IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 8 Ver. V(Aug. 2017), PP 69-73
www.iosrjournals.org

A Clinical Study of Compound Fractures of Both Bone Leg In Patients Attending Assam Medical College Hospital, Dibrugarh

[*]Prabal Sarma[1],Amol Gaikwad[2],Parag Brahma[3,]Anshuman Dutta[4]
Partha Pratim Das[5]
Corresponding author: [*] Prabal Sarma

Abstract
Introduction*: We report the study of the clinical profile of the patients with compound fracture of both bone leg in regard to age, sex, mode, severity, side and associated injuries, duration and its relation to its final results of treatment in this group of patients, to accomplish the desired goal in restoring functional capability in the patients attending the Department Of Orthopaedics, Assam Medical College And Hospital, Dibrugarh*
Methodology: *We studied 40 cases whom were evaluated in regard to age ,sex, occupation, mode, site, side, type, duration of injury, i.e. from the time of injury to attending this hospital previous treatment received, associated injury or illness and were treated with uniplanar unilateral fixator*
Results: *67.5 % cases were healed within 2-3 weeks.40% cases were healed within 16-20 weeks. The unaided full weight bearing from the date of injury in average cases was 23.1 weeks.70% cases unilateral uniplanar fixator was the method of stabilization.75% cases had the complication of wound infection.37.5% highly satisfied, 60% satisfied and 7.5% were not satisfied with the treatment.*
Conclusion: *Majority of the patients were apprehended because of long continued treatment and also because of common peoples query of external fixator device applied to them.*

Date of Submission: 02 -08-2017 Date of acceptance: 12-08-2017

I. Introduction

An open fracture is one in which the both ends have penetrated to the outside skin and there is injury to the underlying soft tissue of varying severity. Compound fractures of both bone legs have been a common clinical entity encountered in day to day orthopaedic practice in this part of the country. Open fractures present with two problem, the fracture itself and the wound with which it is in contact. The major difference between open and closed fracture is presence of contamination and if by proper tissue management, contamination is prevented from progressing to infection, the facture will heal in the way similar to a closed fracture. The key factor for successful treatment is meticulous irrigation and debridement followed by proper immobilization. Another important issue in the treatment of open fracture is the need for early coverage of the fracture site with soft tissue. The optimum method of skeletal stabilization for open fracture of both bone leg continues to be a source of controversy. Treatment options include cast immobilization, open reduction and internal fixation with plates and screws, external fixation and intramedullary nailing. The tibia and fibula presents with special problem which are not seen at other sites because the skin of the lower part of the leg form a tight envelope around muscles and bone with little subcutaneous tissue and a circulation that is easily impaired. Despite improved techniques of fixation and preoperative coverage with antibiotics, infection and non-union still occurs in many patients after a severe fracture of lower leg. Many of these fractures failed to unite because of severity of initial displacement, damage to the surrounding soft tissue and disruption of micro circulation in the zone of injury. In this part of the country compound fracture of the leg is common due to road traffic accident, industrial, sports and fire arm injury as well as drug abuse and alcoholism. There have been many studies on the subject from west, in India particularly from the north eastern region there have been limited number of publications on clinical studies in this subject. The study is an attempt to evaluate compound fractures of both bone leg in context to existing situation and facilities in this remote part of the country.

II. Material And Methods

40 cases of the compound fracture both bone leg were studied between December 1996 to may 1997 out of which 20 cases were admitted through casualty, 15 through OPD and 5 were referred from general surgery department in Assam Medical College and Hospital, Dibrugarh. All the patients were evaluated in regard to age ,sex, occupation, mode of injury, site of injury, side of injury, type of injury, duration of injury, i.e. from the time of injury to attending this hospital (amch) previous treatment received, associated injury or illness, etc X-rays of the affected limb in two views were taken; the cases were graded according to

