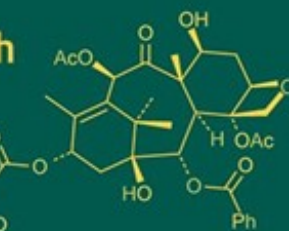
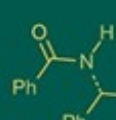


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Incidence of mammary tumor in dogs

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ABSTRACT

The present study was conducted on clinical cases of canines presented to the Department of Veterinary surgery and radiology, Veterinary college, Hassan during twelve months of period (September 2025 to August 2026). 31 cases of different neoplastic conditions in dogs were reported during this period. Of these 31 cases, 23 were diagnosed as canine mammary tumors. Among them, higher incidence of mammary gland tumors were found in 9 to 12 years age group and Dachshund breeds were more affected. Inguinal pair of mammary gland tumors were more affected than other pair of mammary glands.

Keywords: Canines, Dachshund, Mammary tumors

Introduction

Cancer is a disorder distinguished by uncontrolled division of cells and the ability of these cells to spread into adjacent tissue and is a major cause of mortality in canines. It is the second leading cause of death next to cardiovascular disease in pet animals. Incidence of tumours was high in canines compared to other species (Chandrayathi *et al.*, 2014). Although cancer may affect at all ages, in old age leads risk for development of cancer is high. Bitch have 5 pairs of mammary glands. Mammary gland tumours are more common in unspayed and middle-aged bitches and between 8 to 10 years of age are more commonly affected by mammary tumours. Mammary gland tumours rarely occurred in male dogs. The present study was aimed to know incidence of canine mammary tumor regarding age, breeds, sex, involvement of mammary gland, reproductive status of canine patients.

Materials and Methods

The study conducted to know the incidences of mammary gland tumors in canines, presented to the Department of Veterinary Surgery and Radiology, Veterinary college, Hassan during period of study (September 2025 to August 2026).

Results

A total of 8611 cases presented to Veterinary clinical complex, Veterinary college Hassan in twelve months period (September 2025 to August 2026). Among these, 3506 cases were presented to Department of Surgery and Radiology for various ailments. Out of these 3506 cases, 680 belongs to canine category. The mammary gland tumor cases were 23 out of 680 canine cases. The incidence rate of mammary tumors in canine was approximately 3.38 percent.

Table 1. Incidence of mammary tumors in canines

Sl. No.	Number of cases	Total
1	Cases presented to VCC	8611
2	Cases presented to Dept. of VSR	3506
3	canine cases presented to Dept. of VSR	680
4	Canine mammary tumors	23

Age-wise incidence of mammary tumor in dogs

The age-wise incidence of mammary tumor was studied by classifying into four groups: 1-3 years, 3-6 years, 6-9 years, 9-12 years. The high incidence was noted in dogs aged 9-12 years, constituting 52.17 per cent ($n = 12$), followed by the 6-9 years age group, which accounted for 30.43 per cent ($n = 07$). Dogs aged 3-6 years represented 17.39 per cent ($n = 4$), whereas the age group 1-3 years represented no cases. Presented in Table 2 and Fig. 2.

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Table 2. Age-wise incidence of mammary tumors in dogs ($n = 23$)

Sl. No.	Age of the dog	Total cases	Percentage (%)
1	1-3 years	00	00
2	3-6 years	04	17.39
3	6-9 years	07	30.43
4	9-12 years	12	52.17
Total		23	100

Breed-wise incidence of mammary tumors in dogs

The breed wise incidence of mammary tumor revealed the higher number of affected dogs were Dachshund ($n = 11$, 47.82%) followed by Golden retriever ($n = 4$, 17.39%), Labrador Retriever ($n = 3$, 13.07%), Non-Descript ($n = 2$, 8.69 %) and Pomeranian ($n = 2$, 8.69%), Great Dane, Rottweiler accounted for one each ($n = 1$, 4.34%). The breed-wise occurrence of mammary tumors in dogs is presented in the Table 3 and Fig. 3

Table 3. Breed-wise incidence of mammary tumors in dogs ($n = 23$)

Sl. No.	Breed of dog	Total number	Percentage (%)
1	Non-descript	02	8.69
2	Dachshund	11	47.82
3	Labrador Retriever	03	13.07
4	Golden Retriever	04	17.39
5	Pomeranian	02	8.69
6	Great Dane	01	4.34
		23	100

Gender-wise incidence of mammary tumor in dogs

Out of the 23 dogs diagnosed with mammary tumor, 100 per cent ($n = 23$) were females, while no males reported mammary tumor. The gender-wise distribution of mammary tumor cases is presented in Table 4.

