VI. SUMMARY

A study was conducted to evaluate the different configurations of external skeletal fixators (ESF) viz., Type 1b, Type 2 and Type 3 fixator frames among 18 clinical cases of radius fracture in dogs.

The dogs were divided randomly into three groups irrespective of age, breed and gender. The dogs of Group A were treated with Type 1b external skeletal fixator, those of Group B were treated with Type 2 external skeletal fixator and the dogs of Group C were treated with Type 3 external skeletal fixator. The results of the study are summarized as follows.

1. The occurrence of radius fracture among 29,803 clinical cases presented to the hospital over a period of twenty months was 74 (0.25%) and with regard to 330 cases of long bone fractures, the dogs with radius fractures were 74 (22.42%).

2. The site at which highest radius fracture observed was at distal third diaphyseal fracture (44.59%) followed by middle third diaphyseal fracture (33.78%), distal metaphyseal fracture (10.81%), proximal third diaphyseal fracture (5.40%) and distal epiphyseal fractures (5.40%).

3. Among the type of radius fractures observed, oblique fracture (51.36%) were highest followed by transverse fracture (33.78%), incomplete fractures (6.76%), comminuted fractures (5.40%) and multiple (2.70%) fracture.

4. In the present study it was observed that higher incidence of radius and ulna fracture was seen in animals in age group of 1-5 years (45.95%) followed by 6-12 months
(18.92%), more than 5 years (13.51%), less than 3 months (12.16%) and 3-6 months (9.46%).

5. Males (60.80%) were commonly affected than females (39.19%).

6. The highest breedwise occurrence of the condition was seen in non-descript dogs (37.74%) followed by Spitz and German Shepherd (14.86%), Labrador Retriever (12.16%), Great Dane (5.40%) and Boxer (5.40%), Doberman (4.05%), Golden Retriever (2.70%) and one each of Lhasa Apso, Miniature Pinscher, Rottweiler, Dalmatian, Irish Setter, Neopolitan Mastiff and Mudhol Hound (1.35%).

7. Premedication with Xylazine hydrochloride followed by Thiopentone Sodium for general anesthesia resulted in good muscle relaxation and facilitated surgery.

8. The technique for application of external skeletal fixator in all the groups enabled good alignment and apposition of fracture fragments.

9. Systemically Meloxicam at the dose rate of 0.3 mg / kg body weight and Ceftriaxone sodium at the dose rate of 20 mg / kg body weight were administered to prevent post-operative inflammation and infection respectively.

10. The rectal temperature, respiratory rate, heart rate and pulse rate increased apparently during early post-operative days but they were statistically non significant.

11. Hemoglobin, packed cell volume and total erythrocyte count were found to be within the normal physiological range in all the dogs during the study period.

12. There was statistically non significant leukocytosis, neutrophilia and lymphocytopenia up to 3rd post-operative day in all the groups of dogs. The values returned to the normal range in subsequent post-operative days.
13. Serum calcium and phosphorous values were within the normal physiological range in all dogs on the days of presentations as well as after initiation of treatment.

14. A statistically non significant increase in values of serum alkaline phosphatase was observed in all the groups till day 30 after which the values receded back to normal towards the end of the study period.

15. There was statistically non significant increase in aspartate aminotransferase values up to 5th post-operative day and which later receded to normal value and alanine aminotransferase was within the normal physiological range in all the dogs during the study period.

16. Radiographic studies revealed more and thick periosteal callus at the fracture site as compared to moderate and thick periosteal callus completely filling the fracture site in Group B and in case of Group C radiographs showed very less periosteal and more of endosteal callus at the fracture site.

17. The use of Iohexol in osteomedullographic study at the dose rate of 100 mg / kg body weight provided enough contrast for identification in the marrow and intraosseous venous channels.

18. The osteomedullography in the present study did not reveal any information on fracture healing. The injection of contrast agent in to bone marrow on 28th, 45th and 60th days of study was difficult and stasis of contrast agent was noticed at the point of injection which may be due to blockage of the medullary cavity by bone plugs around the pins.
19. All the dogs started bearing weight by second to fourth post-operative day and they were graded good from 5th to 30th and excellent from 30th to 60th post-operative days.

20. The results of pain score evaluation between groups of all the dogs at different interval recorded were non significant.

21. The fixator frame was stable and no implant failure was observed in dogs of all the three groups except pin loosening in one case of Group A but it did not affect the fracture healing. No major complications were encountered either during peri-operative or post-operative period in all the groups.

In conclusion Type 1b, Type 2 and Type 3 fixator frames were easily applied for the treatment of radius fracture. Of which, Type 3 external skeletal fixator provided better stability when compared to other two type of external skeletal fixators.