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Surgical Management of Retroperitoneal Mullerian Cyst of Renal Origin by Unilateral Nephrectomy in a Cat

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ABSTRACT

A twelve-month-old intact female domestic short hair cat was presented with a history of progressive abdominal distension, anorexia, lethargy and oliguria. On abdominal palpation, an extensive globular mass was palpable in the cranial abdomen a survey radiography of the abdomen and thorax revealed a soft tissue contour at the cranial abdomen at the left renal position, thoracic radiography revealed absence of any abnormalities. Renal functional status was ascertained with intravenous pyelography which revealed unilateral cystic dysgenesis of left kidney and agenesis of left ureter. Hematobiochemical profiles and preoperative assessment were done to rule out general organ health. An exploratory laparotomy confirmed the cystic renal distension followed by which unilateral nephrectomy was performed.

Keywords: Mullerian Cyst; Renal Cyst; Nephrectomy; Cat

Introduction

Renal cysts are fluid-filled, epithelial-lined, benign cystic structures within the renal cortex or medulla. Renal cysts in dogs and cats can be congenital, such as Polycystic Kidney Disease (PKD) in Persian cats or bull terrier dogs, with an autosomal dominant trait; Renal cysts can also be acquired, developing secondary to chronic nephropathies (Beck & Lavelle [1]). Extreme rarely reported mullerian cysts of the retroperitoneum are considered to be a subtype of urogenital cysts. Retroperitoneal cysts can be categorized into lymphatic cysts, mesothelial cysts, enteric cysts and urogenital cysts based on embryological origin and histogenesis. Urogenital cysts are further sub classified into pronephric, mesonephric, metanephric and Mullerian types (Yohendran, et al. [2]).

Materials and Methods

A twelve-month-old intact female domestic short hair cat was presented with a history of progressive abdominal distension, anorexia, lethargy and oliguria. General examination revealed 8-10 % dehydration, pale mucous membrane and tachycardia. On abdominal palpation, an extensive globular mass was palpable in the cranial abdomen. Survey radiography of abdominal lateral revealed the presence of a considerable radio dense homogeneous space occupying lesion with sharp regular margins in the cranial abdomen (Figure1). The density of the shadow was similar to that of parenchymal organs. In ventro-dorsal view, the mass was delineated rather in the left and contacted the left abdominal wall (Figure 2). Abdominal ultrasonography demonstrated severe anechoic enlargement of left kidney with smooth borders measuring 8.5 × 5.0 sq.cm, suggestive of hydro nephrosis/ renal cyst. The right kidney was normal in size with echotexture, measuring 4.1 × 2.0 sq.cm. Liver, spleen, gastrointestinal tract and uterus showed normal echotexture and size. For further diagnosis, an intravenous pyelography was performed using Iohexol positive contrast. There was no clear demarcation between the infundibular and calyceal structures upon excretory urography, which led to tentative diagnosis of unilateral cystic dysgenesis of left kidney and agenesis of left ureter (Figure 3). An exploratory laparotomy was performed after routine hematobiochemical profile in order to rule out the origin of the renal cyst and to perform unilateral nephrectomy if indicated.

