



## Prevalence of the most common Surgical Affections of Canine Genital System in Egypt

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### Abstract

The present study was conducted over from September 2013 to January 2015. The affected animals were collected from the surgery clinic of Faculty of Veterinary Medicine, Cairo University and different pet clinics in Tanta, Cairo and Giza governorates. The total number of examined animals along the present study was (3340) dogs suffered from different affections. The ages were ranged from two months to (15) years old and they were of different breeds and sex. Surgical affections of the genital system were recorded in 227 dogs representing 6.8% out of total admitted dogs. The higher incidence was seen in female dogs (7.6%) than male dogs (6.1%). The most of the affected dogs were kept outdoors (203) and only (24) dogs kept indoors. The highest incidence among surgical affections of male genital system in dogs was recorded in scrotal and testicular affections (47.9%) followed by penile and preputial affections (46.1%) then the prostatic affections (6%). The diagnosed scrotal and testicular affections were cryptorchidism, scrotal dermatitis, testicular hypoplasia, orchitis and testicular trauma. The common breeds affected with male genital affections were German shepherd, Golden Retriever, Rottweiler, Pit-bull and Griffon. The penile and preputial surgical affections were transmissible venereal tumor (T.V.T), balanoposthitis, paraphimosis, penile and preputial wounds, phimosis, urethral prolapsed and absence of preputial opening. The diagnosed surgical affections of the prostate in dogs were prostatitis, benign prostatic hyperplasia, prostatic cyst, prostatic abscesses and prostatic neoplasm. The highest incidence among surgical affections of female genital system in dogs was recorded in vulva and vagina affections (67.3%) followed by uterine and ovarian affections (15%) then mammary gland affections (17.7). The common breeds were German shepherd, Rottweiler, Boxer, Pit pull and Griffon. The diagnosed conditions were recorded.

key words: Canine Genitalia, cryptorchidism, scrotal dermatitis, testicular hypoplasia, orchitis, testicular traum.  
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### Introduction

Pet ownership appeared as an interaction between economical, social, emotional, culture and religious aspects (Senna, 2001). So this constituted a base to study the common surgical affections of genital systems in dogs and cats (Alves, Matos,

Reichmann and Dominguez, 2005).

Many literatures documented different anatomical aspect of genital system in dogs (Evans and Christensen, 2007). Genital disorders such as anatomic abnormalities, hormonal disturbances, or disorders of infectious etiology can reduce fertility or prevent bitches from breeding or to conceive.

failure to mate, missed conception or premature termination of pregnancy (Okkens, Bevers, Dielman, van Haafen and van Sluij, 1992). In male dogs, there was scarce information available concerning these problems in the canine female population.

Classifications of genital system in male dog were tabulated by some authors (Boothe, 2003, Valerla, et al., 2007 and Smith, 2008). Some literatures were published dealing with surgical affections of female genital system in dogs (Wykes and Olson, 2003, Zatloukal, et al., 2005; Schlafer and Gifford, 2008; Vince, et al., 2011 and Fossum, 2013). Boothe, (2003), Valerla, et al. (2007), Smith, (2008) and Fossum, (2013) classified that the surgical affections of male genital system in dogs as congenital and acquired. Congenital affections of the testes were cryptorchidism and testicular hypoplasia, and congenital affections of the penis and prepuce were absence of preputial opening, phimosis and paraphimosis. Concannon, et al. (2005), Smith, (2008) and Johson, (2014) demonstrated that the acquired affections of the dog testes as orchitis, scrotal dermatitis, Sertoli cell tumor (SCT), testicular biting, and scrotal hyperkeratosis. Acquired affections of the penis and prepuce were T.V.T, balanoposthitis, paraphimosis, phimosis penile & preputial wounds, and urethral prolapse. Acquired affections of the prostate gland were benign prostatic hyperplasia, prostatitis, prostatic abscesses, prostatic cyst and prostatic neoplasm.

Many literatures were published dealing with surgical affections of female genital system in dogs (Wykes and Olson, 2003; Zatloukal, et al., 2005; Schlafer and Gifford, 2008; Vince, et al., 2011 and Fossum, 2012). Surgical affections of female genital system in dogs were classified into congenital and acquired. Congenital affections were ovarian cyst, persist hymen and supernumerary gland (Nelson and Couto, 2003; Wykes and Olson, 2003 and Fossum, 2012). While, acquired affections were vaginal hyperplasia, vaginal prolapse, T.V.T, vulvar

wound, vaginal polyps and vaginal neoplasm (Purswell, 2005; Gouletsou et al., 2009 and Harpreet Kour et al., 2011), pyometra, dystocia, uterine haematoma, uterine tumor, uterine prolapse and uterine torsion (Miller et al., 2003; Hagman et al., 2006 and Crane and Kutzeler, 2015), mammary neoplasm, mammary abscesses, and mastitis (Goldschmidt et al., 2011; Salgado and Cassali, 2013 and Breno Souza Salgado et al., 2014).

The aim of the present study was to describe the incidence of the most common surgical affections of genital system in male and female dogs in Egypt.

### Material and methods

This study was conducted from September, 2013 to January, 2015. The affected animals were collected from the surgery clinic of Faculty of Veterinary Medicine, Cairo University and different pet clinics in Tanta, Cairo and Giza governorates. The total number of examined animals along the present study was (3340) dogs suffered from different surgical affections. Each affected animal was thoroughly examined and all collected data were put on record. To confirm preliminary diagnosis, some diagnostic investigations were carried out. These investigations were included; radiological examination, ultrasound scanning, laboratory investigations, microbiological examination, histopathological examination and cytological examinations were performed.

