

The Conservative Treatment of Tibial Fractures with an Intact Fibula in Adults

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ABSTRACT: During January to December 1985, twenty-seven cases of tibial fractures with intact fibulas in adults were treated conservatively and with delayed weight bearing. Nine (33%) had delayed union, ten (37%) had varus deformity of the fractured tibia and none had non-union. In this study we found that varus deformities could not be prevented with delayed weight bearing technique in the conservative management.

The prognosis of tibial fracture depends largely on the fracture itself. Nicoll¹ identified the major adverse factors as these; initial displacement, soft tissue damage and infection. Another factor many times thought to be significant has been the presence or absence of an associated fibular fracture.²⁻⁴ Nicoll¹ and Weissman⁵ found that an intact fibula may indicate a better prognosis.

Teitz⁴ reported that in patients older than the age of 20, the intact fibula caused delayed union in 26 per cent. However, other evidence seems to favour a good prognosis with an intact fibula. Primarily because it indicated that there was less initial displacement and damage.¹⁻⁵

The purpose of this study is to know the result of the conservative treatment of tibial fracture with an intact fibula and delayed weight bearing.

MATERIALS AND METHODS

From January 1985 to December 1985, 36 patients with tibial fracture and an intact fibula in adults (age was > 20 years) were treated at Cipto Mangunkusumo Hospital, Jakarta. Only 27 patients had a good follow-up, nine cases were lost.

Their fracture were reviewed retrospectively with regard to the mechanism of injury, fracture site, fracture pattern and soft tissue injury. All the patients were treated initially with long leg plaster cast after closed reduction, except two of the patients who had open fractures which were treated with open reduction.

After 4 weeks the long leg plaster was changed to a patellar tendon bearing cast. The patients were allowed to bear weight partially with one crutch until union occurred.

RESULT

All the fractures were caused by traffic accidents and the majority of fractures were of the distal third (81.5%) and comminuted pattern (48.2%). Most of the fractures were closed (92.6%). (Table 1)

Complications included delayed union and varus deformity of greater than 5 degrees, there was no non-union. The mean healing time was 16.3 weeks, with the range of 14 to 23 weeks. (Table 2)

TABLE 1
Mechanism of Injuries, Fracture Site, Fracture Pattern and Soft Tissue Injury

Mechanism of Injury		
Traffic accident	27	100 %
Fracture Site		
Distal third	22	81.5%
Middle third	5	18.5%
Fracture Pattern		
Transverse	5	18.5%
Oblique/Spiral	9	33.3%
Comminuted	13	48.2%
Soft Tissue Injury		
Open	2	7.4%
Closed	25	92.6%

TABLE 2
Complication

Delayed Union	9	33%
Varus Deformity	10	37%

Healing was defined as trabeculae crossing the fracture line and the patients ability to fully weight bear on the limb without a crutch and without pain.

Delayed union (union more than twenty weeks) occurred in nine patients, including the two open fractures. Four patients healed in 21 weeks, three in 22 weeks and two in 23 weeks. Varus deformity of 5 degrees or more was found in ten cases (37%).

DISCUSSION

When this type of fracture is first seen, it often seems so innocent that it is frequently put into a plaster without anesthesia, reduction is often considered unnecessary, because the displacement appears so slight. Although the prognosis of tibial fracture depends on the initial displacement, soft tissue damage and comminution. In our series non of these factors made any significant difference. According to Charnley,⁶ this type of fracture is the solitary exception of the general rule.

Frankel and Burstein⁷ calculated "the moment of inertia at various site along the tibia and found it to be the lowest at the junction of the middle and distal one-third, they hypothesized that this low moment of inertia could account for the high incidence of fractures at this level. In our series there were 81.5 per cent at the distal one-third, actually these were not distal but more likely at the junction of middle and distal part.

Varus deformity of less than 5 degrees is cosmetically acceptable and there is no evidence to suggest that degenerative changes occur in adjacent joint.³ The reason for the tendency of tibial frac-

tures to angulate into varus is due to primarily by an intact fibula while the medial one remain unsupported, creating a varus moment at the knee and there was similar evidence at the ankle joint. According to Tetiz⁴ the varus deformity could be prevented by delayed weight bearing. In our series the varus deformity still occurred with delayed weight bearing.

The tibial fracture with an intact fibula is an insidiously dangerous fracture pattern. It has to be closely observed if the varus deformity is more than 5 degrees. It should be corrected with a form of treatment depending on the expertise of the surgeon.

The ten cases with varus deformity in our series were between 7-14 degrees. In the situation where the close observation cannot be achieved we suggest operative treatment should be initially instituted.

CONCLUSION

Twenty-seven cases of tibial fractures with an intact fibula in adults has been evaluated. There were only 2 open fractures and the closed fracture has been treated conservatively by closed reduction with a long leg plaster of Paris cast. Nine of the cases had a delayed union (more than 20 weeks in plaster of Paris).

However, there is no non-union and the only problem we have seen was the varus deformity (more than 5 degrees) which should be corrected early and early surgical intervention should be accomplished in order to prevent such deformity, particularly when closed follow up for non operative treatment is not feasible.

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