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### Clinical Report

## Segmental Unilateral Epididymal Agenesis in Two Years Old Pekingese

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ARTICLE INFO	ABSTRACT
<p><i>Article History:</i></p> <p>Received 16 September 2020 Revised 30 September 2020 Accepted 22 November 2020 Online 22 November 2020</p> <hr/> <p><i>Keywords:</i></p> <p>Epididymis Agenesis Dog Pekingese Small breed</p>	<p>Epididymal agenesis is described as the complete or partial lack of the epididymis. In this paper, a two-year-old Pekingese dog with epididymal agenesis is reported during routine castration. The dog was presented to a private pet hospital for conventional castration. Anatomically unilateral epididymal agenesis was observed during orchietomy. Also, pathologically segmental unilateral epididymal agenesis and atrophy of testis were implied. The dog was neutered. Epididymal agenesis is a highly rare phenomenon in all breeding dogs. To the authors' knowledge, this is the first report of epididymal agenesis in small breeding dogs. This kind of animal should not use for breeding programs and practitioners pay attention to this anomaly while encountered infertility in dogs.</p>

### Introduction

The urogenital system is differentiated from the intermediate mesoderm. Genes Pax2 and Pax8 play a key role in this process.<sup>1-3</sup> From the embryological point of view, the mesonephric duct is developed to epididymis by the effect of testosterone.<sup>4</sup> The results of a study showed that fibroblast growth factor (FGF)-2 is an important factor for testis and epididymal development.<sup>5</sup> Mammalian epididymis connects the efferent ducts to the vas deferens. Transition of spermatozoa through the epididymis leads to their motility and fertility. Spermatozoa are

immunogenic but the blood epididymal barrier forms a unique pathway to passage and maturation of sperm.<sup>4,6</sup>

Canine congenital anomalies of the genital system occur extremely rare.<sup>7,8</sup> Epididymal agenesis is described as the complete or partial absence of the epididymis. Bilateral epididymal agenesis leads to infertility. To the best of our knowledge, this is the first report of epididymal agenesis in small breeds of dogs and is very infrequent in dogs.

### Clinical Finding

A two-year-old Pekingese dog was presented for

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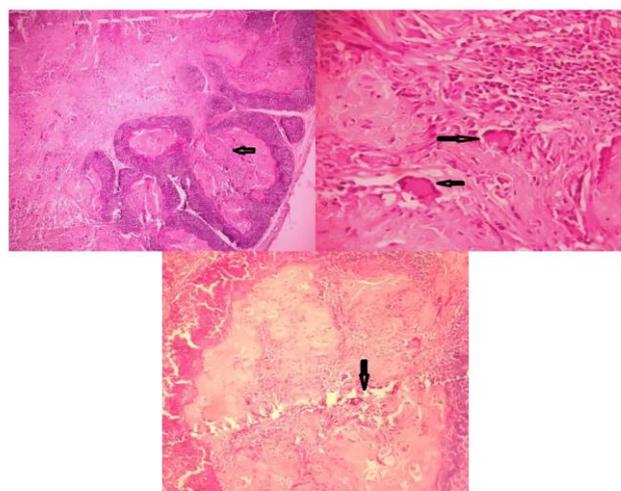


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castration to a private pet hospital in Tehran, Iran. Clinical examination of the genital system showed no anatomical abnormalities or sexual behavior disorder.<sup>9-11</sup> The prostate was in normal location in rectal examination. The hematological evaluation was done and no abnormalities were identified. The patient was fertile because he had mating experience and subsequently had a female dog pregnant. Open castration technique was done for this case. During the operation, aplasia of left epididymis was observed (Figure 1). Morphologically, the size and weight of left testis with epididymal agenesis were lower than those of the right testis. Fixation of the testis specimen was done in 10% formalin, which was then referred to laboratory and stained with hematoxylin and eosin (H&E). Histopathological analysis revealed left testicular tissue with severe loss of seminiferous tubules and epididymal tissue with the absence of vas deferens, suggesting the segmental aplasia. Prominent degeneration of the tubules was observed,



**Figure 1.** Post operation image of the both testes. Left testis with epididymal agenesis and the right side was normal.



**Figure 2.** Pathological image of the left testis. Severe loss of tubules and epididymal tissue with absence of vas deferens (segmental aplasia). Prominent degeneration of seminiferous tubules (testicular degeneration) with multinucleated giant cells enveloped in a layer of vascular connective tissue were seen (spermatocytic granuloma formation).

indicating testicular degeneration. Moreover, a multinucleated giant cell enveloped in a layer of vascular connective tissue was observed suggesting the formation of the spermatocytic granuloma (Figure 2). In comparison, the right testis and epididymis were normal

### Treatment and Outcome

The dog was neutered by standard procedure of surgery and anesthesia. For anesthesia, the combination of ketamine and medetomidine was injected intramuscularly by a dosage of 10 mg/kg and 0.04 mg/kg respectively.<sup>12</sup>

### Clinical Relevance

In this report, we considered unilateral segmental agenesis in a Pekingese dog. In our case study, unlike the last report in a husky,<sup>13</sup> the weight of the left testis was lower than the right testis. Also, obstructive atrophy of the testis with epididymal agenesis has been reported in a ram.<sup>14</sup> The obstruction, as a consequence of epididymal agenesis, impedes the spermatozoa transition. As a result, accumulation of the spermatozoa in proximal to the obstruction probably led to testicular degeneration.<sup>15</sup> Also, according to McCullough *et al.*, testicular weight loss may occur in rats after puberty, therefore at puberty, testicular fluid and spermatozoa return to the testicle. In case of proximal epididymal agenesis, intratesticular hydrostatic pressure increases and could damage the germinal cell epithelium, leading to testicular atrophy.<sup>4</sup> Hence, it is important to eliminate such animals for breeding.

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### Conflict of Interest

The authors declare no conflicts of interest related to this report.

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