Radiological examination was done by (X-ray unit) <sup>I</sup> of Department of Surgery, Anesthesiology and Radiology, Cairo University. Another X-ray unit (Prima, Fuji) <sup>II</sup> was used for diagnosis in private pet clinics. Ultrasonographic imaging was done by (TOSHIBA) <sup>III</sup> device of Department of Surgery, Anesthesiology and Radiology, Cairo University. Another two devices, (BELSON) <sup>IV</sup> and (MINDRAY) <sup>V</sup> from different pet clinics were used.

**Results**

The total number of examined animals along the present study was (3340) dogs suffered from different affections. The

ages of the affected animals were ranging from two months to (15) years old and they were of different breeds and sex. (Table,1).

Table (1): Locations of the total admitted and genital system affected cases and their percentages over a period starting from September 2013 until January 2015.

Locations	Dogs				
	Male dogs	Female dogs	Other	Total	
Surgery clinic Faculty Vet. Med. Cairo Uni.	Total admitted cases	762	343	3	1108
	Genital system affected cases	17	13	3	33
	Percentage	2.2%	3.8%	100%	
Clinic in Gharbia governorate	Total admitted cases	833	765	-	1598
	Genital system affected cases	71	67	-	138
	Percentage	8.5%	8.8%	-	8.6%
Clinic in Cairo governorate	Total admitted cases	337	297	-	634
	Genital system affected cases	29	27	-	61
	Percentage	8.6%	9.1%	-	9.6%
Total	Total admitted cases	1932	1405	3	3340
	Genital system affected cases	117	107	3	227
	Percentage	6.1%	7.6%	100%	6.8%

I (FISCHER), 1985, made in JAPAN.

II (FCR) Prima, Fuji, 2000, made in JAPAN.

III (BELSON), 2011, made in China.

IV (TOSHIBA), 2004, made in JAPAN.

V (MINDRAY) DP 2010.

Table (2): Surgical affections of male genital system in dogs.

Affected organs	No. of affected animals	% to the total affected male dog (117)	% to the total affected dogs (227)	Surgical affections	No.	% to the regional affected no. dogs	% to the affected males (117)	% to the total affected dogs (227)
Scrotal and Testicular affections	56	47.9%	24.7%	Cryptorchidism	38	67.9%	32.5%	16.7%
				Scrotal dermatitis	12	21.5%	10.2%	5.3%
				Testicular hypoplasia	3	5.4%	2.6%	1.3%
				Orchitis	1	1.7%	0.8%	0.4%
				Testicular biting wounds	2	3.6%	1.7%	0.9%
Penile and preputial affections	54	46.1%	23.8%	T.V.T	37	68.4%	31.6%	16.3%
				Balanoposithitis	10	18.51%	8.5%	4.4%
				Paraphimosis	2	3.7%	1.7%	0.9%
				Penile and preputial wounds	2	3.7%	1.7%	0.9%
				Phimosis	2	3.7%	1.7%	0.9%
				Urethral prolapsed	1	1.9%	0.9%	0.4%
Prostatic affections	7	6%	3.1%	Prostatitis	1	14.3%	0.9%	0.4%
				Benign prostatic hyperplasia	1	14.3%	0.9%	0.4%
				Prostatic cyst	2	28.6%	1.7%	0.9%

				Prostatic abscesses	2	28.6%	1.7%	0.9%
				Prostatic neoplasm	1	14.2%	0.8%	0.4%
Total	117	100%	51.5%					

The total number of dogs suffered from surgical affections of genital system was (227) representing (6.8%) out of the total admitted dogs (3340). The distribution of these affected cases between males and female and its different percentages was illustrated in (table,1).

The breeds of affected dogs were German shepherd (125), Rottweiler (57), Pit pull (16), Boxers (two), Great Dan (two), Golden retriever (16), French mastiff (one), Santa Bernard (one), Labrador (one) and Toy breeds like Griffons(five) and Yorkshire (one).

The outdoors housing systems for (203) dogs was garden, roof and farms. Twenty -four dogs were kept indoors.

Surgical affections of male dogs were classified anatomically into: scrotal and testicular affections, penile and preputial and prostatic problems and represented 56, 54 and seven cases; respectively.

The diagnosed scrotal and testicular affections were cryptorchidism (38 cases), scrotal dermatitis (12 cases), testicular hypoplasia (3 cases), orchitis (one case) and testicular trauma (2 cases). The mean ages of these dogs were 9 months.

The penile and preputial surgical affections were transmissible venereal tumor (T.V.T), balanoposithitis, paraphimosis, Penile and preputial wounds, phimosis, urethral prolapsed and absence of preputial opening.

The diagnosed surgical affections of the prostate in dogs were prostatitis, benign prostatic hyperplasia, prostatic cyst, prostatic abscesses and prostatic neoplasm (Table, 2). The numbers of female dogs suffered from genital surgical affections were (107). This represented (47.1%)

of the total genital affected dogs. The surgical affections of female genital system were included vaginal and vulvar, uterine and ovarian and mammary gland affections. The affection was diagnosed in (39) German shepherd dogs, (15) Rottweiler, a Boxer, a Pit pull and a Griffon (Table, 3).

The diagnosed surgical affections of the vulva and vagina were vaginal and vulvar neoplasia (T.V.T), vaginal hyperplasia, persist hymen, vulvar wound, vaginal polyps and vaginal sinus. The average age of affected female dogs with vulvar and vaginal transmissible venereal tumor (T.V.T) was one year to three years old.

Uterine and ovarian affections were pyometra, dystocia, uterine hemorrhage, uterine tumor, uterine prolapse, uterine torsion and ovarian cyst. The age of animals affected with pyometra ranged between (two years to five years old). The affections were German shepherd (three), Great Dane (one) and Griffon (one). Four animals suffered from open pyometra and one suffered from closed one. The affected female dogs with open pyometra suffered from purulent discharge from vagina, depression, anorexia, thirsty and vomiting. The affected female dog with closed pyometra was represented by enlarged drooped abdomen, dehydration, and anorexia. The temperature was 40.5°C then dropped to 37°C.

