reported.

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