CASE REPORT

Surgical Management of Urolithiasis in a Male Labrador: A Case Report

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Urinary stones (urolithiasis) are a common condition responsible for lower urinary tract disease in dogs. The formation of calculi is associated with precipitation and crystal formation of a variety of minerals. Urinary calculi can damage the lining of the urinary tract, causing inflammation, which may predispose to bacterial infection. If calculi become lodged in the ureter, causing an obstruction, it may result in serious kidney damage. Unilateral ureteral obstruction may result in hydronephrosis with loss of function of the kidney. Urine retention may rupture the bladder with distension of the renal capsule (Tion *et al*., 2015 and Mudasir *et al*., 2018). So, an urgent cystotomy for removal of uroliths is the most commonly performed surgical procedure to save the life of the pets.

Case History and Observations

A male Labrador Retriever dog of 10 years age was presented to the veterinary clinical complex, WBUAFS, Kolkata with a history of vomition, stranguria, and hematuria. The dog was depressed and mildly dehydrated. There was dribbling of blood tinged urine which in later stages stopped completely. The local veterinary physician tried with diuretics but failed. Apparently, the dog was in good physical condition having rectal temperature 100.2°F, respiration rate 26/min, heart rate 86/min, and visible mucous membrane looking normal.

A simple radiograph of lateral view of caudal abdomen showed multiple uroliths like a bunch of grapes in urinary bladder (Fig. 1). Then some haemato-biochemical parameters were considered before performing surgical intervention. Results showed Hb 13.8 g/dL, PCV(%) 64, TLC 18.4x10^3/cmm, DLC(%)-Neutrophil 84, Lymphocyte 14, Eosinophil 6, Monocyte 0.4, Platelet count 106x10^5/cmm, BUN 62 mg/dL, creatinine 1.2 mg/dL, ALT 78I U/L, AST 46I U/L. Urine analysis showed specific gravity 1.008 with the presence of epithelial cells. Retrograde hydro propulsion was attempted by inserting the Ryle's tube (size 6) through the urethral orifice upto the obstruction at the level of os penis. 2% lignocaine gel was used topically before the insertion of Ryle's tube. Several attempts were made to increase by infusing normal saline to facilitate the movement of the uroliths into the urinary bladder. The procedure was attempted repeatedly with a

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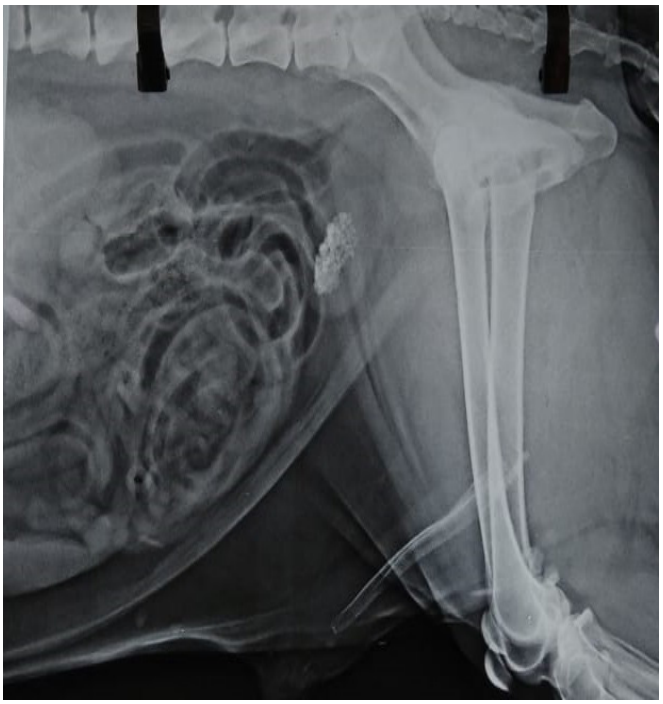