The surgical affections of mammary gland in dogs were mammary neoplasms, mammary abscesses, mastitis, supernumerary gland and mammary papilloma. Dog mammary neoplasms were recorded in (ten) animals. Their ages were ranged from 6- 15 years and their weights were ranged from 10 - 35 kg. Six females German shepherd dogs, (two) females Griffon and (two) female Rottweiler were diagnosed (Table, 3).

junction. Both testes remained undescended in two cases. In other case they appeared from vagina. Hormonal assay revealed that estrogen was (17pg/ml) and testosterone (1ng/ml).

Table (3): Surgical genital affections of female dogs.

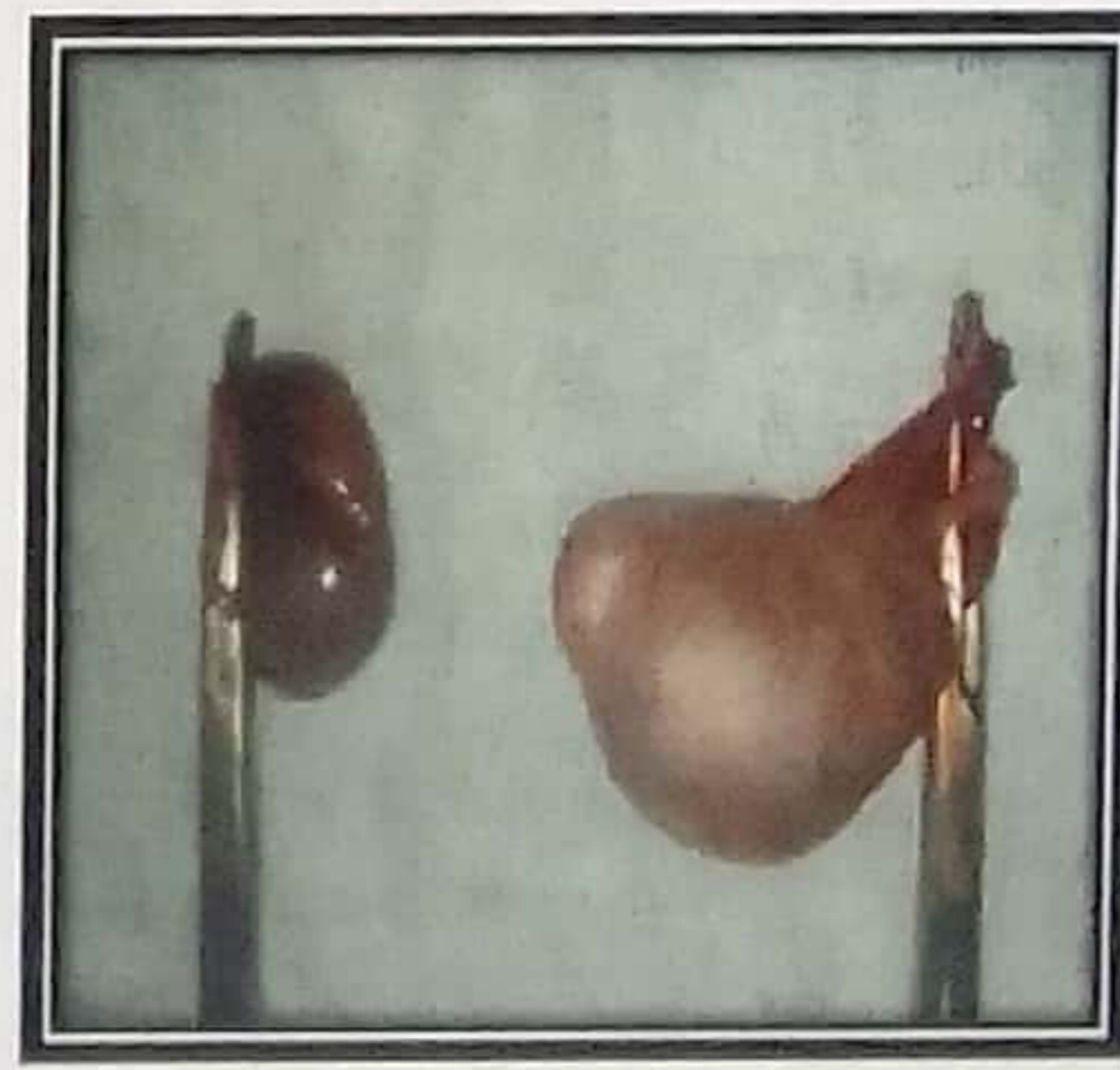
Affected organs	No. of affected animals	% to the total affected female dogs (107)	% to the total affected dogs (227)	Surgical affections	No.	% to the regional affected no. dogs	% to the affected females (107)	% to the total affected dogs (227)
Vaginal and vulvar affections	72	67.3%	31.7%	Vaginal and vulvar neoplasia (T.V.T)	57	79.2%	53.3%	25.1%
				Vaginal hyperplasia	10	13.8%	9.3%	4.4%
				Vulvar wound	2	2.8%	1.9%	0.9%
				Persist hymen	1	1.4%	0.9%	0.4%
				Vaginal polyps	1	1.4%	0.9%	0.4%
				Vaginal sinus	1	1.4%	0.9%	0.4%
Uterine and ovarian affections	16	15%	7%	Pyometra	5	31.3%	4.7%	2.2%
				Dystocia	5	31.3%	4.7%	2.2%
				Uterine hemorrhage	2	12.5%	1.7%	0.9%
				Uterine tumor	1	6.3%	0.9%	0.4%
				Uterine prolapse	1	6.2%	0.9%	0.4%
				Uterine torsion	1	6.2%	0.9%	0.4%
				Ovarian cyst	1	6.2%	0.9%	0.5%
Mammary gland affections	19	17.7%	8.4 %	Mammary neoplasm	10	52.6%	9.3%	4.4%
				Mammary abscesses	3	15.8%	2.8%	1.3%
				Mastitis	3	15.78%	2.8%	1.3%
				Supernumerary gland	2	10.5%	1.9%	0.9%
				Mammary papilloma	1	5.3%	0.9%	0.4%
Total	107	100%	47.1%					



(A)



(B)



(C)

Fig. (1): A) Right unilateral cryptorchid testis, (B) surgical castration of intra-abdominal cryptorchid testis, (C) Left atrophied intra-abdominal cryptorchid testis in comparison with normal right one.



