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## Studies on occurrence of proximal femoral fractures in dogs

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### Abstract

The present survey study was conducted in Department of Veterinary Surgery and Radiology, Veterinary College, Hebbal, Bengaluru for a period of twelve months. The dogs with the complaint of limping on hindlimb were examined physically and clinically to access the patient's condition and localize the lesion. Further patients were subjected to radiographic examination to confirm the type of fracture. The femoral fractures in dogs were selected and classified according to region, age, breed, gender, limb involved and etiology.

**Keywords:** Dogs, long bone fractures, proximal femoral fractures and non-descript

### 1. Introduction

Long bone fractures are more common orthopaedic conditions among young dogs. Fractures are more frequent in hind limbs (64.29%) compared to forelimbs (35.71%). Among hind limb fractures in dogs most affected is the femur accounting for 81.81% (Henea *et al.*, 2020) [7]. The most common type of long bone fractures in dog includes femur and tibia representing 45 and 26 percent of fractures respectively (Ali, 2013) [1]. Fracture of the femur was reported to be the most common skeletal conditions affecting growing dogs (Tercanlioglu, and Sarierler, 2009) [12]. It was reported to be 20 percent of all fractures and 45-47 percent of all long bone fractures (DeCamp *et al.*, 2016) [4]. Fractures of the femoral proximal extremity comprised 19.7 percent (Elzomor *et al.*, 2014) [5]. Femur fractures are classified as proximal, femoral shaft and distal femoral fractures. Further proximal femoral fractures were classified as femoral head, femoral neck, trochanteric, intertrochanteric and subtrochanteric fractures (Johnson, 2013) [8]. Capital physeal fractures were more common in young animals and often go unrecognized due to improper diagnosis resulting in malunion or non-union and due to a short recording period.

### 2. Materials and Methods

The present survey study was carried out in Department of Veterinary Surgery and Radiology, Veterinary College, Hebbal, Bengaluru, for a period of twelve months (January 2022 to December 2022). The occurrence of femoral fractures in dogs was recorded irrespective of age, breed, and sex. The dogs presented with complaints of hindlimb lameness were further examined and radiographic examination was done to confirm the type of fracture. Recorded femoral fractures were classified according to different age group, sex, breed, limb involved, etiology and type of fracture. Occurrence of proximal femoral fractures was recorded and fracture types were further classified as capital physeal, subcapital, transcervical, basicervical, intertrochanteric and subtrochanteric fractures according to Daly (1978) [3] (Fig. 1).

### 3. Results and Discussion

A total of 49,600 cases were presented to the Veterinary College Hospital, Hebbal, Bengaluru, over a period of twelve months (from January 2022 to December 2022). Among these 13,761 cases were presented to the Department of Veterinary Surgery and Radiology. Out of which 9,959 cases were canine cases, among them 370 cases were fracture cases. Out of these, 135 dogs had femoral fractures accounting for 36.49 percent of all dog's fractures, whereas 235 (63.51%) dogs had other bone fractures.

According to the region of the femur, fractures were classified as proximal femoral fractures (n=30; 22.22%), diaphyseal fractures (n=72; 53.34%), and distal femoral fractures (n=33; 24.44%) (Fig. 2). These had left proximal femoral fractures in 53.34 percent (n=16) of the

cases and right proximal femoral fractures in 46.66 percent (n=14) of the cases. Similarly, Braden *et al.* (1995) [2] also recorded 25 percent of proximal femoral fractures among total femoral fractures.

Proximal femoral fractures were further classified and recorded as Capital physal (n=11, 36.66%), Subcapital (n=2, 6.66%), Transcervical (n=5, 16.67%), Basicervical (n=5, 16.67%), Intertrochanteric (n=3, 10%) and Subtrochanteric (n=4, 13.34%) fractures. Daly (1978) [3], also recorded highest occurrence of physal fractures followed by transcervical, basicervical, intertrochanteric and sub-capital. The highest cases of capital physal fractures may be due to feable physal attachment and stronger ligament attachment to the femoral head (Fig. 3).

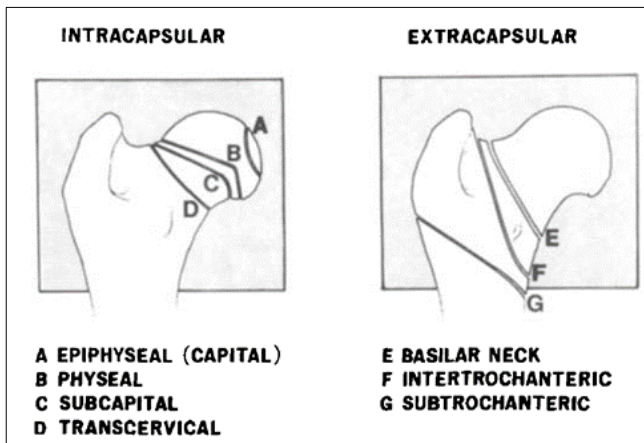


Fig 1: Classification of proximal femoral fracture (Daly, 1978)