Fig. 1: Radiograph showing Bunch of grapes like uroliths inside urinary bladder

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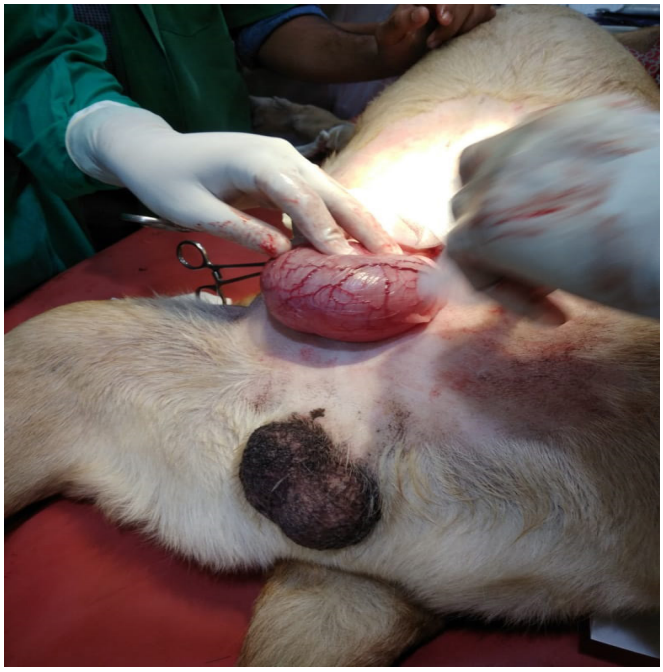

Fig. 2: Standard surgical procedure (cystotomy)

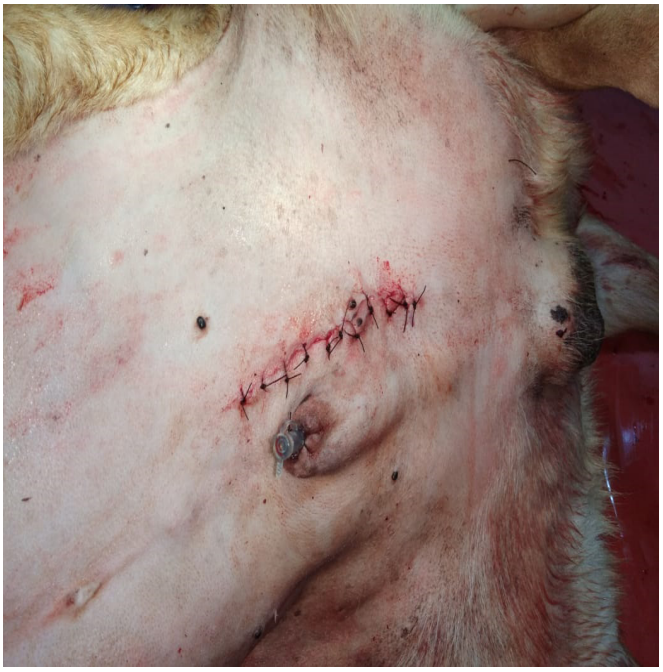

Fig 4: Catheterization of urethra with ryle's tube and skin suture.

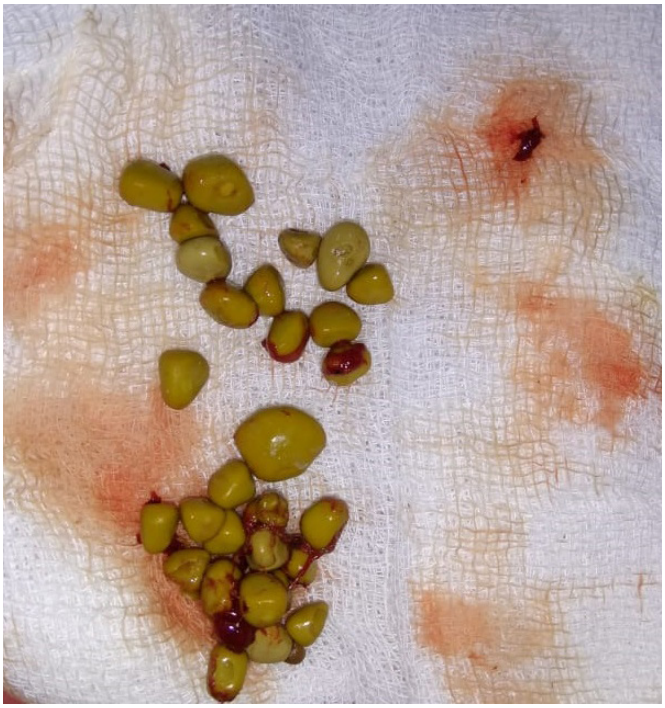

Fig. 3: Uroliths of different shapes and sizes.

digital pressure applied to the urethra, and then cystotomy was performed.