(A)



(B)



(C)



(D)

Fig. (2): A) Transmissible venereal disease (T.V.T) in male dog, (B) Paraphimosis in dog, (C) Phimosis in dog, (D) Urethral prolapsed in male dog.



(A)



(B)

Fig., (3): (A) T.V.T in female dog and (B) Vaginal hyperplasia in female dog.

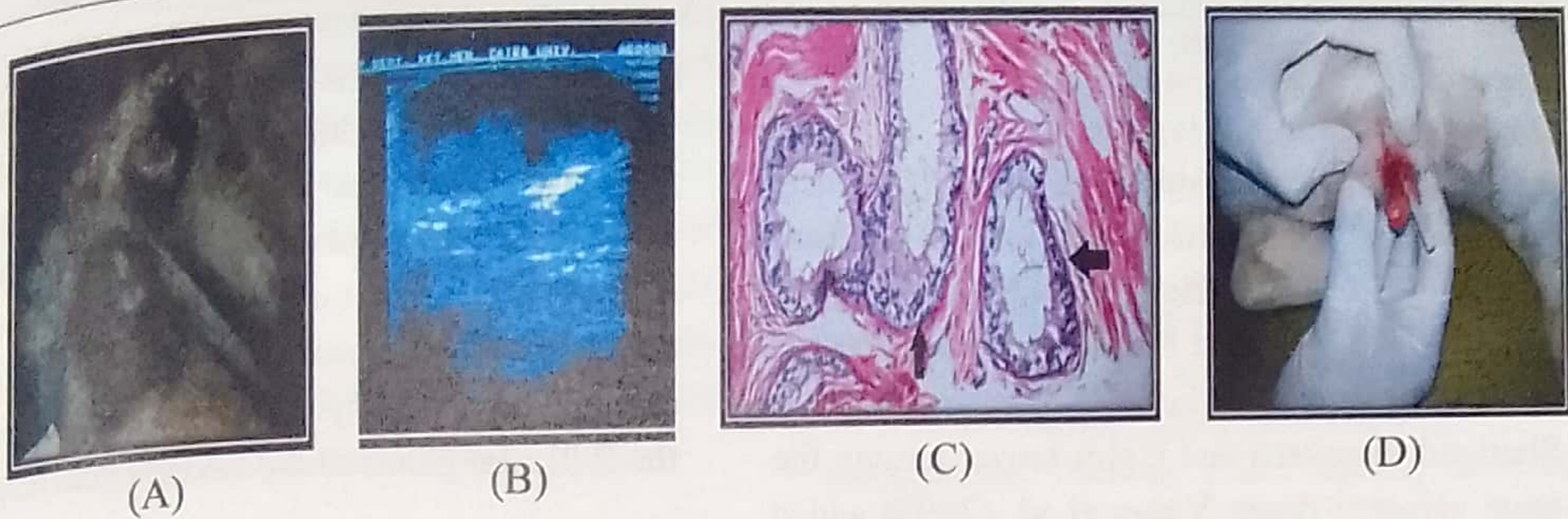


Fig. (4): A) Mammary tumor in female dog, (B) B-mode ultrasound sagittal scans of 15years old Griffon female dog suffered from mammary neoplasm which was recorded ultrasonographically as mixed echopattern of mammary tissue (anechoic and hyperechoic within the hypoechoic mammary parenchyma) which indicated sings of malignancy, (C) Mammary gland showed fibro adenoma some ductal lining epithelium had some hyper plastic proliferation (arrow) (H&E×200) and (D) Male pseudohermaphroditism.

### Discussion

The percentage of the genital system affected cases were higher in Gharbia and Cairo governorates clinics (10% and 8.9%) respectively than surgery clinic of veterinary medicine (2.9%) which indicated that the percentage in the private clinic was more accurate than these of the surgery department clinic as it calculated from total number of different cases. While in surgery clinic, it considered a percentage of genital system surgical affections out of total surgical affected case only.

Surgical genital system affection showed the higher incidence (with exception of other sex) in female (7.6%) than male dogs (6.1%). To our knowledge no available literatures were recorded on the percentage of surgical genital system affections incidence among dogs. As all researches were concerning with incidence of each surgical affections of the organs from the genital system affected cases.

The highest incidence among surgical affections of male genital system in dogs was recorded in scrotal and testicular affections (47.9%) followed by penile and preputial

affections (46.1%) then the prostatic affections (6%).

In the present study, cryptorchidism was recorded in (32.5%) from the total affected male dogs. This results disagreed with **Micelsen and Memon, 1995; Shulz et al., 1996; Acland 1998; Nielen et al., 2001; Reif and Brodey, 2005 and White, (2005)** they reported the incidence of cryptorchidism ranges between 0.8% and 15%. **Shulz et al., (1996) and Reif and Brodey, (2005)** stated that cryptorchidism incidence were 77.5% in pure breed dog and 22.5% in mongrels. From the previous statement, the high incidence of cryptorchidism may be due to unexperted selection of dog breeders of pure blood line as **Johnston et al., (2001), Memon and Tibary, (2001) and Reif and Brodey, (2005)** said that it was congenital or inherited disease (Fig., 1).