classification of compound fracture by Gustillo and Anderson. For all the cases wound was inspected at the initial examination and thorough cleaning and sterile dressing were done. In operating theatre wound was debrided systematically in all the cases. In four cases repeat debridement was needed after 24-48 hours to remove necrotic tissue which was not possible in the first attempt. Post debridement bone status was evaluated and any free floating cortical fragment which could potentially become sequestered were removed. Bone fragments having reasonable soft tissue attachment were retained. then the fractures were stabilized by external fixator in 38 cases. Closure of the wound was done on the cleanliness of the wound ad possibility of the apposing the skin without tension. Otherwise a later soft tissue reconstruction is done or the wound is allowed to heal by secondary intension. The affected limb was kept elevated and postoperative physiotherapy was taught to the patient . all patients received routine antibiotic cases, postoperative xrays were taken, majority of the patients were discharged when the wound became healthy and advised pin track dressing at the local hospital. All the patients were advised non weight bearing and crutch walking. Two cases were managed conservatively with plaster cast after wound debridement under general anaesthesia. The follow up examination were done initially at two weeks interval for first month, then four weeks interval till sign if union was proven. Radiographs were taken at four weeks interval. Patients opinion about his own feelings, any anxiety, anguish, apprehension and his concern about the comments from other people who came to see them were also taken into consideration.

III. Results

Age

The patient were of different age group oldest being 60 years and the youngest being 8 years. Incidence rate was most in the age group between 25-34 years.

Sex distribution

Out of 40 cases of compound fracture both bone leg in the present series only three female cases were recorded. Male to female ratio was 40:3.

Duration of injury

85%of the cases came after 12 hours of injury and only 10 % of the cases came within 8 hours.
Between 8-36 hours of the injury 90% of te cases came.

Mode of injury

Commonest mode of injury was road traffic accident followed by fall from height , sports injury, assault and firearm respectively in the decreasing order.

Side of injury

Commonest side involved is right side with 80% incidence and left with 20%.

Type of compound fractures.

The grading of the compound fracture is done depending on the severity of injury and degree of contamination and vascular status on the basis of criteria pput forward by gustillo and aderson etal 1984 of these 50 % were type II, 17.5 % were type IIIA, 17.5 % type I and 15 % type IIIB. None of the cases were of type III C.

Pattern of fracture

From the radiograph of the limb fracture were valuated. Out of 40 cases 37.5 % was comminuted, 32.5% transverse, 27.5 short oblique and 2.5 % was segmented. In all cases fibular fracture case was of the same nature.

With or without bone loss.

Out of 40 cases 35 cases were of wiohut any bone loss. Only 5 had bone loss.

Associated injury

Only 9 cases presented with associated injury, 5 were of fracture femur, 2 were of radius fracture, 1 Colles and one with medial condyle fracture was admitted.

Previous treatment

15 cases reported to AMCH, Dibrugarh without any definitive treatment , in 25 cases anaegsic immobilization with splintage and tetanus prophylaxis was given. 5 cases were reffered from general surgery.

The operation.

38 cases tolerated well to anaesthesia without any complication and out of these 38, 28 were fixed with unilateral uniplanar tubular fixator and 9 cases were unilateral biplanar fixator, in one case plate and screw fixation was done, and only two patient was treated conservatively due to anaesthetic contraindication after the bone grafting.

Bone grafting

Out of the 40 cases of compound fracture of both bone leg cancellous bone grafting was done from iliac bone in 9 cases that is 22.5%

Soft tissue reconstruction

Soft tissue reconstruction was done in 15 cases and 25 cases don't required any form of reconstruction.

Duration of hospital stay

In 26 cases out of 40 cases duration of hospital stay was within 2 weeks with maximum of 9-11 weeks in only 2 cases

Time of soft tissue healing

Type I and Type II fractures were mostly healed between 2-3 weeks. Healing time is longer in type III compound cases. Average time of soft tissue healing is 3.1 week.

Time of fracture healing.

Out of 40 cases 2 cases had gone for non union, 12 cases were united beyond 24 weeks and were considered as delayed union and 16 cases were healed between 16-20 weeks.

Weight bearing.

In present study we allowed patient for partial weight bearing by the later part of follow-up when there was enough callous formation at fracture site. They were allowed for full weight bearing when there was clinical and radiological union of fracture. However in 8 cases PTB cast was used after removal of fixator. Unaided full weight bearing in average cases was 23.1 weeks.

Method of primary stabilization.

Out of 40 cases 38 were treated with external fixator in which 28 had unilateral uniaxial type and rest 10 with biplanar unilateral external fixator. Only 2 patients were treated conservatively in whom operation was contraindicated.

Complications.

There were o any intraoperative complication but in postoperative complications most common was wound infection in 30 cases followed by pin track infection in 22 cases and rest not so frequent complication was haemorrhage, delayed union, non union, malunion and joint stiffness.