Surgical Procedure and Discussion

The preoperative stabilization of the patient included antibiotic prophylaxis with the combination of ceftriaxone and tazobactum (562.5 mg + 262.5 mg) i/v and 1 litre normal saline i/v @ 40 drops/minute throughout the procedure. General anesthesia was achieved by administering atropine (0.04 mg/kg b.wt., s/c) followed by xylazine (1 mg/kg b.wt., i/m), with diazepam (0.5 mg/kg b.wt., i/v). After 10-12 minutes, 1% propofol (6 mg/kg b.wt.) was administered i/v for induction of complete anesthesia. A standard surgical procedure for cystotomy (Fig. 2) was achieved. Repeated vigorous attempts with forced normal saline infusion through urethra was made to expel all uroliths (Fig. 3). So that the complete opening of urethral passage can be done. The bladder was flushed with normal saline and antiseptic. The catheter was again carefully inserted up to the bladder and cut from the urethral orifice. The catheter was fixed to prepuce with a single simple interrupted silk suture (Fig. 4).

Post-operative care included ceftriaxone with tazobactum (562.5 mg + 262.5 mg) i/v bid, for 7 days, followed by oral cefpodoxime proxetil 200 @ 1 tab bidpc for 2 weeks , NS @ 250 ml i-v bid for 3 days, inj. melonex (0.2 mg/kg b.wt., i/m) od for 5 days along with multivitamin syrup @ 1 tsf bidpc. Urinary antiseptic Cystone tablet @ 2 tabs bidpc with urinary alkalizer syrup @ 1 tsf bidpc for 14 days were given. The owner was advised to flush the catheter with normal saline twice a day. Local dressing with Betadine lotion every alternate day was done. The urethral catheter was removed on day 9, and the skin sutures were removed after 15 days. The dog showed uneventful recovery.

Long urethra in male dog often face partial or complete urethral obstruction due to this anatomical peculiarity (Franti *et al*., 1999). Of the hematological parameters, the increase in TLC, DLC, and PCV was observed as a result of infection and dehydration. BUN, AST, ALT were also above normal as a result of dehydration, urinary retention, and

stress to the kidney (Cowgill and Francey, 2005). Before attempting surgery, forceful retrograde hydro propulsion with normal saline was made to expel the uroliths from the urethra into the urinary bladder. The technique has also been described by Osborne *et al.* (1999). After giving an incision to the distended urinary bladder, more than 30 numbers of uroliths of different shapes and sizes from oval, round to semilunar, were retrieved from the bladder. Chances of urinary tract infection were considered and followed up by antibiotics, urinary antiseptics, fluid, and other supportive care as postoperative prophylaxis. The owner was advised to increase water consumption to facilitate the diuresis and reduce the possibility of aggregation of mineral deposits. Oral disodium hydrogen citrate syrup was prescribed to check renal tubular acidosis helping to increase the excretion of toxic substances from the kidneys, thus helping to inhibit bacterial growth in the urinary tract (Byer and Khan, 2005). The antibiotics like cefpodoxime was recommended for another two weeks to prevent recurrent infections. Cystone tablet is an herbal formulation that acts as a urinary antiseptic, prevents the formation of lithogenic substances and causes disintegration of urinary calculi (Erickson *et al.*, 2011). The higher specific gravity of urine indicates the concentrated urine as a result of dehydration, and the presence of epithelial cells suggests the removal from the lining of the bladder that is a common finding in urolithiasis.

It was concluded that appropriate dietary management can reduce the chances of calculi formation to a great extent. However, prompt diagnosis and surgical intervention improve the outcome of urolithiasis.

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