The most common breeds affected with cryptorchidism in the present study were German shepherd, Golden retriever, Rottweiler, Pit-bull and Griffon. **Nelson and Couto (1994), Johnston et al., (2001), Miller, Van Lue and Rawlings, (2004) and Ronald, (2011)** observed that the top ten breeds with increased incidence of cryptorchidism were Toy

Rawlings, (2004) and Ronald, (2011) observed that the top ten breeds with increased incidence of cryptorchidism were Toy poodles, Pomeranian, Yorkshire terrier, Miniature dachshund, Cairn terrier, Chihuahua, Maltese, Boxer, Pekingese, and English bulldog German Spitz, miniature Schnauzer, Pekinese, Maltese, Shetland Shepherd and Cairn terrier among the most affected dogs. Yates et al. (2003) added that in their study a frequent occurrence of cryptorchism in German shepherds, Staffordshire bullterriers and Boxers. There reported were contrary our findings in the present study.

In the present work, transmissible venereal tumor (T.V.T), was recorded in (31.6%) from the total affected male dogs. The results which agree with Rogers, (1997), Das and Das, (2000) and Mello Martins et al., (2005) they recorded the incidences of transmissible venereal tumor (T.V.T), 11% in Kenya, 32% in Sri Lanka, 10% in Marry land (USA) and 23.5 to 28.6% in India. It may be due to the transmissible venereal tumor (T.V.T), need worm environment to occur. These results were also agreed with other findings Amaral et al., (2007), Gaspar et al., (2010), Ajala et al., (2012) and Amaralavc et al., (2012) they attributed to the highest incidence in tropical and sub-tropical areas (Fig., 2).

The highest incidences among surgical affections of female genital system in dogs was recorded in vaginal and vulva affections (67.3%) followed by uterine and ovarian affections (15%) then mammary gland affections (17.7%)

In the present results, vaginal hyperplasia was recorded in (two) German shepherd dogs, (six) Pit pull, (one) Golden retriever and (one) Great Dane dogs. Their age ranged from nine

months to 15 months. The results which agree with Wykes, (1986), Schaeffers-Okkens, (2001) and Rani et al., (2004) they reported that vaginal hyperplasia was most frequently seen during the first estrous period and usually spontaneously regresses during the luteal phase and more commonly in young animals and in the follicular phase of the sexual cycle (Fig., 3).

From the obtained results, the most common breed which suffered from vaginal hyperplasia was pit pull. The same findings reported Wykes, (1986), Schaeffers-Okkens, (2001), Rani et al., (2004) and Suresh Kumar et al., (2011) they reported that the brachycephalic breeds such as the Boxer, Bull Mastiff and the Mastino Napolitano breeds more frequent affected. However, it had also been reported to be seen in Dalmatians and Dobermans.

Regarding the uterine and ovarian affection, in the present study the highest incidence were recorded in pyometra and dystocia representing 4.7% out of total affected female dog. The results agreed with Smith, (2006) who recorded that the incidence of pyometra was very high in middle aged and multiparous bitches. Contrary to this findings Gill, (2002) mentioned that frequency of dystocia 9.1% in Golden Retrievers, 85.7% in Pekingese, and Caesarian sections from 5.9% in Rough Collies to 60% in Pekingese. Eneroth et al., (2000) reported that the frequency of Caesarian sections in Boston Terriers was 62%, and in French Bulldogs 43%. Bergström et al., (2006) recorded that the incidence of dystocia to be around 16%.

In the present study, dystocia was recorded in five female dogs. All cases were treated with caesarian sections except in one female Your shier dog which need



ovariohysterectomy (OHE) as uterus were suffered from uterine laceration and ulcers, that confirmed by histopathological. The results which agree with Darvelid and Linde-Forsberg, (1994), Eneroth et al., (1999), Linde, (2001), Gill, (2002) and Catharina and Gunilla, (2007) who recorded that caesarian sections was the best surgical treatment in dogs which suffered from dystocia rather than hormonal interference.

From the obtained data, the most common surgical affection of the mammary gland was mammary neoplasm representing 9.3% in dogs and out of total affected female dogs. The findings agreed with Misdorp and van der Heul, (2002), Sanchez et al., (2005), Amorim et al., (2006), McAloose et al., (2007), Murphy, (2008), Pliego et al., (2008), and Fusaro et al., (2009) they found that the risk of developing mammary gland tumors was 0.05% if the bitch was spayed prior to the first estrous cycle. The incidence of neoplasia increased to 8% if the bitch was spayed prior the second estrous cycle and to 26% if spayed after the second estrous cycle. Egypt spaying in young dogs was less common than in other countries. This could be attributed to the role of hormones in mammary neoplasm incidence in addition to use of contraceptives as chemical sterilization of female cat recorded by owners (Fig., 4).

A retrospective studies in the present investigation revealed that the prevalence of the surgical genital system affections in dogs was 6.1% and 7.6% male and female dogs respectively. The highest incidence recorded was cryptorchidism in male dog 32.5% while in bitches was T.V.T 53.3%.

### References

Acland, M. H. (1998): Sistema reprodutor do macho. In: Carlton, W. W. & McGavin, M. D. Patologia veterinária especial de

Thompson. 2th ed. Artmed. Porto Alegre. p. 575-576.

Alves, M.; Matos, M.; Reichmann, M. and Dominguez, M. (2005): Estimation of dog and cat population in the state of Sao Paulo', Revista de Saude Publica 39(6), 1-7.

Amaral, A.S., Bassani-Silva, S., Ferreira, I., Fonseca, L.S., Andrade, F.H.E., and Gaspar, L.F.J. (2007): Cytomorphological characterization of transmissible canine venereal tumor. Rev Port Cien Vet.

