**Research & Reviews: Journal of Veterinary Science and Technology**
ISSN: 2319–3441(online), ISSN: 2349-3690(print)
Volume 5, Issue 1
www.stmjournals.com

# Diagnosis and Surgical Management of Dog Bite Induced Cystorrhexis in a Dog

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***Abstract***

*A two years male Pomeranian dog was presented to clinics with a history of dog bite wounds on the ventral abdomen, anuria and anorexia since last two days. It was tentatively diagnosed as lower urinary tract trauma with uroperitoneum based on physical examination, abdominocentesis, radiography and ultrasonography. Emergency laparotomy under general anaesthesia was performed and cystorrhaphy was done after retrograde catheterization of the urethra and an indwelling catheter was placed to drain the abdomen. The clinical outcome of case was discussed.*

***Keywords:*** *Cystorrhexis, cystorrhaphy, Dog bite, Indwelling catheter, Uroperitoneum*

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## INTRODUCTION

The incidence of dog bite wound is more common in male unneutered dogs as compared to other dogs showing aggressive behavior [1]. Out of these dog bites, the major life threatening complication seen was rabies. In dogs and cats the most common cause for uroperitoneum is either blunt or penetrating trauma to the lower urinary tract [2]. Uroperitoneum and dehydration are the common symptoms seen in lower urinary tract injury. Uroperitoneum can be detected by abdominocentesis, while the condition of bladder is diagnosed by radiography and ultrasonography [3]. Urethral patency can be guarded by urethral catheterization and the accumulated urine in the peritoneum can be drained by placing peritoneal catheter [4].

### History and Clinical Examination

The two-year old male Pomeranian was presented with a history of dog bite two days back followed by anuria and anorexia. Physical examination revealed bite wounds on either side of penis with severely congested skin on the ventral abdomen (Figure 1) with fluid thrill in the distended abdomen and severe dehydration. Abdominocentesis revealed clear fluid indicating uroperitoneum. Lateral abdominal radiograph revealed collapsed urinary bladder with uniform fluid density in the entire abdomen.

The dog was subjected to real time abdominal ultrasonography after retrograde catheterization of the urethra into bladder and flushing the catheter with normal saline. There was no distension of the bladder in the scan (Figure 2) even after saline flushing and the saline was seen flowing out of the bladder lumen when flushed through indwelling catheter. Based on findings, the condition was diagnosed as dog bite induced urinary bladder rupture with uroperitoneum. The haematobiochemical findings revealed severe neutrophilia (95%), and severely elevated BUN (98 mmol/l) and creatinine levels (2.4 mg/dl) suggestive of azotemia.

***Fig. 1:*** *Photograph showing Congested Abdominal Skin at the Time of Presentation.*

  

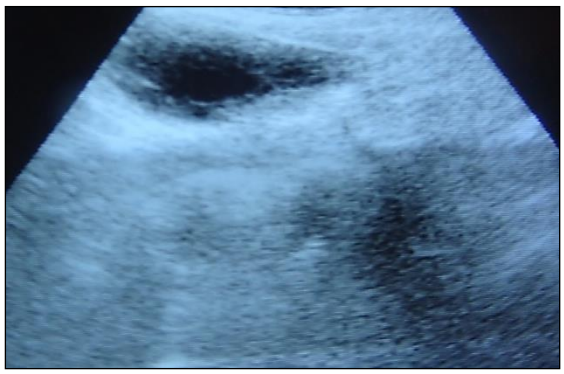

***Fig. 2:*** *Photograph showing the Ultrasonogram of Bladder and Uroperitoneum.*

**Treatment and Management**

The dog was administered Ringer lactate and normal saline at the dose rate of 20 ml/kg body weight each intravenously to treat severe azotemia and dehydration. Emergency laparotomy was done under general anaesthesia with Atropine at the dose rate of 0.04 mg/kg body weight subcutaneously as preanaesthetic 30 min before induction.

Anaesthesia was induced with mixture of Ketamine HCl at the dose rate of 5 mg/kg body weight and Diazepam at the dose rate of 0.5 mg/kg body weight given intravenously. Anaesthesia was maintained using Isoflurane mixed in oxygen through cuffed endotracheal tube using anesthetic machine.

***Fig. 3:*** *Intraoperative Photograph showing the Rent in the Urinary Bladder.*

Lower left flank skin incision was given for laparotomy and the ruptured bladder was approached. The defect in the bladder wall was identified (Figure 3) and was closed with No 2-0 polyglactin suture material in Cushing's fashion. The peritoneal cavity was flushed with copious amount of normal saline and a baby feeding tube (No: 10) was placed in the peritoneum to lavage and evacuate the contents from the peritoneum.

**Postoperative Care**

The animal was administered Ringer lactate solution and normal saline solutions at the dose rate of 20 ml/kg body weight each, intravenously for three postoperative days. Meloxicam was given at the dose rate of 0.2 mg/kg body weight subcutaneously for three postoperative days and Ceftriaxone sodium at the dose rate of 10 mg/kg body weight intramuscularly for seven postoperative days.

**Outcome of the Case**

Postoperatively, the dog started voiding urine through indwelling catheter and started consuming liquid diet. The congestion of the ventral abdomen started to decrease and became normal by 7th day. The dog made complete recovery by 12th postoperative day (Figure 4). The peritoneal drain was removed after 5 days and intraurethral catheter was removed after 12 days along with skin sutures with normal urine passage.

***Fig. 4:*** *Photograph showing Normal Colour of the Skin Postoperatively.*

Urinary bladder injuries are uncommon in small animals as the bladder is anatomically located in the bony pelvic compartment, but injuries can occur when the bladder is distended with urine and comes into the abdomen [5, 6]. Thornhill and Cechner, 1981 opined that male dogs are more prone to bladder rupture due to less urethral compliance, and more intravesical pressure, as observed in the present case. Extra peritoneal

ruptures of the urinary bladder can be managed by simple catheter drainage, by intermittent cystocentesis or by cystotomy tube placement or urinary marsupialization [6, 7]. The trauma to the bladder was penetrating which might be caused by dog bite which needs emergency laparotomy and surgical repair as done in the present case [8].

In the present case laparotomy was performed by giving skin incision on lower left flank to avoid the congested skin on the mid ventral region. In accordance to McLoughlin, 2000 peritoneal catheter in addition to urethral catheter was placed to drain the urine from the peritoneum. Postoperative peritonitis was not encountered in the animal as the animal was on antibiotic therapy and peritoneal lavage was done regularly using the peritoneal catheter. A dog bite induced bladder rupture was successfully diagnosed on clinical symptoms, abdominocentesis, radiography and exploratory laparotomy and managed by cystorrhaphy with indwelling urethral and peritoneal catheters.

## CONCLUSION

In cases with dog bite wounds, proper physical examination of animal is compulsory besides radiography and ultrasonography to assess the injury to visceral organs in the abdomen and should be treated accordingly.

## ACKNOWLEDGEMENT

Authors are thankful to the University authorities of Sri Venkateswara Veterinary University, Tirupati, for providing necessary facilities to carry out the present work.

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**Cite this Article**
Raghunath M., Ravi Kumar P., Vidya Sagar P., Devi Prasad V. Diagnosis and Surgical Management of Dog Bite Induced Cystorrhexis in a Dog. *Research & Reviews: Journal of Veterinary Science and Technology.* 2016; 5(1): 20–22p.

 