

Patterns and Causes of Long Bone Fractures in Dogs: A Two-Year Retrospective Study

Ravi Kumar Palli^{1*}, Devi Prasad Vaddadi¹, Mallikarjuna Rao², Srikala Devarakonda³

ABSTRACT

A retrospective study was conducted on 173 (1.77%) dogs with long bone fractures among 9,784 dogs presented to SVVU Super Speciality Veterinary Hospital, Visakhapatnam, from January 2022 to December 2023. Males (n=96, 55.5%) and juvenile dogs (n=58, 33.5%) were most frequently affected. Mongrels and small breeds such as Spitz and Pomeranians showed higher susceptibility. Among 185 long bone fractures, hind limbs (51.5%) were slightly more involved than forelimbs, with radius-ulna (29.6%) and femur (25.2%) being the most commonly fractured bones. Out of 173 cases, falls from height (45.7%) and vehicular accidents (30.1%) were the major causes. The study provides epidemiological insights into canine long bone fractures, aiding clinical management and preventive strategies.

Key words: Canine, Epidemiology, Hind limb, Long bone fracture, Trauma.

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INTRODUCTION

Long bone fractures are common musculoskeletal injuries in dogs, often resulting from trauma such as vehicular accidents, falls, or dog fights (Libardoni *et al.*, 2016; Abd El Raouf *et al.*, 2019). Male and juvenile dogs are frequently affected, likely due to higher activity and roaming behaviour (Rani *et al.*, 2007; Priyanka *et al.*, 2019). Breed predisposition has also been reported, with Mongrels and non-descript dogs being more susceptible, while small breeds such as Spitz and Pomeranians show higher fracture rates due to delicate skeletal structures and urban exposure (Dvorak *et al.*, 2000; Minar *et al.*, 2013; Kumar *et al.*, 2022). The femur, radius-ulna, and tibia-fibula are the most commonly fractured bones, reflecting their biomechanical role in locomotion and weight-bearing (Simon *et al.*, 2011). This study was aimed to analyze the prevalence, pattern, and risk factors of long bone fractures in dogs presented to a SVVU Super Speciality veterinary hospital in Visakhapatnam.

MATERIALS AND METHODS

A retrospective study was carried out to evaluate the frequency and distribution of bone fractures in dogs presented to the SVVU Super Speciality Veterinary Hospital, Visakhapatnam, Andhra Pradesh, India over a period of two years, from January 2022 to December 2023. Clinical records of 9,784 dogs admitted for various surgical conditions were reviewed. Data were extracted from physical examination findings and radiographic reports recorded at the time of admission. Out of the total cases, 269 dogs (2.75%) were diagnosed with bone fractures, of which 173 cases (64.31%) involved long bones specifically the humerus, femur, radius-ulna, and tibia-fibula accounting for 1.76% of the total surgical caseload. Fractures were classified based

¹Department of Veterinary Clinical Complex, College of Veterinary Science, Garividi-535101, Sri Venkateswara Veterinary University, Andhra Pradesh, India

²Department of Veterinary Surgery and Radiology, NTR College of Veterinary Science, Gannavaram-521101, Sri Venkateswara Veterinary University, Andhra Pradesh, India

³Department of Veterinary Medicine, College of Veterinary Science, Garividi-535101, Sri Venkateswara Veterinary University, Andhra Pradesh, India

Corresponding Author: Dr. P. Ravi Kumar, Assistant Professor, Department of Veterinary Clinical Complex, College of Veterinary Science, SVVU, Garividi-535101, India. e-mail: ravikumarpallitvm1018@gmail.com

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on patient demography, including age, breed, sex, and etiological factors, to identify predisposition patterns. Only cases with complete clinical and radiographic documentation were included in the analysis. The compiled data were systematically analyzed to determine the prevalence, distribution, and patterns of long bone fractures in the canine population presented to the hospital.

RESULTS AND DISCUSSION

In the present study, 173 dogs with long bone fractures were analyzed for breed, age, limb, bone involvement, and etiology.

