



RESULTS OF NON-OPERATIVE TREATMENT OF TIBIAL FRACTURE IN ADULT PATIENTS WHO REFUSED TO UNDERGO SURGERY

Orthopaedics

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ABSTRACT

Introduction: - the tibial fractures in adult are very common and the literature suggest that when treated surgically they are associated with less complications. Then there are numbers of patients who just refuse to undergo any surgical procedures. This study belongs to that group of the patients only, irrespective of type of fracture, local skin condition and associated co morbidity.

Material and method: - all 22 tibial fractures treated non-surgically in adult patients at govt medical college, Haldwani, from January 2018 to December 2019, were reviewed to analyse the outcome of the treatment.

Conclusion: - if all the principles of conservative treatment applied correctly, it is a satisfactory method of the treatment if not the best method in adult tibial fractures.

KEYWORDS

tibial fractures treatment; adult, non operative treatment

INTRODUCTION:-

The tibial long bone fractures are the most common long bone fracture encountered by the most orthopaedic surgeons with incidence of 26 tibial fractures per 1,00,000 population per year (6). The average age of a tibial fracture population is about 37 years (average age for male 31 years and 54 years for females). There are four principal methods of treating tibial diaphyseal fractures in adult, 1 non operative management, 2 plating, 3 intra medullary nailing (the commonest used method), 4 external fixators (for bad local tissue conditions). The goal of each treatment method is to stabilise the bone in an acceptable alignment until it unites (12).

There is no general consensus regarding the acceptable reduction of closed tibial fractures in adult, however most surgeon accepts 1 cm of shortening, 5° of valgus but no varus malalignment, 10° of malalignment in anteroposterior plane and 5° to 10° of external rotation but no internal rotation (12).

Most non-operatively treated tibial fractures are initially treated by the application of a long cast and then it is switched over to either PTB cast of functional cast bracing (11). Bohler from Viena was the first scientist who defined the long leg cast, actually he used to apply a skin tight plaster with minimum padding, and then the plasters were split to accommodate the post traumatic swelling, and then again converted to a complete POP cast later. Dehne (7) reviewed the results of long leg plaster with and without preceding traction and concluded that traction was unnecessary but early weight bearing was desirable his main concern was shortening (30%). Nicoll (9) in his study concluded that the average union time was 15.9 weeks, but he also noted that 22% fractures took 20 weeks to unite and 5% of non union by one year.

Serminto (13) introduced the PTB cast and suggested that long leg cast should be applied only until the soft tissue swelling had resolved. Puno et al (10) retrospectively compared 60 patients treated by reamed intramedullary nailing 141 patients treated by cast. The two populations were comparable but results were very different. Non operative group was associated with 1.4% of infection and 4.3% of malunion and 13.5% patient required secondary surgery. The incidence of infection was 3.3% and 1.7 % of malunion in operative group. Most importantly he concluded that surgically treated group heals rapidly (9.1 wks for surgically treated and 15.2 wks for non operative group).

In 1970 Serminto (14) published a report on 135 fractures treated by functional cast bracing allowing both knee and ankle joint movement. He reported an average time of union 15.5 wks with no non union. In later publication Serminto et al analysed 1000, consuetive closed

tibial fractures. They stressed that the final shortening did not exceed the initial fracture shortening and that the method was very inexpensive. But the other authors encountered more problems.

MATERIAL AND METHODS:-

All the patients presenting as a adult tibial fractures were admitted, at Dr Sushila Tiwari Govt Hospital, Haldwani, for operative treatment. But this makes a small group of patients who refused to undergo any surgical procedure and eventually discharged on request. Between year January 2018 to December 2019, a total of such 22 patients were identified kept under follow up on OPD basis.

Inclusion criteria was simple, any patient 17 years or older diagnosed as tibial fracture irrespective of type of fracture, local soft tissue condition and associated co morbidity. All the fractures were reduced in casualty department and a long leg slab were applied. After two days the first check radiograph was taken in the orthopaedic ward. And if it is found to be acceptable then plaster is converted to a complete POP cast by applying an anterior POP slab. If the reduction is not acceptable then patient on taken OR and a complete POP cast is applied under image intensifier. The reduction was considered acceptable when there was at least 50% cortical contact, within 5° of valgus varus angulation in side to side plane, within 10° of antero posterior plane and not more than 1.5 cm of shortening.