Amaralavc, Oliveir, R.F., Apsm, S., Luzle, B., and Anafj, S. (2012): Tumor venéreo transmissível intraocular em cão: relato de caso. Vet. Zootec, 2012, 19, 779-85.

Amorim, F.V.; Souza, H.J.M. and Ferreira, A.M.R. (2006): Clinical, cytological and histopathological evaluation of mammary masses in cats from Rio de Janeiro, Brazil. J. Feline Med. Surg., 8, p.379-388.

Barsanti, J.A. (2006): Genitourinary infections. In: GREENE, CE. Infectious diseases of the dog and cat. 3th Ed., St Louis: Saunders Elsevier, cap. 91, p.935-61.

Bergström, A.; Nödtvedt, A.; Lagerstedt, A.S. and Egenvall, A. (2006): Incidence and breed predilection for dystocia and risk factors for Caesarian section in a Swedish population of insured dogs. Vet. Surgery; 35:786-791. doi: 10.1111/j.1532-950X.2006.00223.x. [PubMed].

Boothe, H.W. (2003): Penis, prepuce, and scrotum, in Slatter D (ed): Textbook of Small Animal Surgery, ed 3. Philadelphia, WB Saunders, 2003, pp 1532-1541.

Breno, S.S.; Lidianne, N.M.; Geovanni, D.C.; Noeme, S.R. and Fátima, G. (2014): Rare Histotypes of Canine Mammary Neoplasms. Published licensee Source J. 1 (1).

Catharina, L.F. and Gunilla, P. (2007): A survey of dystocia in the Boxer breed. Acta Vet Scand. 2007; 49(1): 8.online Mar 21, 2007.

Concannon, P.W.; England, G.; Verstegen, J. and Linde F.C. (2005): Recent Advances in Small Animal Reproduction. Internat. Vete. Inf. Service, Ithaca NY (www.ivis.org).

- Crane, B. and Kutzler, M.A. (2015):** Mechanisms of Disease in Small Animal Surgery, 3rd Ed., **Bojrab M.J. and Monnet E. (Eds.)**. Publisher: Teton New Media, Jackson, WY, USA ([www.tetonnm.com/](http://www.tetonnm.com/)). Internet Publisher: Internat. Vet. Inf. Service, Ithaca NY ([www.ivis.org](http://www.ivis.org)), Last updated: 19-Jan-2015; A5676.0115.
- Darvelid, A.W. and Linde, F. C. (1994):** Dystocia in the bitch: A retrospective study of 182 cases. *J. of Small Animal Practice*. 35:402-407.
- Eneroth, A.; Linde, F.C.; Uhlhorn, M. and Hall, M. (1999):** Radiographic pelvimetry for assessment of dystocia in bitches: a clinical study in two terrier breeds. *J. of Small Animal Practice*. 1999; 40:257-264. [PubMed].
- Eneroth, A.; Uhlhorn, M.; Swensson, L.; Linde, F.C. and Hall, M. (2000):** Valpningsproblem hos fransk bulldogg, skotsk terrier & bostonterrier (Dystocia in the French Bulldog, Scottish terrier and Boston terrier) *Hundsport*; 112 (9) :38-41.
- Evans, H.E. and Christensen, G.C. (2007):** *Millers Anatomy of the dog*, 4th Ed. W.B. Saunders, Philadelphia.
- Fossum, T.W. (2013):** Surgery of the genital and reproductive systems in small animal surgery, in Fossum TW (eds.) 4th ed, Elsevier Mosby, Philadelphia, PP: 825.
- Fusaro, L.; Panarese, S. and Brunetti, B. (2009):** Quantitative analysis of telomerase in feline mammary tissues. *J. Vet. Diagn. Invest.* v.21, 369-373.
- Gaspar, L.F.J., Ferreira, L., Colodel, M.M., Brandão, C.V.S., and Rocha, N.S. (2010):** Spontaneous canine transmissible venereal tumor: cell morphology and influence on Pglycoprotein expression. *Turk. J. Vet. Anim. Sci.*, 34(3), 447-454.
- Gill, M.A. (2002):** PhD thesis. University of Sydney; Perinatal and late neonatal mortality in the dog.
- Goldschmidt, M.; Peña, L.; Rasotto, R. and Zapulli, V. (2011):** Classification and grading of canine mammary tumors. 48: 117-131.
- Gouletsou, P.G.; Galatos, A.D.; Apostolidis, K. and Sideri, A.I. (2009):** Vaginal fold prolapse during the last third of pregnancy followed by normal parturition in a bitch. *Anim. Reprod. Sci.*, 112:371-376.
- Hagman, R.; Kindahl, H.; Fransson, B.A.; Bergstrom, A.; Holst, B.S. and Lagerstedt, A.S. (2006):** Differentiation between pyometra and cystic endometrial hyperplasia/mucometra in bitches by prostaglandin F2alpha metabolite analysis. *Theriogenology* 2006, 66:198-206.
- Harpreet, K.; Smita, F.H.; Gurmeet, S.; Jan, M.H. and Jasmeet, S. (2011):** Chronic vaginal prolapse in bitch and its management. *Indian Journal of Canine Practic.* Volume 3 Issue 2, December, 2011.
- Johnson, C.A. (2014):** Mechanisms of Disease in Small Animal Surgery, 3rd Ed., **Bojrab M.J. and Monnet E. (Eds.)**. Publisher: Teton New Media, Jackson, WY, USA ([www.tetonnm.com/](http://www.tetonnm.com/)). Internet Publisher: Internat. Vet. Inf. Service, Ithaca NY ([www.ivis.org](http://www.ivis.org)).
- Johnston, S.D.; Kustritz, M.V.R. and Olson, P.N.S. (2001):** Disorders of the feline uterus and uterine tubes (oviducts). In: *Canine and feline Theriogenology*, **Johnston SD, Kustritz MVR, Olson PNS (Eds.)**, W.B. Saunders Company, Philadelphia, 463-471.
- Johnston, S.D.; Root Kustritz, M.V. and Olson, P.N. (2001):** Sexual differentiation and normal anatomy of the dog. Sexual differentiation and normal anatomy of the tom cat. In: *Canine and Feline Theriogenology*, Philadelphia: WB Saunders, 275; 497.
- Linde, F.C. (2001):** Biology of Reproduction and Modern Reproductive Technology. In: **Ruvinsky A, Sampson J**, editor. *The Genetics of the Dog*. Oxon; CAB International Publishing; pp. 401-429.
- McAloose, D.; Munson, L. and Naydan, D.K. (2007):** Histologic features of mammary carcinomas in zoo felids treated with melengestrol acetate (MGA) contraceptives. *Vet Pathol.*, 44, p.320-326.