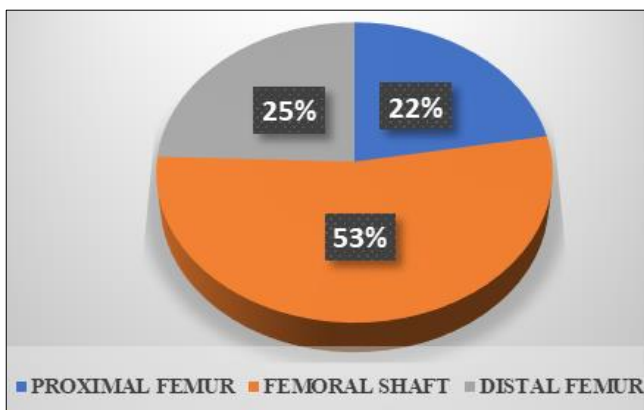


Fig 2: Region-wise fracture occurrence

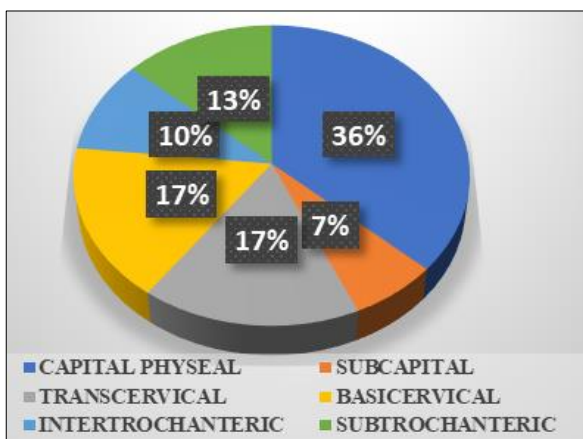


Fig 3: Occurrence of proximal femoral fractures

Gender-wise, out of 30 proximal femoral fracture instances, 30 percent (n=9) of the female cases and 70 percent (n=21) of the male cases were documented. The higher prevalence in males may be due to their hyperactivity, excitement, propensity to roam, and the desire of pet owners to keep male dogs as companion animals (Nilajagi, 2021 and Srinivas, 2022) [10, 11].

Considering the different age groups, the majority of the dogs in this study with proximal femoral fractures were under one year of age (n=18, 60%), 30 percent (n=9) of the dogs were between one to less than five years old, 3.33 percent (n=1) were between five to less than ten years old, and 6.67 percent (n=2) of the dogs were older than ten years (Fig. 4). The proximal femoral fractures occurred more commonly in dogs less than one year of age, this might be caused by playful behaviour, hyperactivity, immature skeletal structures, insufficient ossification, and a lack of experience in escaping from harm, trauma, and other possible dangers (Libardoni *et al.*, 2018 and Hayashi *et al.*, 2019) [9, 6].

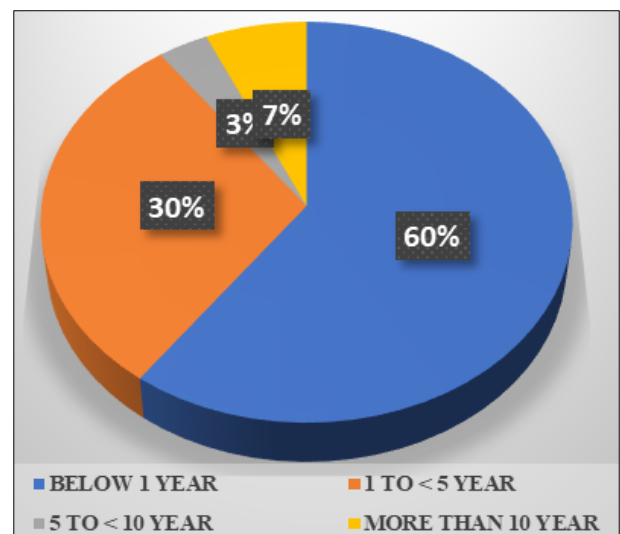
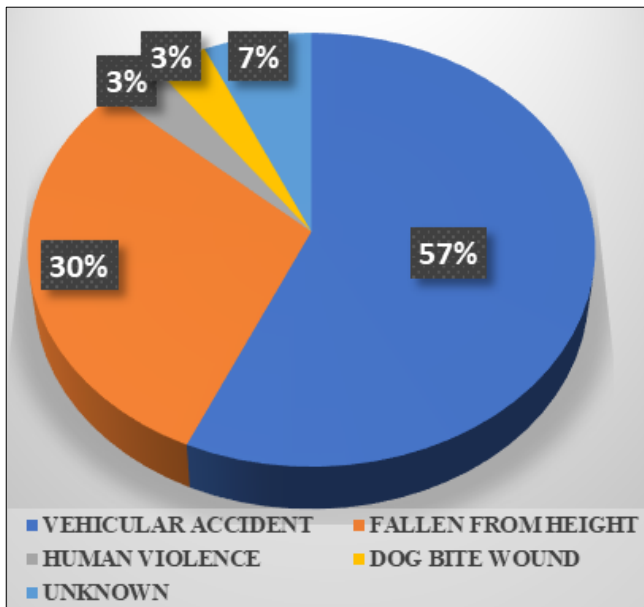


