

# MANAGEMENT OF DISTAL TIBIAL FRACTURE USING INTRAMEDULLARY PINNING AND HEMI-CIRCLAGE WIRING IN A DOG

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A male, Labrador dog of four years age having 32 kg. body weight was presented for treatment of simple right tibial fracture. On radiographic examination, it was diagnosed as simple, spiral fracture of distal 1/3<sup>rd</sup> of right tibia. Surgical intervention was conducted using intramedullary pinning along with circlage wiring after following due procedure. The animal recovered successfully without any complication.

**Keywords:** Dog, Fracture, Intramedullary pin, Tibia.

Fracture is defined as the loss of continuity in the bone and/or cartilage. Fractures are one of the most common problems in routine veterinary practice. External trauma such as compression, bending and twisting may cause fractures of bone. (Priyanka *et al.*, 2019). Tibial fracture is more common in small animals and corresponds to 15 to 21% of long bone fractures and 11.7% of appendicular fractures in dogs (Dias *et al.*, 2018). Several methods of stabilization of tibial fractures have been recommended like intramedullary pinning, bone plating, intramedullary interlock nailing and external fixation by Plaster of Paris and external skeletal fixators (Li *et al.*, 2015). The primary intention of any method of fracture management is to achieve quick healing and enabling the patient to function normally by allowing proper weight bearing. In the present case, intramedullary pinning along with circlage wiring was done successfully to manage the case of simple, spiral, distal tibial fracture.

## Case History and Observations

A four years old male Labrador dog weighing 32 kg was presented to Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, OUAT, Bhubaneswar for treatment of simple tibial fracture in right hind limb. On radiographic examination, it was confirmed as simple spiral fracture of tibia at distal 1/4<sup>th</sup> of the shaft. Routine haematological and biochemical parameters were done to evaluate the body condition. NSAID and fluid therapy was given to stabilize the patient. It was decided to do surgical intervention.

## Surgical Treatment

The dog was kept in fasting for 12 hours. The animal was preanaesthetized with inj. Glycopyrrolate @ 0.01 mg/kg bwt, inj. Butorphanol @ 0.2 mg/kg bwt intramuscularly (IM). Then it was sedated with dexmedetomidine @ 5mcg/ kg bwt intravenously (IV). Anaesthetic induction was done with Inj Propofol @ 4 mg/kg bwt IV and it was maintained with 1.5 % isoflurane. The animal was prepared for surgery as per standard operating procedure (SOP). A five

inch longitudinal incision was given on skin of the medial aspect of tibia over the fractured site. After separating subcutaneous tissue, the muscles were bluntly dissected, separated and the fractured fragments were brought to the incision site. The fractured ends were lavaged using normal saline and freshened using bone cutter. Using stainless steel drill bits (1-2mm size), both the proximal and distal fragments were drilled at one or two points. A 4.5 mm intramedullary pin was inserted in retrograde manner using orthopedic drill. Stainless steel (SS) wire of 22 gauge was introduced through the drilled holes and tied by twisting (Fig. 2). The extra portion of SS wire was cut and removed. The ends of the twisted wire were bent towards fractured site to prevent injury to the peripheral tissue. The surgical site was flushed with normal saline. The muscles were apposed using polyglactin 910 suture No.1. The subcutaneous suturing was done by

polyglactin 910 suture and skin by Nylon No.1. The extra portion of the pin was cut by orthopedic pin cutter at the level close to the skin. Then the protruded portion of pin was pushed into deeper tissue using orthopaedic hammer so as to remain below skin level. The site was cleaned, sutured and applied with povidone iodine lotion, then mupirocin ointment was applied. The incision line was covered using paraffin wet bandage and then dry bandaging was done. A radiograph was also taken (Fig.1). Over that, modified Thomas splint was applied. Post-operatively Inj. Ceftriaxone @ 25 mg/kg B.wt., Inj. Carprofen @ 4 mg/kg B.wt. along with oral supplementation of calcium and multivitamins were given. The owners were advised for restricted movement and to prevent the bandage from coming into contact with water for 6 weeks.



**Fig.1: Radiographic image of intramedullary pinning and wiring**



**Fig.2: Intraoperative image of intramedullary pinning and wiring**

### Results and Discussion

Radiographic evidence was relatively satisfactory at the immediate post-operative period, with good alignment of the bone axis and correct insertion of intramedullary pin and wiring. There were no post-operative complications or suture dehiscence up to the day of suture removal which is also mentioned by Dias *et al.* (2018). The skin sutures were removed after 12 days of

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operation. Post-operative assessment of functional weight bearing was done at weekly interval up to 6 weeks by observing the animals from distance and near and found to be improving day by day. There was no bone shortening or fragment collapse (Fig.1) as also recorded by Chanana *et al.* (2018). IM pin was removed after 51 days. The animal was followed for six months and no complication was recorded.

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