- Memon, M. and Tibary, A. (2001): Canine and Feline Cryptorchidism In: Recent Advances in Small Animal Reproduction, P. W. Concannon, G. England and J. Verstegen (Eds.) Publisher: Internat. Vet. Inf. Service (www.ivis.org), Ithaca, NY, USA.
- Mickelsen, D. W. and Memon, M. A. (1995): In: Stephen J. Ettincuer, Edward Feldman. Textbook of veterinary internal medicine. 4<sup>th</sup> Ed. WB. Saunders. Philadelphia. 1689p.
- Miller, A.; Ramos, V.J. and Dickerson, M. (2003): Uterine neoplasia in 12 cats. J Vet. Diagn Invest 15:575-522. PubMed.
- Miller, N.A.; Van Lue, S.J. and Rawlings, C.A. (2004): Use of laparoscopic-assisted cryptorchidectomy in dogs and cats". J. Am. Vet. Med. Assoc. 224 (6): 875-8, 865.
- Misdorp, W. and Van der Heul, R.O. (2002): Carcinosarcomas of the dogs. Vet. Pathol., v.17, p.53-57.
- Nelson, R. W. and Couto, C. G. (1994): Distúrbios do ênis, prepúcio e testículos. In: Fundamentos de medicina interna de pequenos animais. ed2. Koogan. Rio de Janeiro. P.513-517.
- Nielen, A.L.; Janss, L.L. and Knol, B.W. (2001): Heritability estimations of diseases, coat color, body weight, and height in a birth cohort of Boxers. Am J Vet Res 62:1198, 2001. - PubMed.
- Okkens, A.C.; Bevers, M.M.; Dielman, S.J.; van, H.B. and van Sluij, F.J. (1992): Fertility problems in the bitch. Animal Reproduction Science 28, 379-387.
- Pliego, C.M.; Ferreira, M.L.G. and Ferreira, A.M.R. (2008): Diagnostic quality of mammary nodes biopsy with Super-core II® needle of bitches. Cienc. Rural, v.38, p.2203-2209.
- Purswell, B.J. (2005): Vaginal disorders. In:Textbook of Veterinary Internal Medicine, 4<sup>th</sup> Ed., Ettinger, S.J. and Feldman, E.C.(Eds). W.B. Saunders, London. pp. 1686-1690.
- Rani, R.U.; Kathiresan, D. and Sivaseelan, S. (2004): Vaginal fold prolapse in a pregnant bitch and its surgical management. Indian Vet. J.,81: 1390-1391.
- Reif, J.S. and Brodey, R.S. (2005): The relationship between cryptorchidism and canine testicular neoplasia. JAVMA 1969; 155.
- Ronald, M.B. (2011): Cryptorchidism in Dogs and Cats by Saunders, an imprint of Elsevier Inc. All rights reserved.
- Salgado, B.S. and Cassali, G.D. (2013): Perspectives for improved and more accurate classification of canine mammary gland neoplasms. Vet Pathol 50: 347-348.
- Sanchez, J.; Buendia, A.J. and Vilafranca, A. (2005): Canines carcinosarcomas in the head. Vet. Pathol. v.42, p.828-838.
- Schaefers-Okkens, A.C. (2001): Recent Advances in Small Animal Reproduction. Eds. P.W. Concannon, G. England and J. Verstegen. Internat. Vet. Inf. Service (www.ivis.org), Ithaca, Fig. 1: The vaginal and rectal prolapse in the bitch NY, USA.
- Schlafer, D.H. and Gifford, A.T. (2008): Cystic endometrial hyperplasia, pseudo-placentational endometrial hyperplasia, and other cystic conditions of the canine and feline uterus. Theriogenology 2008; 349-358.
- Senna, N.A. (2001): Observations on some aspects of dogs and cats ownership: A new role for veterinarians. Egypt Vet Med Ass 61, no 3:199-216.
- Shulz, K.S.; Waldron, D.R.; Smith, M.M.; Henderson, R.A. and Howe, L.M. (1996): Inadvertent prostatectomy as a complication of cryptorchidectomy in four dogs. JAAHA; 32:211-214.
- Smith, F. O. (2006): Canine pyomtra. Theriogenology 66: 610-612.
- Smith, J. (2008): Canine prostatic disease, a review of anatomy, pathology, diagnosis and treatment; Theriogenology; 70:375-383.
- Sontasa, B.H.; Ozyogurtcub, H.; Gurelb, A. and Ekicia, H. (2009): Evaluation of clinical and pathological characteristics of 155 canines with mammary tumours: a retrospective study Arch Med Vet 41, 53-59.
- Valerla, A.; Grieco, D.; Elenariccardi, R.; Ancalungu, C.; Chiaragiudice, V. and Finazzi, M. (2007): Frequency of canine testicular tumors.

