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As the civilization is increasing, the dynamicity of life is also increasing and today man is becoming more prone to accidents than ever before. In this day to day mad rush of a twentieth century man, accidents are bound to occur and with accidents, fractures are inevitable. Fractures of the shaft of the tibia are among the most common long bone injuries presenting for treatment and certainly the most difficult to treat. The fracture of leg is a common unsolved problem in the orthopaedic practice. Still the ideal method of treatment has not yet been found and there are differing opinions on the management of fractures of the lower leg. The words of Sir John Charnley, said about twenty years ago, still holds true - "We have still a long way to go before the best method of treating a fracture of the shaft of the tibia can be stated with finality".

Sushruta (1000 BC) treated fractures of leg by immobilising the limb in "Kapta Shyana". Today various methods of treatment of tibial shaft fractures are available in orthopaedic practice.
The spectrum of treatment ranges from conservative methods of closed reduction with plaster immobilization, to A.O. and AOIF techniques of internal fixation and highly mechanical external fixation.

The age old closed treatment, is obviously generally satisfactory in those cases, where the fractures are stable and a good reduction can be achieved, but in cases of unstable fractures it is very difficult to maintain the fractures in reduced position only by the plaster cast and the result is malunion, malposition delayed union or nonunion. Besides it poses the multiple problem of prolonged immobilization and recumbency leading to post immobilization stiffness of joints, post plaster edema, muscular wasting, osteoporosis, thromboembolic phenomenon, respiratory complications, urinary complication and occasional psychiatric complications. These complications interfere with routine life of patient even after his firm consolidation of the fracture site. The prolong morbidity not only disturbs the patient and his family but also disturbs the society as a whole.

Open reduction and internal fixation either with an intramedullary nail or plate, though achieve
good opposition of fragments and also overcomes few of the complications of conventional method of treatment but at the cost of chances of infection and metallic reaction and increased incidence of delayed union and even non-union. In open fractures especially of tibia the problem is of stabilizing the fragments and care of the wound.

According to Burwell (1971) the disadvantages of internal fixation are:

1. Delayed wound healing.
2. Sepsis
3. Loosening of implant, thus loss of rigidity of fixation.
4. Delayed union and non-union.
5. Metal reaction.
6. Fat embolism and venous thrombosis.

Internal fixation also disturbs the normal healing process, either by periosteal stripping or blocking of the endosteal callus formation. It also hampers the normal healing process by draining the fracture haematoma.

Considering the advantages and disadvantages of various methods of treatment, surgeons all over the
world have felt a need to evolve a new method of treatment which would eliminate most of the disadvantages of both. The frequency of compounding in leg fractures and their unsatisfactory treatment by any of these methods also provided an impetus to the search of a newer method of treatment. Special stress was laid on those newer methods of treatment which could provide early weight bearing ambulation so that the patients may be restored to his normal daily routine as early as possible.

In cases where the fracture is of severe or moderate variety and the reduction achieved is not satisfactory, it can be improved upon by introducing percutaneous pins in both the fragments which provides a better hold on the fragments thereby by checking rotation and ensuring a better reduction.

These pins can be attached to an external metallic frame (Hoffman, 1957) or can be incorporated in a plaster cast so as to provide a rigid immobilisation also (Anderson and Hutchins, 1966). The chances of infection are only in a localised area as compared to internal fixation where whole of the medullary canal can get infected. This also provides early ambulation and physiotherapy which minimises the
complications associated with prolonged immobilization.

External fixator helps in fracture healing by perfect and accurate reduction, firm fixation, maintenance of reduction, provision of compression, early mobilization and weight bearing.

Rigid fixation by transfixing steinmann's pins in the fragments and incorporating them in a plaster cast has a definite edge over the conventional plaster cast method since it also checks the rotation of the proximal and distal fragments within the plaster cast.

Over the last few years, external fixation and percutaneous pinning with plaster have come up as potential methods for the treatment of fractured long bones. But unfortunately not much work has been done on these methods. Experimental trails to evaluate the efficacy of these types of fixations are also lacking. Hence it was endeavoured to take up this experimental study, to evaluate the compare the efficacy of external fixation and percutaneous pinning with plaster in maintaining the fixation of fracture fragments during the period of immobilization and to
evaluate and compare the strength and quality of the union achieved by the external fixation using a simpler external fixation device with that achieved by percutaneous pinning with plaster. Adult rabbits were chosen for the study because of their benign nature, easy availability and adequate size to allow application of external fixator.