

A Case of Cavitated Uterine Mass from Müllerian duct in a Mixed Breed Dog

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Abstract : This report describes a case of newly recognized congenital Müllerian duct anomaly in a bitch. A fourteen-year-old, mixed breed bitch was presented with mild hematuria and mammary gland tumor. Complementary examinations were performed and abdominal ultrasonography revealed distended uterine horns and uterine tumor-like mass around the right ovarian area. Macroscopic examination showed the mass to be on the level of insertion of the right round ligament. The mass was cystic in nature, and had no communication with the uterine cavity. Histopathologically, the mass was identified as an accessory cavity lined by functional endometrium, which confirmed the diagnosis of accessory and cavitated uterine mass.

Key words : cavitated uterine mass, congenital anomaly, Müllerian duct, bitch.

Introduction

Müllerian tract anomalies result from incomplete bilateral duct elongation, fusion, canalization, or septal resorption of the Müllerian ducts (4). Non-development or non-fusion (partial or complete) of Müllerian ducts may result to a variety of anomalies ranging from complete agenesis to duplication of female reproductive organs (8).

Accessory and cavitated uterine mass (ACUM) is a newly recognized Müllerian duct anomaly in women (6). It is an accessory cavity lined by functional endometrium within an otherwise normal uterus (1). There were several reports of ACUM in women (1,3). However, unlike humans, ACUM has not been reported in dogs until now.

To the best of our knowledge, this is the first description of a case of the cavitated accessory uterine mass with an otherwise normal uterus in a bitch.

Case

A 14 year-old, 8.0 kg, mixed bitch, was presented with mild hematuria and mammary gland tumor (< 1 cm). The owner reported that the bitch had a history of estrus sign two months prior to presentation. On physical examination, the bitch was bright and alert. Complete blood count, serum biochemistry and blood gas analysis didn't show any significant anomalies. On abdominal ultrasonography, the uterine horns were bilaterally distended with fluid and had thickened endometrium; measuring about 1 cm in diameter. Notably, there was also a uterine tumor-like mass (1.5 × 1.5 cm) observed around the right ovary. Thus, ovariohysterectomy and partial mastectomy were performed.

After the surgery, a macroscopic examination showed that both ovaries had normal luteal tissue. The uterus on the other hand, had endometrial hyperplasia with mucinous fluids. The tumor-like mass was identified to be a subserous cavitated mass-like structure located on the posterior right ovarian bursa at the insertion of the round ligament (Fig 1). During tumor excision, mucoid and grayish-colored fluid exudated from the cystic mass. There was no communication between the cavity of the mass and the uterus. Upon histopathological observation, a section of the tumor-like lesion showed a normal internal endometrial lining of the cavitated mass (Fig 2). The other genital tracts were also anatomically normal. Histopathology revealed normal architectures of uterus including perimetrium, myometrium, and endometrium in the cavitated mass. The mass was confirmed as cystic endometrial hyperplasia (Fig 3).

Discussion

Most of the congenital anomalies of the uterus are due to a fault in one or more steps in the fusion process of the Müllerian ducts. These congenital anomalies have a severity ranging from hypoplasia to complete agenesis in reproductive organs (4,7).

In contrast to the usual Müllerian anomalies, an accessory uterine mass can be caused by the duplication and persistence of the ductal Müllerian tissue during developmental process at the level of the attachment of the round ligament, possibly related to gubernaculum dysfunction (2). Therefore, the cases of ACUM have been observed as an accessory cavity lined by functional endometrium within an otherwise normal uterine cavity (1,3,4). For this reason, ACUM was not included in the usual classification systems as it is difficult to explain by embryology (1,3).

In humans, diagnosis of ACUM is difficult, and is done by the exclusion of known causes of dysmenorrhea-like diffuse

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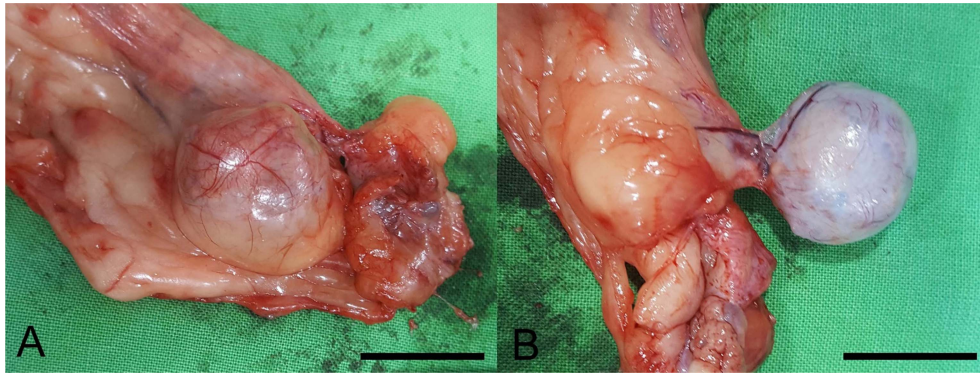


Fig 1. Surgical specimen showing the right uterine horn and ovary after ovariectomy. A: The mass on the posterior ovarian bursa at the level of the round ligament insertion is shown. Bar = 2 cm B: Exposed accessory uterine mass after removal of surrounding serous tissue. Bar = 2 cm.