Patients own opinion.

Most of the patients were satisfied with the treatment rendered to them. 37.5 highly satisfied 60% satisfied, 7.5 % not satisfied.

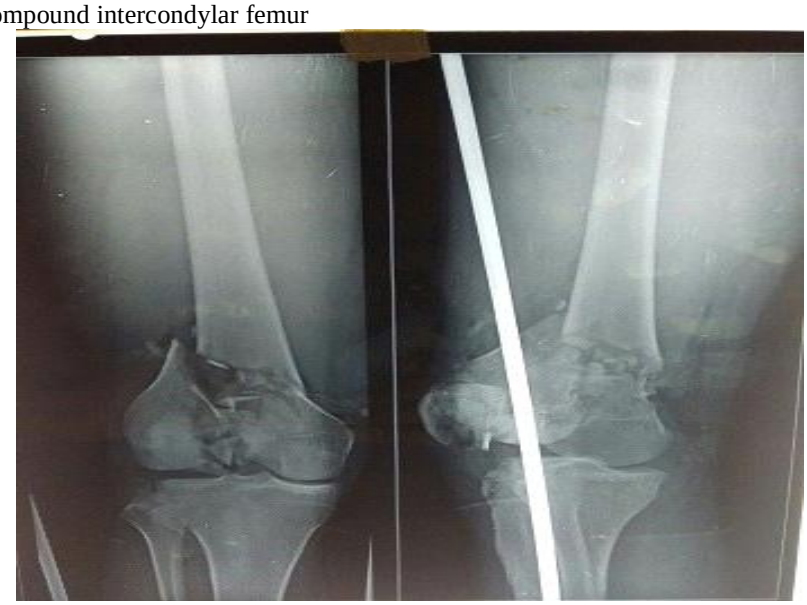
IV. Conclusion

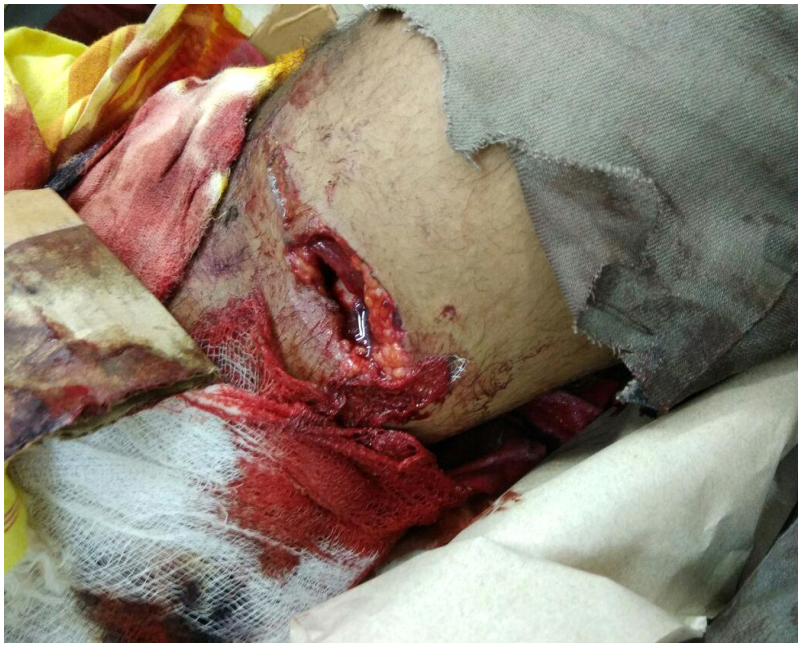
In the study of the 40 cases of compound fracture of both bone leg carried at department of orthopaedic surgery at AMCH, dibrugarh following conclusions were made:

- Majority of cases in age group 20-40 years and average being 33.4 years
- Male outnumbered female in ratio of 13.3:1
- Commonest mode of injury was road traffic accident.
- Right side most commonly involved.
- Most cases to reported to our hospital after 12 hours and only 10% cases reported within 6 -8 hours.
- There were no any type III C cases recorded in the study.
- Type I fracture 17.5 %, type II – 50%, type III 32.5 % of which IIIA 17.5 %and type IIIB 15% respectively.
- Only 9 cases reported with associated injury which include fracture femur, colles, radius fracture and medial epicondyle fracture of elbow.
- 12.5 % cases reported with variable bone loss.
- 38 fractures out of 40 cases were stabilized with and external fixator, 2 cases required manipulation and POP done.
- Average time of operation was 65.3 minutes.
- Autogenous cancellous bone grafting done in 22.5 % cases.
- Soft tissue reconstruction done 37.5 % cases.
- Complication recorded were 47.5 % superficial infection, 55% pin track infection, 27.5 % deep infection and 5 % haemorrhage, 30% delayed union, 5 % non union 2.5 % malunion, 15% ankle restriction and 12.5 % knee restriction.
- Average hospital stay was 2.9 weeks.
- Average soft tissue healing time 3.1 weeks
- Average bone healing time 22.5 weeks
- Average full weight bearing time 23.2 weeks
- Average external fixator time 23.3 weeks
- No amputation or mortality recorded.

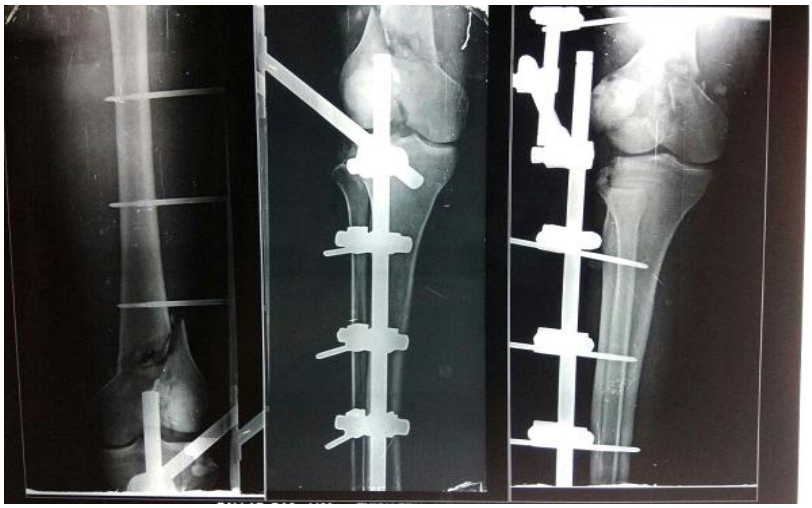
Majority of the patients were apprehended because of long continued treatment and also because of common peoples query of external fixator device applied to them.

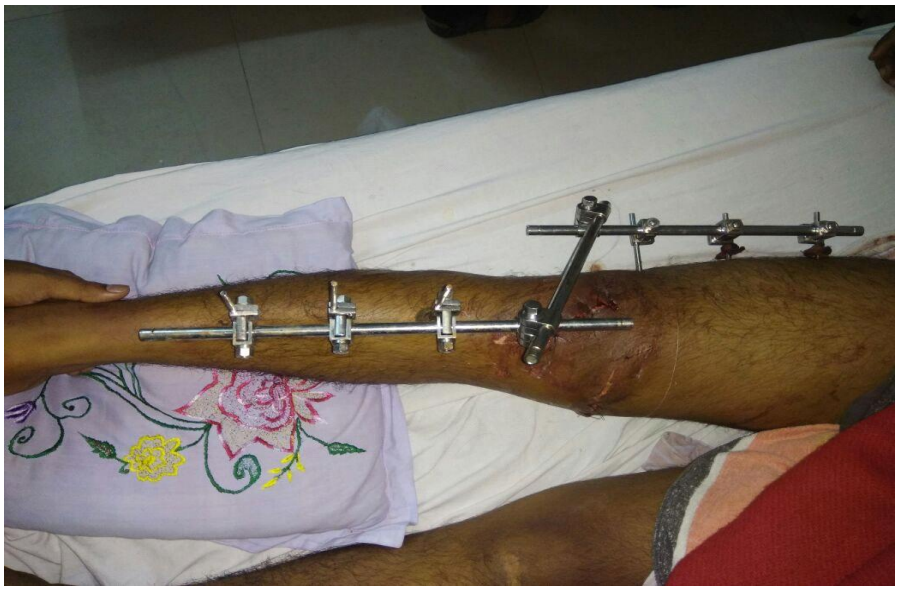
Case: Type 3B compound intercondylar femur





Treated with external fixator post op x ray and clinical photograph





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