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## RESEARCH ARTICLE

### EARLY VS DELAYED INTERVENTION IN COMPOUND TIBIAL FRACTURES

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#### ABSTRACT

Orthopedic trauma involving leg constitutes one of the commonly involved practice by every surgeon. With the advent of increasing motor vehicle accidents the practice is increasing day by day. The injury ranges from closed to open and may extend to degloving of skin. Fracture pattern may include simple to comminuted and may involve segmental fracture patterns. The study involves analysis of 100 cases presented with compound 3b tibia fracture between Feb. 2018 to Dec. 2019. Degloving injuries and segmental tibia fractures are being excluded from study. Patients were followed for about 1 yr postoperatively. The results are evaluated and analysed in terms of early and delayed complications and functional results of procedure. The results shows favourable outcome in cases operated early usually within 12 hr of injury. The chief reason being the break in microbial exponential growth due to early debridement and closure of soft tissue defects. Repeated debridement can be beneficial but persistent open wounds predispose to added infections and has chances of increased soft tissue loss with time.

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## INTRODUCTION

Tibia fracture constitutes one of the commonest orthopedic trauma encountered by every orthopedic surgeon. Compound injuries being an added threat needs a special management. Treatment modalities chiefly available are External fixator stabilization and interlocking nailing for fixation of fracture (Dehne, 1969; McGraw, 1988) External fixator (Aho, 1983; Behrens, 1983; Bosse, 1989) stabilization can be employed for wide variety of injury patterns. It can be used as a temporary or definitive mode of fixation. The drawbacks involves visible hardware, pin site infections, pin site loosening, prolong immobilization period and risk of refracture. The interlocking nail appears to be more efficacious and associated with less drawbacks. Benefits being an intramedullary implant, early rehabilitation, no fear of pin site infections and better stability of implant. Gustilo Anderson (Johner and Wruhs, 1983) has classified open tibia fractures on basis of severity of injury. Compound type 3 cases were found to have variable prognosis depending on various patient and surgeon related factors. A study was done to analyse the results of Early versus Delayed primary interlocking nailing in compound 3b cases (Tornetta, 1994)

## MATERIALS AND METHODS

The study conducted between February 2018 to December 2019 involving the analysis of results of early versus delayed interlocking nailing in patients presenting to emergency department in Govt medical college Jammu with compound 3b tibia fractures. Patients were followed for about 1 year to interpret the early and delayed results of surgery. Patients were operated by between 2 types of intervals. Early interval involves period of surgery extending less than 12 hr since injury and delayed interval involves period of surgery extending after 24 hrs to 72 hrs. The age group of involved in study ranges between 18 to 55 years. The sex distribution involves 62 males and 38 females. The number of patients undergoing early and delayed surgery includes 60 and 40 respectively. The delay in fixation of compound fracture is due to associated comorbidities like head injury, chronic hypertension and diabetes, cardiac ailment and respiratory complaints. All cases with delayed surgery had undergone primary wound debridement within 6 hours of hospital admission. Antibiotics are started on admission to hospital. Before surgery all patients have undergone primary wound debridement and wound lavage with about 9 liters of normal saline.

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## RESULTS

A total of 100 cases involved in study undergone primary interlocking nailing with early surgery in 60 cases and delayed surgery in 40 cases. The results were analysed in terms of parameters like primary wound closure, additional flap requirement, secondary infection (Court-Brown, 1992; Maurer, 1989) and implant failure.

s. no	Primary wound closure (No. of patients/ Percentage)	Flap requirement (No. of patients/ Percentage)	Secondary infection (No. of patients/ Percentage)	Implant failure (No. of patients/ Percentage)
1. Early surgery (<12 hours)	52/ 86.66	8/ 13.33	6/ 10	2/ 3.33
2. Delayed Surgery 12 to 72 hours)	22/ 55	12/ 30	12/ 30	5/ 12.5

The patients were followed for a minimum period of about 1 year after procedure. The above mentioned table shows analysis of results in terms of various parameters representing success of surgery and its better outcome. It is seen that delayed surgery is associated with difficult wound closure and associated with additional plastic surgeon intervention for wound closure. In our study additional flap (Trabulsky, 1994) procedure was required in 30% of cases undergoing delayed surgery as compared to 13.33% cases undergoing early surgery. It is associated with additional secondary impacts non-beneficial to patient like morbidity of additional procedures, long duration of surgery, additional blood transfusions, increased infection rate (Khatod, 2003), increased cost of procedure and long rehabilitation period. It is also seen that there is increased infection rate in delayed surgery cases noted to be 30% in our study as compared to 10% in early surgery cases. Due to above mentioned pitfalls associated with delayed surgery the end result is implant failure noted to be exclusively due to infection in our study. It is noted to be 12.5% in delayed surgery cases as compared to 3.33% in early surgery cases. The implant failure cases in our study had undergone external fixator stabilization and serial debridement and antiseptic dressing to control infection. Infection was controlled in all cases but duration of treatment varies extending maximum to about 7 weeks in 3 cases in cases of patients undergoing delayed surgery. 2 case were reported to develop chronic osteomyelitis in cases of implant failure.

## DISCUSSION

It is seen that Gustilo Anderson classification remains the one of the efficient parameter to assess and classify open tibia fractures. The treatment modalities based on the classification shows variable results in different areas. Our study analyses the results of primary interlocking nailing in compound 3b cases. The patients were operated over 2 specified intervals. The results were analysed in terms of 4 different parameters like primary wound closure, additional flap requirement, secondary infection and implant failure. The results were found to have favourable outcome in terms of all parameters like morbidity of procedure, cost of procedure, rehabilitation period, secondary infection rate and implant failure cases.

The above discussion concludes that compound 3b tibia fracture cases if operated early usually within shortest possible time period after injury often leads to better prognosis. It is due to early closure of wound and thus stops the vicious circle involved in initiating wound infection beginning at soft tissue component and later involving bone and ending to cause osteomyelitis.

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