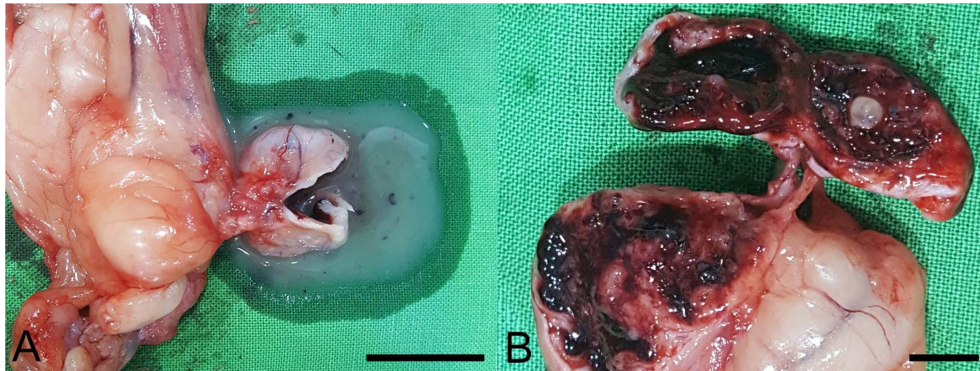


Fig 2. A: Section of the mass showing grayish and mucoid fluid. Bar = 2 cm. B: A section of the non-communicating mass showing edematous and hemorrhagic mucosal surface with multifocal cystic formations. Bar = 1 cm.

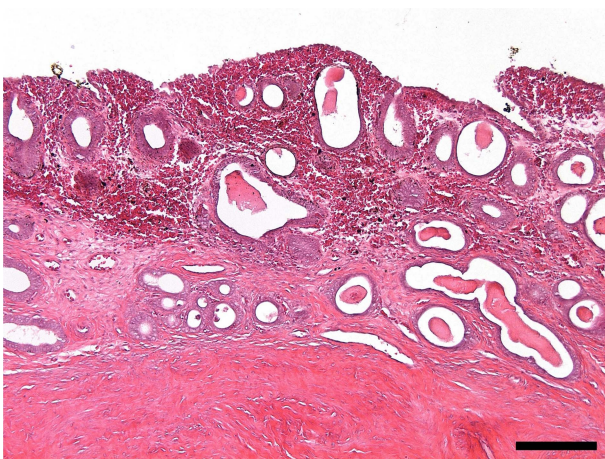


Fig 3. The cavitated mass was composed of perimetrium, myometrium, and endometrium. The mass showed severe diffuse cystic endometrial hyperplasia characterized by multiple cystic formations. Bar = 200 μ m.

adenomyosis, endometriosis and Müllerian duct anomalies (9). Ultrasound and MRI are especially useful for the evaluation of the presence or absence of fluid filled cavities and functional endometrium (5). The actual diagnosis of ACUM are

surgical with histopathological findings of cavitated mass with chocolate-colored fluids and presence of functional endometrium (9). The evaluation criteria for diagnosing ACUM in humans suggested by Acien *et al* (1) are as follows: (1) an isolated accessory cavitated mass (usually located under round ligament); (2) normal uterus, fallopian tubes, and ovaries; (3) a surgical case with excised mass and pathological examination; (4) an accessory cavity lined by endometrial epithelium with glands and stroma; (5) chocolate brown colored fluid contents; (6) no adenomyosis (if uterus was removed), but there could be small foci of adenomyosis in the myometrium adjacent to the accessory cavity.

As observed in our case, the uterine tumor-like mass is diagnosed as ACUM (1). Although the mucinous grayish colored fluid within the cavitated mass was not chocolate brown in color as reported in human cases, histological study showed a cavitated mass with a functional endometrium. In humans, clinical symptoms such as severe dysmenorrhea and chocolate brown colored fluid contents in cavitated mass could be attributed to intra-cystic bleeding and stretching of the cystic cavity (1,3). However, in this case, the grayish mucinous fluid in the cavitated mass is thought to be associated with cystic endometrial hyperplasia, as confirmed by the histopathological results, and not intra-cystic bleeding.

For the treatment of ACUM, the mass be removed via lap-

aroscopy or laparotomy which can prevent the typical relentless suffering of young women (3). However, in dogs, we hypothesize that it is difficult to detect the condition early because the bitch does not show any special clinical symptoms as in humans. Nevertheless, a positive confirmation also entails treatment via ovariectomy.

In summary, this is the first reported case of an accessory cavitated uterine mass with an otherwise normal uterus in a bitch. ACUM is newly recognized congenital Müllerian duct anomaly occurring in humans. It can be caused by duplication and persistence of the ductal Müllerian tissue during the developmental process. Diagnosis depends on the functional endometrium lining the accessory cavity and critical location of the mass at the level of the attachment of the round ligament.

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