Breed-wise Distribution

Mongrels or non-descriptive dogs were most commonly affected (n=32, 18.5%), followed by Spitz (n=26, 15.0%), mixed breeds (n=18, 10.4%), and Labrador Retrievers (n=16, 9.2%). Other breeds included German Shepherds (n=15, 8.7%), Pomeranians (n=14, 8.1%), and Dachshunds (n=13, 7.5%), while less frequently affected breeds included Golden Retrievers (n=12, 6.9%), Dobermann Pinschers (n=7, 4.0%), Beagles (n=5, 2.9%), Pugs (n=5, 2.9%), Cocker Spaniels (n=3, 1.7%), Great Danes (n=3, 1.7%), Mudhol Hounds (n=2, 1.2%), and Rottweilers (n=2, 1.2%). The predominance of Mongrels and small breeds such as Spitz and Pomeranian may be attributed to their wider population distribution, free roaming, and higher exposure to trauma, particularly vehicular accidents in urban areas (Dvorak *et al.*, 2000; Minar *et al.*, 2013; Kumar *et al.*, 2022).

Age-wise Distribution

Of the 173 dogs, juvenile dogs (<1 year) were most affected (n=58, 33.5%), followed by geriatric dogs (>8 years) (n=46, 26.6%), young adults (n=39, 22.5%), and mature adults (n=30, 17.3%). The high incidence in juvenile dogs may be due to increased activity, immature skeletal structures, and incomplete bone mineralization, which make them more prone to trauma (Rani *et al.*, 2007; Simon *et al.*, 2011). The notable proportion of fractures in geriatric dogs is likely due to age-related bone weakness and reduced agility (Kumar *et al.*, 2007).

Sex-wise Distribution

Of the 173 dogs, 96 were males (55.5%) and 77 were females (44.5%). The higher incidence in males is consistent with previous reports and may be attributed to their more active behaviour, greater roaming tendencies, and increased exposure to trauma compared to females (Aithal and Singh, 2012; Priyanka *et al.*, 2019).

Limb-wise Distribution

Out of 173 cases, a total of 185 fractured limbs were recorded, indicating that some dogs sustained fractures in more than one limb. Forelimb fractures (n=103/185, 55.68%) were slightly more common than hind limb fractures (n=82/185, 44.32%). Among individual limbs, the right forelimb was most frequently affected (n=61/185, 32.97%), followed by the right hind limb (n=47, 25.41%), left forelimb (n=42, 22.70%), and left hind limb (n=35, 18.92%). The higher incidence of forelimb fractures, particularly on the right side, could not be clearly ascertained. However, these findings were contrary to those reported by Ali (2013) and Jain *et al.* (2018), who observed a greater incidence of hind limb fractures and attributed this to the tendency of dogs to present their hindquarters toward the source of impact during vehicular collisions.

Bone-wise Distribution

Out of 185 long bones that got fractured in 173 patients, the radius and ulna were most commonly fractured (n=61, 32.97%), followed by the femur (n=52/185, 28.11%), humerus (n=42, 22.70%), and tibia/fibula (n=30, 16.22%) (Fig. 1). The predominance of fractures in radius-ulna and femur can be attributed to their biomechanical importance in weight-bearing and locomotion, rendering them more susceptible to trauma (Simon *et al.*, 2011; Jani *et al.*, 2014). These findings aligned with previous reports highlighting the forelimb and hind limb bones as frequent sites of fracture in dogs.

Distribution of Long Bone Fractures based on Etiology

Out of 173 cases, falls from height was the most common cause of injury (n=79, 45.7%), followed by automobile accidents (n=52, 30.1%). Trauma by inanimate objects (n=3, 1.7%), dog bites (n=6, 3.5%), and bone tumours (n=2, 1.2%) were less frequent, while 31 cases (17.9%) had unknown etiology. Falls and vehicular accidents together accounted for 131 cases (75.7%), corroborating earlier studies that identify accidental trauma as the primary cause of skeletal injuries in dogs (Libardoni *et al.*, 2016; Abd El Raouf *et al.*, 2019).