Incidence according to site of occurrence

Total 27 mammary tumor masses were found in 23 cases of canine mammary tumors. Among them 19 cases (82.60 %) had only one gland involvement while 4 cases (17.39 %) had two gland involvement. The higher incidence of mammary gland tumor was noticed in inguinal glands (13 cases, 48.14 %) followed by caudal abdominal glands (8 cases, 29.62%). The cranial abdominal glands were (4 cases, 14.81%). Cranial and caudal thoracic glands were equally affected (2 cases and 3.78% in each). The lowest incidence of mammary tumors was observed in cranial and caudal thoracic glands. The above data is presented in Table 5 Fig 4.

Reproductive status of patients

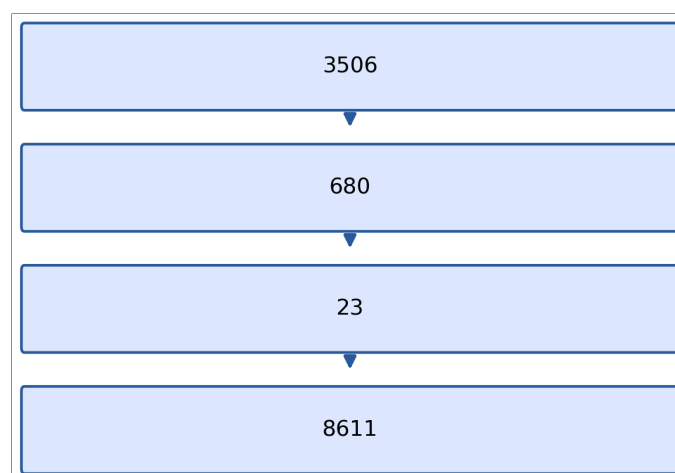
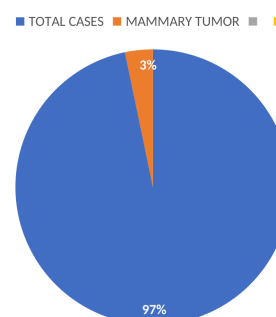
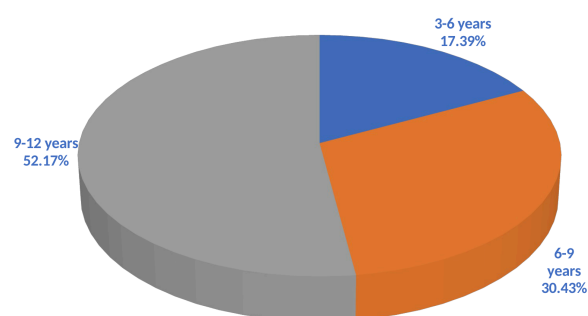
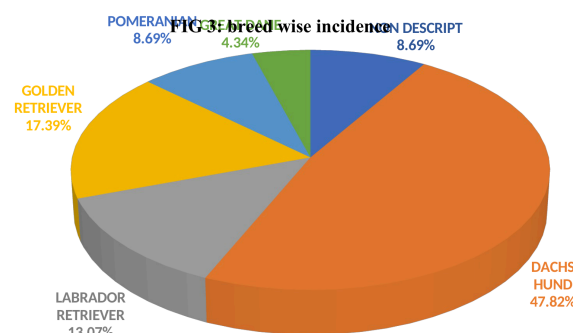
Out of 23 cases, only two cases were neutered and remaining 21 cases were intact suggested that the intact bitches were more at risk of development of mammary tumors due to hormonal dependency of proliferating neoplastic cells.

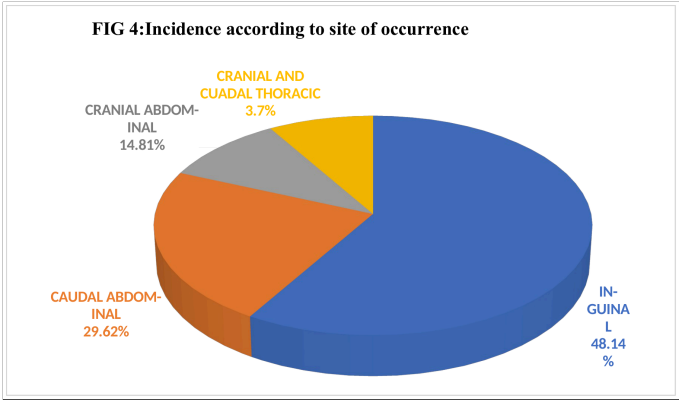
Table 4. Gender-wise incidence of mammary tumor in dogs ($n = 23$)

Sl. No.	Gender of dog	Total number	Percentage (%)
1	Male	00	00
2	Female	23	100
Total		23	100

Case presented to Dept
Canine case presented
Canine mammary tumor cases

Case presented to VCC

**INCIDENCE OF MAMMARY TUMORS****FIG 1: INCIDENCE OF MAMMARY TUMORS****FIG 2: age wise incidence****FIG 3: Breed wise incidence**



Discussion

Incidence of mammary gland tumor in canines

The present clinical study was conducted on clinical cases of canines presented to the Department of Veterinary Surgery and Radiology, Veterinary college, Hassan during twelve months period (September 2025 to August 2026). The study’s results were thoroughly analyzed and reported.