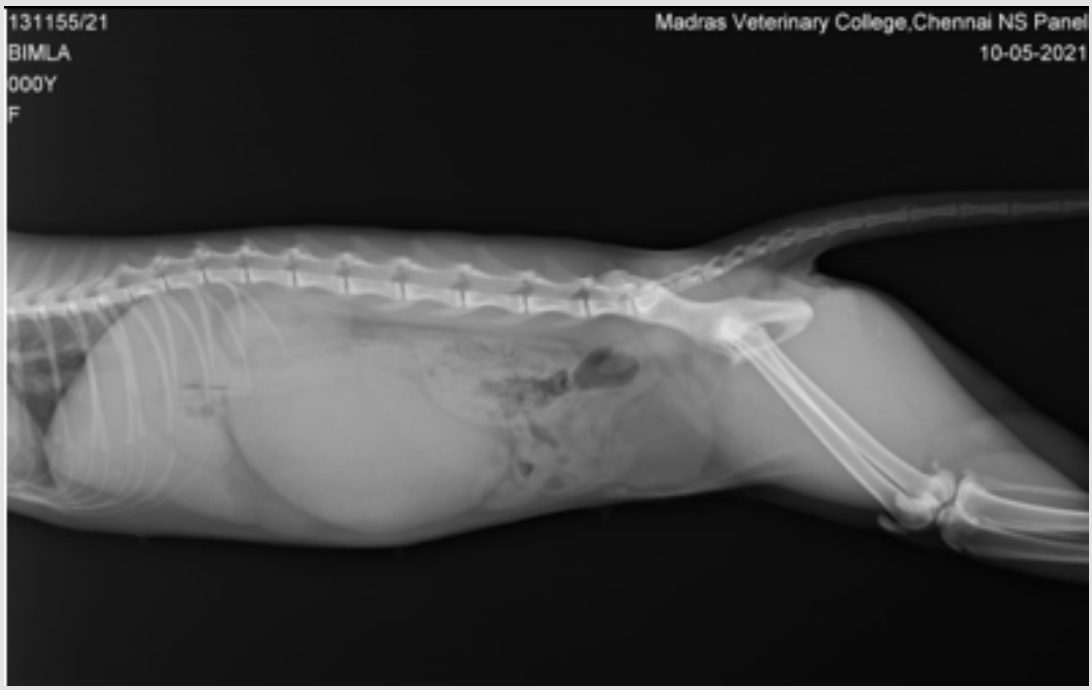

Figure 1: Plain radiography of abdomen lateral with dense mass.

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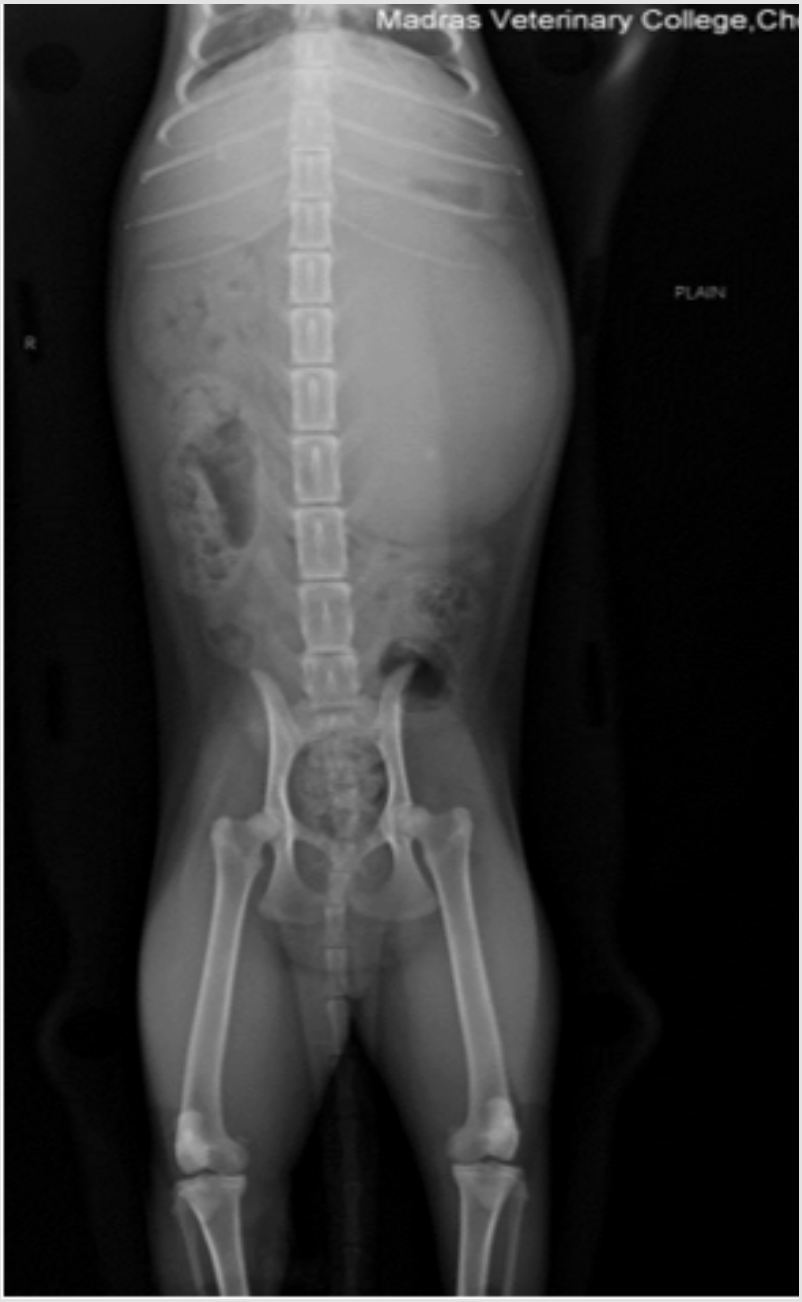

Figure 2: Ventro-dorsal radiography reveals the large mass on the left side.

