

가 (Fig.1).

가 40.4 , 가 36.5 .
 가 21 , 4 , 1 , 1
 가 , 21 14 가
 , 4 , ,
 1 .
 , -
 3 , 1/3 가 16 , - 4 ,
 1/3 가 3 ,
 1/3 1 , - 2 , 1/3 11 ,
 - 5 , 1/3 3 (Table 1).
 1995 3 1998 11
 67 , 69
 가가 48 , 49
 .67 16
 , 2
 , 76
 1
 49 27 , 27
 , 21 , 22 .
 27 가 21 , 가 6
 21 16 ,
 5 .

가 36.5 .
 27
 가 21 , 4 , 1 , 1
 , 21 14 가
 , 4 , ,
 1 .
 , -
 3 , 1/3 가 16 , - 4 ,
 1/3 가 3 ,
 1/3 1 , - 2 , 1/3 11 ,
 - 5 , 1/3 3 (Table 1).
 5 ,
 3 , 5 , 13 ,
 1 , 1 Melis ⁹⁾
 3 Winquist-Hansen
 11) 2 2 , 3 9 , 4 2 3 가
 . 2 ,
 2 , 4 , 13 ,
 1 , 1 Melis ⁹⁾
 4 , 13 Winquist-Hansen
 11) 1 2 , 2 4 , 3 6 , 4 1
 3 가 (Table 2).
 27 5 가
 , Gustillo I 4 , II 1 .
 22 3 가 ,
 Gustillo I .
 50% , 50% 100%
 , 100%
 , 15 ,

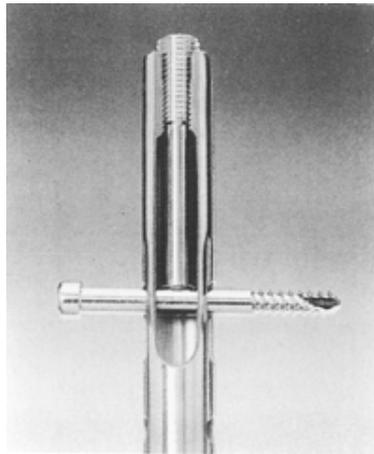
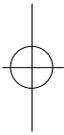


Fig 1. Proximal part of the interlocking compression nail demonstrating internal compression device with the permission of Osteo company

Table 1. Level of fractures

	ICN	Ordinary nail
Proximal one-third	0	1
Proximal-middle	3	2
Middle one-third	16	11
Middle-distal	4	5
Distal one-third	3	3
Total	*26	22

*ICN Melis 3 1 .

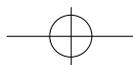


Table 2. Pattern of fractures

	ICN	Ordinary nail
Transverse	5	2
Oblique	3	2
Spiral	5	4
Comminuted		
grade 1	0	2
grade 2	2	4
grade 3	9	6
grade 4	2	1
Segmental	1	1
Total	27	22

1
 Osteo (, Osteo IC-
 Nail) , ACE 12
 ,Howmedica 6 ,AO 4
 27 가 13
 (compression locking)(Fig.2)
 (dynamic-oscillating compression)(Fig.3) ,
 14 (static locking)
 가 3/4
 가 Klemm Borner⁸⁾ 가
 (Table 4)
 chi-square
 , 7 가 34
 , 8 14 가 12 , 14
 가 2 . 8

10 , 2 ,
 13 , 8 , 1 (Table 3).
 49 22
 3 ,
 1 , 1 , 가
 , 4 , 3
 , 3 ,
 2 , 2 , , 8 14 가 12 , 14
 가 2 . 8

