SUMMARY AND CONCLUSION
The treatment of tibial shaft fractures continue to remain one of the most common and controversial problems faced by the orthopaedic surgeons, in the accident prone world of today. The subcutaneous nature of the bone renders it more vulnerable for compounding and comminution, lack of skin coverage exaggerating the problem of fracture treatment. In the past, the treatment of compound fractures of leg had ranged from closed reduction and cast immobilization to open reduction and internal fixation, each modality having its merits and demerits.

The treatment of closed reduction and plaster cast immobilization, though satisfactory for some closed, stable fractures, is highly unsatisfactory when there is compounding with massive wounds and needs frequent change of dressings, or where it is comminuted and unstable and cannot be maintained in reduced position by plaster cast only, resulting in mal-union, delayed union and non-union. Besides, all the hazards of prolonged immobilization are associated with it.

The treatment of open fractures by early internal fixation is a controversial subject and can counter to the traditional approach of "Treat the soft tissue first and deal with the bone secondarily". However, early intra-medullary nailing after thorough debridement and surgical
toilet in grade I and some of the grade II compound fractures is practically a safe bargain.

In cases with severe compounding, comminution and contamination with skin loss, the external fixator has proved to be indispensable. This provides a better hold on fragments, better means of reduction, ensures check on rotation and limb length discrepancy. Frequent wound dressings and associated procedures such as skin grafting, muscle pedicle grafting, bone grafting etc. can be done with the fragments still reduced and the fixator in situ.

Twenty two patients with compound fractures of tibia were treated by intramedullary nailing or external fixation, as indicated.

The present study was undertaken in the Department of Orthopaedics, M.L.B. Medical College, and Hospital, Jhansi (UP).

In 22 patients, mostly males and between the age group of 17-60 years, intramedullary nailing was done in 12 cases (7 grade I and 5 cases grade II) and external fixator was applied in 10 cases (2 grade II and 8 grade III).

The wound was left open after adequate debridement and fixation, except in 8 cases (7 grade I and 1 grade II) which were operated early and in them primary closure was done. Delayed primary closure (2 cases) skin grafting (6 cases) secondary healing (6 cases) were the
procedures used to provide wound coverage, once the infection was controlled, the average period of immobilization with external fixator was 9.7 weeks.

The average period of soft tissue healing was 5 weeks while fracture healing took place at an average period of 19.2 weeks with intramedullary nailing and 23.4 weeks with external fixator. The union by external fixation was more of primary union than by bridging callus. The patients were followed up for 4 months to 15 months with an average of 8.5 months.

In our series of 12 cases of intramedullary nailing, 2 developed superficial infection and there was no deep infection. There were 3 delayed unions, 1 non-union and 3 cases with mild ankle stiffness (0–10°). There was no malunion, shortening or osteomyelitis.

Out of 10 cases treated by external fixation, 4 developed moderate to severe post operative wound infection which was adequately controlled in due course of time. There were 5 delayed unions, 2 non unions and 1 malunion. 4 cases developed major pin tract infection, 2 cases developed chronic osteomyelitis, one patient had gap non-union which was treated by the Ilizarov technique.

After a follow up of 4 to 15 months the following conclusions were drawn:-

1. Majority of the patients were male (21 males, 1 female) in the age group of 21–30 years.
2. Road traffic accident is the commonest mode of injury (90.9%) clearly indicating the effect of high speed automobile and industrialization on human life.

3. Majority of cases reported to us between 6-12 hours of injury. Most of the patients had not received any prior treatment before being hospitalised.

4. The severity of trauma and the degree of soft tissue loss has a direct bearing on the final outcome.

5. There were four major factors which determine the development of wound infection and its extent.
   a. Degree of soft tissue injury and contamination.
   b. Time interval between injury and surgery.
   c. Adequate debridement and surgical toilet.
   d. Degree of movement at fracture site.

6. Thorough debridement and surgical wound toilet form the most important steps for prophylaxis against infection.

7. The wound should be closed primarily only with 'caution' and after proper assessment, whenever in doubt "leave the wound open".

8. Antibiotic prophylaxis has a definite role in open fractures. Initially it should be a broad spectrum antibiotic, followed after culture and sensitivity by the specific antibiotic till the infection subsides.

9. Primary intramedullary nailing can be safely done in cases with minimal soft tissue damage and who have reported early. It leads to better bone and soft
tissue healing and early post operative rehabilitation.

10. In cases with severe soft tissue damage, late cases, comminuted fractures etc, the external fixator is indispensable.

11. Early walking and partial weight bearing, both in intramedullary nailing with PTB cast and in external fixator, is better for fracture healing providing intermittent compression.

12. By restoring early functional use of the limb and return to work, the psychological trauma to the patient is minimised.

13. Conservative treatment of reduction and cast immobilization had a very limited role in the management of compound fractures.


15. The complications are directly related to the severity of soft tissue and bony injury. The incidence of infection, delayed union, non-union increases in direct proportion to the severity of injury.

16. However, judicious selection of cases, skillful management after proper assessment of the injured leg can drastically bring down the complication rate and vastly improve the post operative functional rehabilitation of the patient making him to return to his original job at the earliest.