In brief, the study highlights that long bone fractures in dogs are most prevalent in male, juvenile, and non-descript dogs, with the radius-ulna and femur being the most commonly affected bones. Hind limbs were slightly more prone to fractures than forelimbs, and falls from height and vehicular accidents were the leading causes. These findings emphasize the role of behavioural and environmental factors in fracture occurrence and provide valuable epidemiological data for preventive strategies, clinical management, and resource planning in veterinary practice.

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REFERENCES

- Abd El Raouf, M., Mekkawy, N.H.M., & Abd El-Aal, A.M. (2019). Femur fractures and treatment options in 20 dogs admitted to our clinic from January 2013 to December 2015. *Iraqi Journal of Veterinary Sciences*, 31(2), 117-122.
- Aithal, H.P., & Singh, G.R. (2012). Pattern of bone fractures caused by road traffic accidents and falls in dogs: A retrospective study. *The Indian Journal of Animal Sciences*, 69, 960-961.
- Ali, L.B. (2013). Incidence, occurrence, classification and outcome of small animal fractures: A retrospective study (2005-2010). *International Journal of Animal and Veterinary Sciences*, 7(3), 191-196.
- Dvorak, M., Johnson, A.L., & Vasseur, P.B. (2000). Classification of long bone fractures in dogs. *Veterinary Surgery*, 29(3), 207-215.



Fig. 1: Radiographic views of common fractures of different long bones in dogs

- Jain, R., Shukla, B.P., Nema, S., Shukla, S., Chabra, D., & Karmore, S.K. (2018). Incidence of fracture in dog: A retrospective study. *Veterinary Practitioner*, 19(1), 63-65.
- Jani, S.M.Y., Kushwaha, R.B., Gupta, A.K., Malik, K., & Soodan, J.S. (2014). Occurrence of fractures in dogs: A retrospective study of five years. *Indian Journal of Veterinary Surgery*, 35, 73-74.
- Kumar, A., Dhalwal, B., Singh, V., & Bisht, P. (2022). Management of long bone fractures using diverse fracture fixation techniques in small animals. *Journal of Scientific Research and Reports*, 28(3), 1-6.
- Kumar, K., Mogha, I.V., Aithal, H.P., Kinjavdekar, P., Amarpal, Singh, G.R., Pawde, A.M., & Kushwaha, R.B. (2007). Occurrence and pattern of long bone fractures in growing dogs with normal and osteopenic bones. *Journal of Veterinary Medicine Series A*, 54(9), 484-490.
- Libardoni, R.N., Serafini, G.M.C., Oliveira, C., Schimites, P.I., Chaves, R.O., Feranti, J.P.S., Costa, C.A.S., Amaral, A.S., Raiser, A.G., & Soares, A. (2016). Appendicular fractures of traumatic etiology in dogs: 955 cases (2004-2013). *Ciencia Rural*, 46(3), 542-546.
- Minar, M., Hwang, Y., Park, M., Kim, S., Oh, C., Choi, S., & Kim, G. (2013). Retrospective study on fractures in dogs. *Journal of Biomed Research*, 14(3), 140-144.
- Priyanka, Singh, T., Mohindroo, J., Verma, P., Udheiya, R., & Umeshwori, N. (2019). Evaluation of intramedullary pinning technique for management of tibia fractures in dogs. *The Pharma Innovation Journal*, 8(2), 291-297.
- Rani, U.R., Kathiresan, D., & Vairavasamy, K. (2007). Fracture pattern of femur in canines and their surgical management. *Indian Veterinary Journal*, 84, 1310-1312.
- Simon, M.S., Ganesh, R., Ayyappan, S., & Kumar, R.S. (2011). Incidence of pectoral limb fractures in dogs: A survey of 331 cases. *Tamilnadu Journal of Veterinary and Animal Sciences*, 7(2), 94-96.