Fig 4: Age-wise occurrence of proximal femoral fractures

With regard to breed-wise occurrence, among the 30 proximal femoral fractures, the Non-descript breeds had the highest incidence (n=17, 56.67%), followed by Pug (n=3, 10%), Rottweiler (n=3, 10%), and Doberman (n=2, 6.67%). Great Dane, Golden Retriever, German Shepherd, Miniature Pinscher, and Rajapalyam were next, each with a 1 percent (n=1). The highest incidence was recorded in non-descript dogs, than by the purebred dogs. This might be due to the fact that, majority of the non-descript dogs were maintained as semi domestic pets, allowed to roam freely, given free reign of the neighbourhood and spent majority of their time in the streets. This makes them more vulnerable to trauma and automobile injuries (Nilajagi, 2021 and Srinivas, 2022) [10, 11]. In the present study, 17 (56.66%) of the proximal femoral fractures were caused by vehicular accidents, nine (30%) were due to fall from height, two (6.66%) fractures were due to unknown trauma and one (3.34%) case each was attributed to human violence and animal attack (Fig. 5). This could be explained by the pets' tendency to roam free, more traffic in the city, inability to flee from moving vehicles, and aggressiveness in establishing their dominance in the neighbourhood.



**Fig 5:** Etiology of proximal femoral fractures observed

#### 4. Conclusion

In conclusion, femoral fractures showed highest occurrence among all other long bone fractures. Femoral diaphyseal fractures were more common than proximal and distal femoral fractures. Proximal femoral fractures were more commonly noticed in young non-descript male dogs. Among proximal femoral fractures capital physeal were more common in young ones.

#### 5. Acknowledgement

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#### 6. References

1. Ali LMB. Incidence, Occurrence, Classification and Outcome of Small Animal Fractures: A Retrospective Study (2005-2010). *International Journal of Veterinary Sciences and Animal Husbandry*. 2013;7(3):191-196.
2. Braden TD, Eicker SW, Abdinoor D, Prieur WD. Characteristics of 1000 Femur Fractures in the Dog and Cat. *Veterinary and Comparative Orthopaedics and Traumatology*. 1995;08(4):203-209.
3. Daly WR. Femoral Head and Neck Fractures in the Dog and Cat: A Review of 115 Cases. *Veterinary Surgery*. 1978;7(2):29-38.
4. DeCamp CE, Johnston SA, Déjardin LM, Schaefer SL. Fractures of the femur and patella. In: Brinker, Piermattei, and Flo's handbook of small animal orthopedics and fracture repair, 5<sup>th</sup> edn., Ed: DeCamp, C.E., Jihnston, S.A., Déjardin, L.M. and Schaefer, S.L. Elsevier, St. Louis, Missouri; c2016. p. 518-598.
5. Elzomor ST, Sheta E, Farghali HA, Ashour AE. Prevalence of Femoral Fractures in Dogs and Cats. *Journal of the Egyptian Veterinary Medical Association*. 2014;74(2):269-278.
6. Hayashi K, Schulz KS, Fossum TW. Management of specific fractures. In: *Small animal surgery*. 5<sup>th</sup> edn., Ed: Fossum, T.W. Saunders, Elsevier, St. Louis, Missouri;

c2019. p. 1036-1133.

7. Henea ME, Grecu M, Grădinaru AC, Solcan G. Incidence, genetic predisposition, and recovery by physiotherapy of orthopedic disorders in dogs and cats. *Human and Veterinary Medicine*. 2020;12(4):172-179.
8. Johnson AL. Management of specific fractures. In: *Small animal surgery*. Edt. Fossum TW. 4<sup>th</sup> edn., Elsevier, St. Louis, Missouri; c2013. p. 1106-1214.
9. Libardoni R, do N, Costa D da, Menezes FB, Cavalli LG, Pedrotti LF, *et al*. Classification, fixation techniques, complications and outcomes of femur fractures in dogs and cats: 61 cases (2015-2016). *Ciência Rural*, 2018, 48(6).
10. Nilajagi A. Studies on type Ia external skeletal fixator with tie-in configuration for the treatment of comminuted diaphyseal femur fractures in dogs. M. V. Sc. Thesis, Karnataka Veterinary Animal and Fisheries Sciences University, Bidar, India; c2021.
11. Srinivas O. Comparative evaluation of advanced locking plate system and locking compression plate for the repair of femur fracture in dogs. M. V. Sc. Thesis, Karnataka Veterinary Animal and Fisheries Sciences University, Bidar, India; c2020.
12. Tercanlioglu H, Sarierler M. Femur fractures and treatment options in dogs which brought our clinics. *Lucrari Stiiniifice Medicina Veterinara*. 2009;42(2):98-101.