I. INTRODUCTION

Among the long bones, radius and ulna (antebrachium) are predisposed for external trauma as they are the major weight bearing bones and have minimum amount of soft tissue covering. The highest incidences of fractures had been seen in radius and ulna (Thilagar and Balasubramanian, 1988) when compared to other long bone fractures.

For fracture immobilization, the easier and simple procedure followed is external coaptation technique which has its applications limited to simple and stable fractures. Intramedullary pinning of radius is a method of stabilization of multiple radius or ulnar fracture, because of its low cost, less time consumption and it is simple. But it provides less stable fixation and it may result in pin migration and carpal joint ankylosis which hinders limb movement during healing period. Bone plates used for internal fixation are effective in countering all the forces and they are usually preferred when post-operative comfort and early limb usage are desired. Major disadvantage with bone plating is that it requires extensive exposure of fractured part and resurgery for removal of plates after healing.

External Skeletal Fixation (ESF) is a means of stabilizing fractures or joints using percutaneous fixation pins that penetrate both the cortices and are connected outside the body to form a rigid frame or scaffold. Dee et al. (2000) reported external skeletal fixation as an important minimal invasive procedure in the management of radial fractures. External skeletal fixation is economical when compared with bone plate fixation and multiple cast or splint applications. It is adjustable, lightweight and it maintains limb length. It provides rigid stabilization and preservation of blood and nerve
supply. Initial mechanical stabilization requirements of the fracture could be met with fixation devices and later on could be modified or destabilized to provide optimal stabilization throughout the healing period. The chief advantage is that the limb will return to a functional state earlier than with any other forms of external coaptation with early ambulation, weight bearing. It is highly versatile because the apparatus is easy to apply and remove. Its clamps, pins and connecting bars could be reused several times after stable stabilization.

Harari et al. (1998) recommended different configurations of Type 1a, Type 1b, Type 2 and Type 3 external skeletal fixators for successful stabilization of radial fractures. Type 1b frame was preferred over Type 2 or 3 constructs for comminuted, unstable fractures of radius and ulna in small breeds and Type 2 or 3 was used in case of larger breeds.

With this background, the present study was undertaken to evaluate the efficacy of different configurations of external skeletal fixation for radius fracture treatment in dogs with the following objectives

1. To study the occurrence of fracture in dogs.

2. To evaluate different configurations (Type 1b, Type 2 and Type 3) of external skeletal fixation for the treatment of radial fracture in dogs.

3. To study the hematological and biochemical parameters related to radius fracture and its treatment with external skeletal fixators.

4. To study the clinical and radiological changes associated with radius fracture and its treatment by use of external skeletal fixator.