Table 5. Incidence according to site of occurrence (n = 27)

Sl. No.	Mammary Gland Affected	Total number	Percentage (%)
1	Cranial thoracic	01	3.7
2	Caudal thoracic	01	3.7
3	Cranial abdominal	04	14.81
4	Caudal abdominal	08	29.62
5	Inguinal	13	48.14
		27	100

The findings of the present study are consistent with previous reports indicating that mammary gland tumours are among the most frequently occurring neoplasms in female dogs. Marconato *et al.* (2008) [1], Gupta *et al.* (2012) and Biondi *et al.* (2014) [2] similarly reported a high occurrence of mammary tumours and carcinomas in female dogs. Furthermore, Vascellari *et al.* (2016) [3] identified mammary gland tumours as the most common type of tumour in intact female dogs, accounting for approximately 54 per cent of all tumours diagnosed in female dogs. These reports support the high incidence of mammary tumours observed in the present study.

Age-wise incidence

The present study revealed a higher incidence of mammary tumours in older dogs, with the highest occurrence observed in the 9–12 years age group (52.17%), followed by dogs aged 6–9 years (30.43%). The findings are in agreement with Pawar *et al.* (2015) [4], Campos *et al.* (2012) [5] and Mondal *et al.* (2023) [6], who also reported a higher occurrence of mammary tumours and mammary carcinomas in middle-aged to older female dogs. The increased incidence with advancing age might be attributed to prolonged hormonal exposure and the cumulative accumulation of somatic mutations, which may contribute to neoplastic transformation of the mammary tissue.

Breed wise incidence

The breed-wise analysis in the present study revealed the highest incidence of mammary tumours in Dachshunds (47.82%), followed by Golden Retrievers and Labrador Retrievers. The higher occurrence observed in Dachshunds is in agreement with previous reports indicating a breed predisposition to canine mammary tumours. Moe (2001) reported breed-specific variation in the incidence of mammary tumours, while Dobson (2013) [7] identified Dachshunds among the breeds predisposed to mammary tumours. Similarly, Varney *et al.*

(2023) [8] reported increased odds of mammary tumour development in Dachshunds, as well as in Pomeranians and Labrador Retrievers. These findings support the breed-related variation observed in the present study and suggest a possible role of genetic predisposition in the development of mammary tumours.

Gender wise incidence

The present study revealed that all dogs diagnosed with mammary tumours were females (100%), with no cases recorded in males. This finding is in agreement with Devarathnam *et al.* (2021) [9], who reported that all the cases of canine mammary tumours in their study occurred in female dogs. Similarly, Patel *et al.* (2019) [10] observed that most cases of canine mammary tumours occurred in intact female dogs, with only one case reported in a male dog. The findings are also in accordance with Kavya *et al.* (2019) [11], who reported a marked predominance of mammary tumours in female dogs. The predominance of mammary tumours in females may be attributed to the influence of ovarian hormones on the development of mammary neoplasia.

Incidence according to site of occurrence

The present study revealed that the majority of dogs had involvement of a single mammary gland (82.60%), whereas two gland involvement was observed in 17.39 per cent of the cases. The highest incidence of mammary tumours was observed in the inguinal glands (48.14%), followed by the caudal abdominal glands (29.62%). These findings are in accordance with Pankaj *et al.* (2014) [12] and Devarathnam *et al.* (2021) [9], who also reported a higher occurrence of mammary tumours in the caudal mammary glands, particularly the inguinal and caudal abdominal glands. The greater involvement of these glands may be associated with their relatively larger mammary tissue mass and greater susceptibility to hormonal influences.

Reproductive status of patients

In the present study, the majority of dogs affected with mammary tumours were intact (21/23), whereas only two dogs were neutered. This finding is in agreement with Zheng *et al.* (2022) [13], Zuchi *et al.* (2021) [14] and Abdullah *et al.* (2014) [15], who also reported a higher occurrence of mammary tumours in intact female dogs compared with neutered dogs. The increased occurrence in intact bitches could be attributed to prolonged exposure of mammary tissue to ovarian hormones, particularly oestrogen and progesterone, which play an important role in mammary tumour development. Thus, the present findings further support the association between intact reproductive status and an increased risk of mammary tumour development.

Conclusion

Canine mammary gland tumours most commonly occur between 8 to 12 years of age groups with Dachshund being commonly affected breed. CMGT occur most frequently found in non-spayed female dogs. The inguinal pair of mammary glands were more prone to develop CMGT.

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