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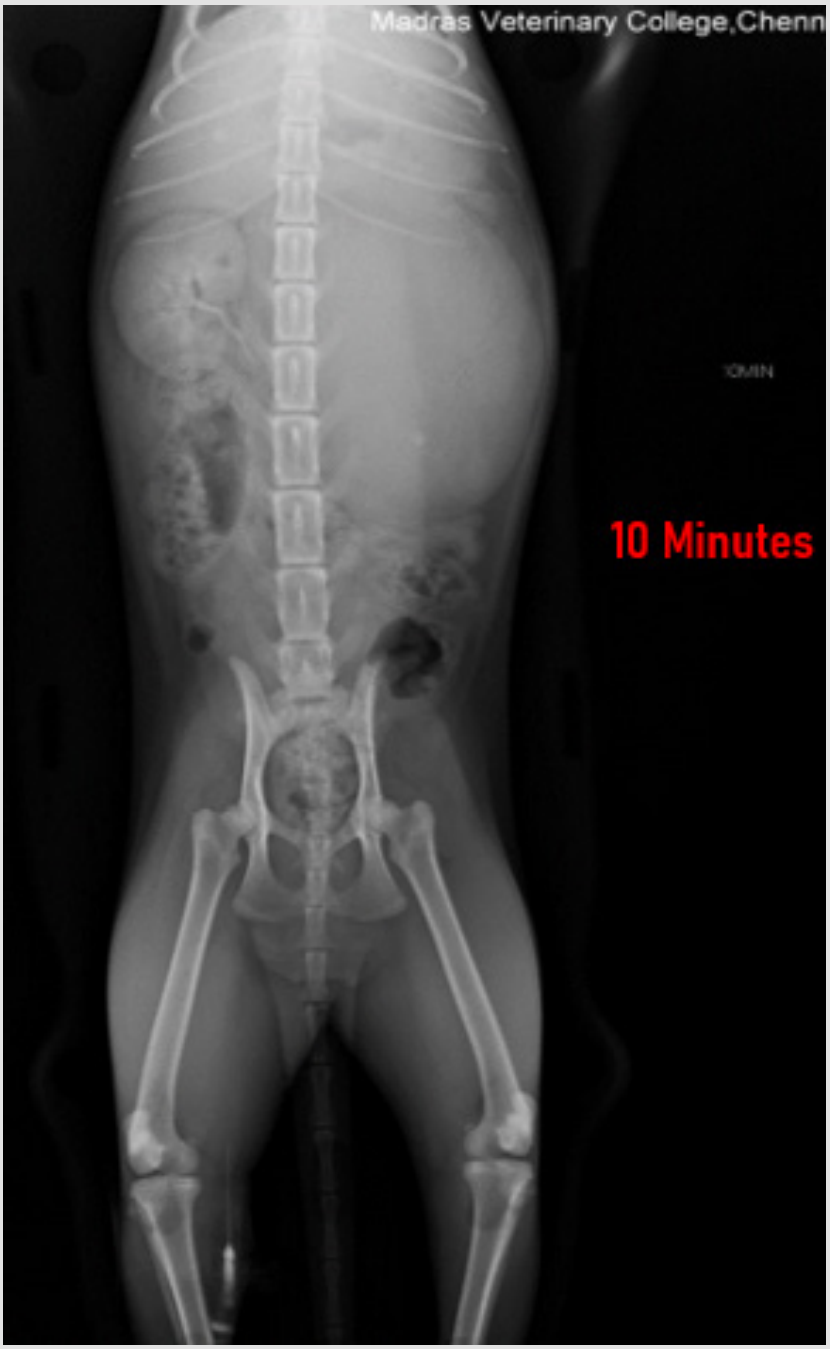

Figure 3: Contrast radiography reveals the agenesis of left kidney.

Surgical Procedure

The patient was premedicated with Inj. Butorphanol @ 0.2 mg/kg and Midazolam @ 0.2 mg/kg intravenously. The patient was administered intravenous crystalloids (0.9% Sodium chloride @ 4 ml/kg/h) preoperatively and intravenous antibiotics (Amoxicillin- Cloxacillin) at 20 mg/kg intravenously. Anaesthesia was induced with Inj. Propofol @ 3 mg/kg intravenously and maintained under inhalant anaesthesia with 2% Isoflurane in 100 percent Oxygen with non-rebreathing circuit. Cranial midventral laparotomy was performed, massive cystic fluid filled mass was identified, isolated from adhesions if any, and exteriorized from the retroperitoneal region (Figure 4). From meticulous dissection, the development of cyst was identified to be originated from the left kidney and complete agenesis of left ureter was noticed. Absence of renal function in the left kidney with absence of adjoined ureter warranted unilateral nephrectomy. The cystic kidney was freed from sub-lumbar attachments and renal artery was double ligated with Polydioxanone (2-0) close to abdominal aorta.