Patient is put on strict limb elevation and active passive toes movement and he is allowed a strict non weight bearing ambulation on axillary crutches. This plaster is continued for six weeks. After 6 weeks second check x-ray is taken and plaster converted into a patellar tendon bearing cast (PTB). During this period patients are allowed touchdown weight bearing on axillary crutches and this is continued for another 6 weeks. After 6 weeks a functional cast brace is applied and patient is allowed partial weight bearing on crutches. Plaster wedging if ever needed done when patient is on PTB. The evidence of fracture healing (callus formation) in distal third tibial fracture is much slower; therefore, clinical signs of healing are more reliable in these areas.

RESULTS:-

As the hospital, where the study was conducted, is located at the foothill (from where the hill area starts) one of the common mode of the injury is fall from the tree/hill (18%); however road side traffic accident remains the highest (73%). In our study 63.63% were men and 36.36 were female out of 22 patients. The average age of the female patients were more the male (47 yrs for female and 32.28 years for male).

Fracture was seen more commonly in right leg than the left side (54.54% right and 45.45% left side). Distal one third of the tibia were

the commonest site of injury with a total of 63% middle one third 27.27% and least common was proximal third 9%.

Of the 22 patients examined, 16 (73%) were closed fracture and 6 (27%) open fracture and in all the cases the compounding was less than grade II according to Kile Gustilo and Anderson classification. Surprisingly, none of the patient presented with higher degree of compounding opted for the conservative treatment.

Isolated tibial fractures were encountered in 27% of the cases and in 73% patient fibula was also fractured. Shortening was the major concern in most of the studies but in our study 72.72% of the patients were having shortening less than 1 cm, 18% within 1.5 cm and 9% patient with 2 cm or more. Knee range of motion was never a problem in this study but a restricted dorsi-flexion in some.

Of the 22 patients examined only one patient presented with high energy trauma (AO 42C2.2) and who was the only patient with shortening more than 2 cm and angulations at fracture site were not within the acceptable limit and eventually undergone secondary surgical intervention, rest in all the patient angulation in all the planes were within acceptable limit, with average time taken for the fracture healing 18.8 weeks.

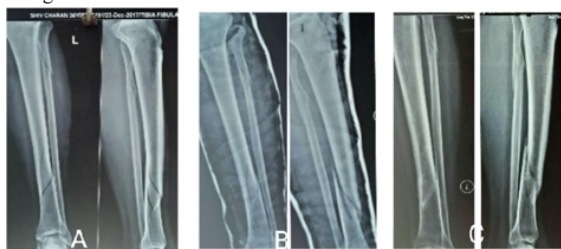


Fig 1, 36 yrs old male patient (A) initial x-ray (B) at 4wks (C) at 14 wks

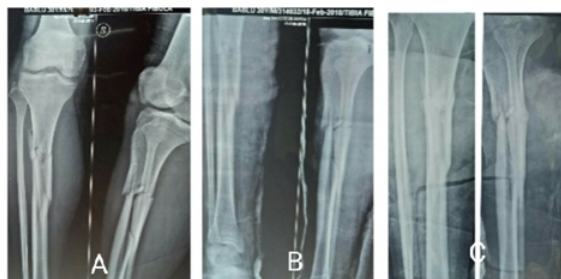


Fig 2, 30 yrs old male patient (A) initial x-ray (B) at 4 wks (C) at 16 wks



Fig 3, 58 yrs old male patient (A) initial x-ray (B) at 4 wks (C) at 16 wks

CONCLUSION:-

Technically it is difficult for the surgeon and cumbersome for the patient but when all the principles of the conservative treatment applied non-operative method of the treatment gives satisfactory results in low energy trauma. Surprisingly, no patient (except for one) with 1, high velocity trauma, 2, high grade compounding, opted for the conservative treatment possibly they knew that the surgery were the better option for them.

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