- Vince, S.B.; Zevrnja, A.; Beck, I.; Folonozic, D.; Geres, M.; Samardzija, J.; Grizel, J. and Dobranic, F. (2011): Unilateral segmental aplasia of the uterine horn in a gravid bitch- a case report. *vet.archiv* 81, 691-698.
- White, R.A.S. (2005): The male urogenital system. In: Williams JM, Niles JD (Ed.): BSAVA Manual of canine and feline abdominal surgery, Gloucester, pp. 270-297.
- Wykes, P.M. and Olson, P.N. (2003): Vagina, vestibule, and vulva. In: Slatter DH (Ed.). Text book of Small Animal Surgery. 3<sup>rd</sup> Ed. pp. 1502-1510, Saunders, Philadelphia.
- Wykes, P.M. (1986): Diseases of the vagina and vulva in the bitch 1986. In Current therapy in Theriogenology -to edited by David A. Morrow, WB saunders Company Philadelphia, 1<sup>st</sup> Ed., Pp 478-480.
- Yates, D.; Hayes, G.; Heffernan, M. and Beynon, R. (2003): Incidence of cryptorchidism in dogs and cats. *Vet Rec* 152: 502 – 504.
- Zatloukal, J.J.; Lorenz ova, F.; Tich, A.; Neas, H.; Kecova, P. and Kohout, A. (2005): Breed and Age as Risk Factors for Canine Mammary Tumours. *Acta Vet.* 74: 103-109.

### الملخص العربي

اجريت هذه الدراسة في الفترة ما بين شهر سبتمبر 2013 وحتى شهر يناير 2015. تم استقصاء الحيوانات المصابة من قسم الجراحة والتخدير والأشعة، كلية الطب البيطري بجامعة القاهرة. بالإضافة لبعض العيادات الخاصة بمحافظات الغربية، والقاهرة، والجيزة. وكان العدد الإجمالي للحيوانات (مختلفة الأنواع، والجنس) التي تم فحصها هو 4686، منها 3340 كلباً. وترواحت أعمار الكلاب ما بين شهرين وخمسة عشر عاماً. وكان العدد الإجمالي للحيوانات المصابة 227 كلباً. في هذه الدراسة تم تشخيص 227 كلباً وكلبة (بنسبة 6.6% من إجمالي الكلاب المفحوصة) يعانون من مشاكل بالجهاز التناسلي. سجلت أعلى نسبة في إصابات الجهاز التناسلي لذكور الكلاب بالخصيتين وكيس الصفن بنسبة 24.7% وإصابات القضيب والقلف بنسبة 23.8% وأخيراً إصابات غدة البروستاتا بنسبة 3.1% سجلت أعلى نسبة حدوث إصابات بالخصيتين وكيس الصفن في عدم نزول الخصية بنسبة 16.7%، التهابات جلدية بكيس الصفن بنسبة 5.3%، ضمور بالخصية بنسبة 1.3%، التهاب الخصية بنسبة 0.4% وأخيراً قضم الخصيتين بنسبة 0.9% كما سجلت إصابات متعددة بالقضيب والقلف كان أكثرهم حدوثاً أورام تناسلية بالقضيب والقلف بنسبة 16.3%، التهاب القضيب والقلف بنسبة 4.4%، خروج القضيب من القلف بنسبة 0.9%، خروج القضيب والقلف بنسبة 0.9%، عدم خروج القضيب والقلف بنسبة 0.9% وأخيراً الهابط الإحليلي بنسبة 0.4% سجلت إصابات متعددة بغدة البروستاتا بالكلاب ومنها التهاب البروستاتا بنسبة 0.4%، تضخم حميد بالبروستاتا بنسبة 0.4%، تكيس بروستاتي بنسبة 0.9% وأخيراً ورم بروستاتي بنسبة 0.4%. أما إناث الكلاب فكانت أعلى الإصابات الجراحية التناسلية موجودة في المهبل وشفتيه بنسبة 67.3%، وفي الرحم والمبايض بنسبة 15%، وفي الغدة الثديية بنسبة 17.7%. سجلت إصابات متعددة بالمهبل وشفتيه ومنها ورم تناسلي مهبلي بنسبة 25.1%، تضخم كمي مهبلي بنسبة 4.4%، جروح بالمهبل بنسبة 0.9%، وجود غشاء بكاري بنسبة 0.4%، زوائد لحمية مهبلية بنسبة 0.4% وأخيراً الجيب المهبلي بنسبة 0.4%. سجلت إصابات متعددة بالرحم و المبايض ومنها التهاب رحمي صديدي بنسبة 2.2%، عسر ولادة بنسبة 2.2%، نزف رحمي بنسبة 0.9%، ورم رحمي بنسبة 0.4%، الهبوط الرحمي بنسبة 0.4%، التواء رحمي بنسبة 0.4%، وتكيس مبيض بنسبة 0.4%. سجلت إصابات متعددة بالغدة الثديية ومنها ورم ثدي بنسبة 4.4%، وخراج ثدي بنسبة 1.3%، التهاب ثدي بنسبة 1.3%، غدد ثديية زائدة بنسبة 0.9%، ثم بثور ثديية بنسبة 0.4%. أعلى نسبة إصابات جراحية تناسلية سجلت في ذكور القطط كانت إصابات الخصيتين بنسبة 12.3% وإصابات القضيب بنسبة 2.6% من إجمالي القطط المصابة حيث كانت نسبة عدم نزول الخصيتين 10.6% ونسبة ضمور الخصيتين 1.7%. قد شكلت الإصابات الجراحية لرحم ومبايض القطط أعلى نسبة من الإصابات 75.2%، ثم إصابات الغدة الثديية (أورام الثدي) 9.7%. حيث كانت أعلى إصابة رحمية للقطط هي التهاب رحمي صديدي بنسبة 46.1%