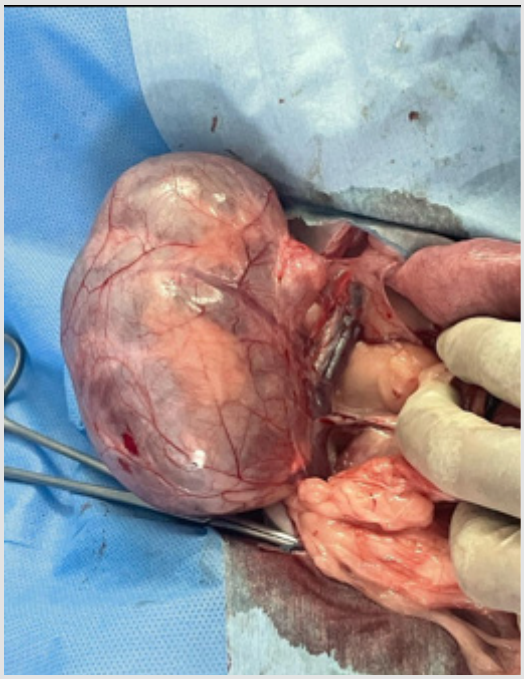

Figure 4: Left side - Retroperitoneal Mullerian Cyst.

Renal vein was ligated separately, avoiding the left ovarian vein and the left kidney was removed. Any alarming hemorrhages were observed post operatively. Following thorough examination of the abdominal cavity laparotomy incision was closed as per standard operating procedures. Post-operatively parental fluid therapy and antibiotics were administered for 7 days and evaluated for any recurrence or any abnormalities through radiography (Figure 5). Adequate postoperative care and periodic review with appropriate advice and care resulted in an uneventful recovery.

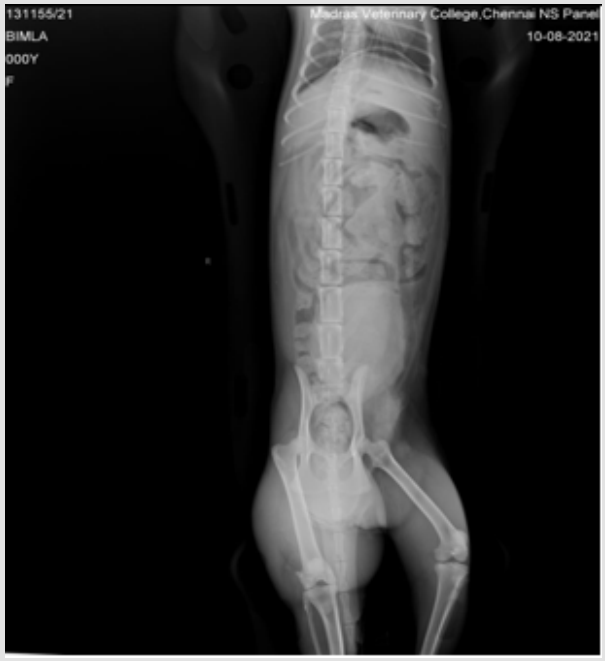

Figure 5: Post-operative radiography.

Results and Discussion

The pathogenic mechanism for the development of Mullerian epithelium-lined cysts in the retroperitoneum is not clear. Retroperitoneal tissue may include aberrant embryologically-derived Mullerian duct remnants that might have the capacity to grow in later life under the influence of abnormal hormonal stimuli (Paskalev, et al. [3]). Alternatively, the coelomic epithelium or peritoneum may undergo differentiation to become serous/tubal-type epithelium, later invaginating into the underlying tissue and eventually lost its connection with the surface, thereby producing a cystic structure. The present case study reveals an acquired Mullerian cyst due to renal origin for which surgical intervention was the only recommended option (Andrea Z, et al. [4]). Post Unilateral nephrectomy contralateral right normal kidney compensated for the renal function that was evident through. Prompt presentation, early diagnosis and surgical intervention favors good prognosis in renal cyst.

Acknowledgement

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