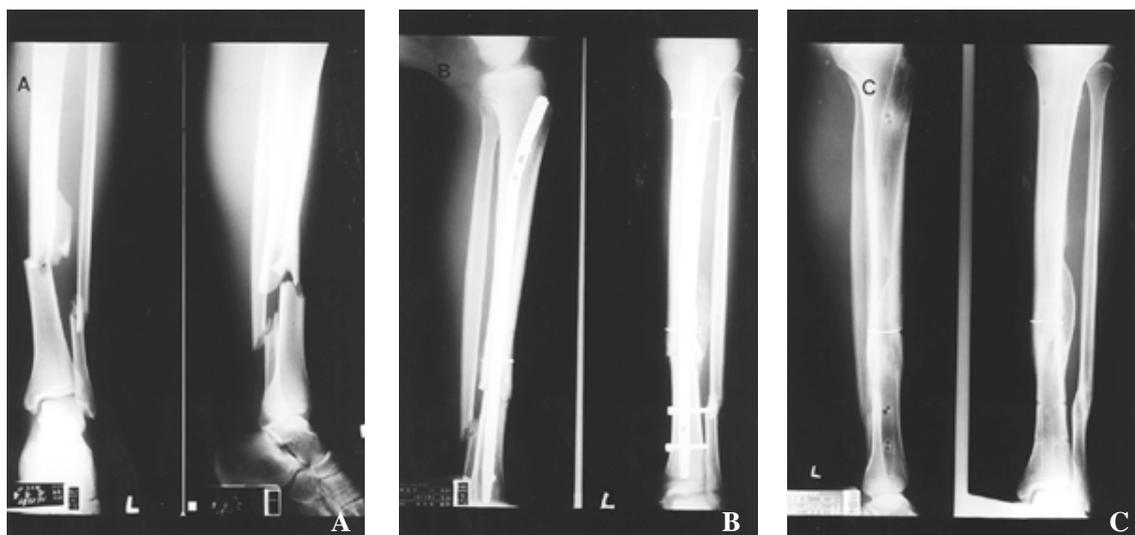
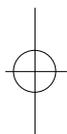


Fig 2-A. Middle-distal fracture with grade 3 comminution and moderate displacement.
B. Interlocking compression nail with compression locking. Large fragment was fixed with circumferential wire and bone graft was added. Postoperative 15th week.
C. At postoperative 15th month, nail was removed.

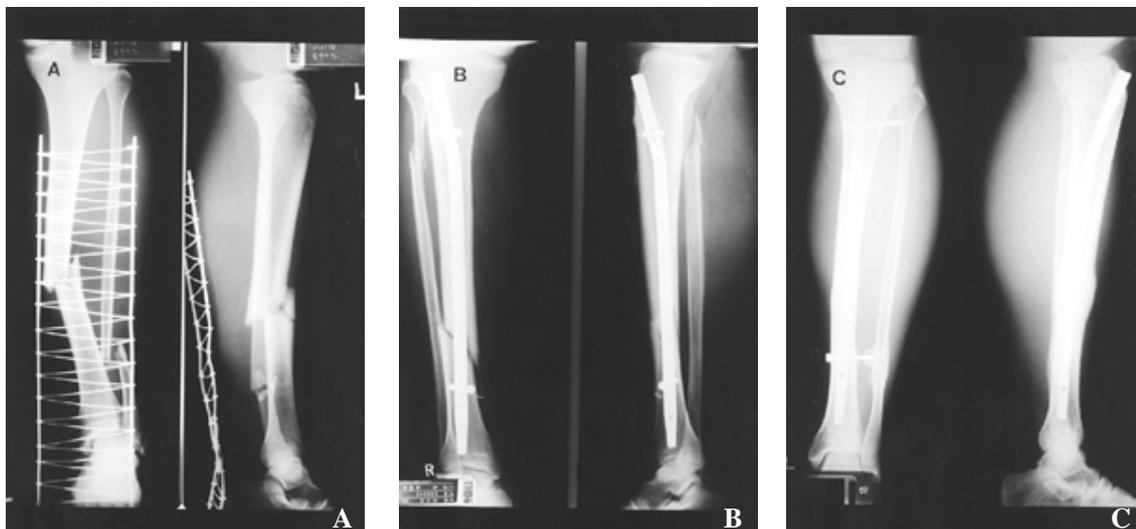
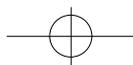


Fig 3-A. Middle one-third fracture with grade 2 comminution and mild displacement.
B. Interlocking compression nail with dynamic-oscillating compression.
C. At postoperative 1 year, solid bone union was seen.



7.5 , 8
 가
 30 , 95 55 , 2
 100 1 10 , 2 10 ,
 1 가
 380 ml ,
 430 ml .
 2
 2 ,
 가
 8
 13.2 , 13
 15.5 . 14
 27 26 , 8
 13.4 , 14

Table 4. Functional results by Klemm and Borner

Excellent	Full knee and ankle motion No muscle atrophy Normal radiographic alignment
Good	Slight loss of knee or ankle motion Less than 2-cm of muscle atrophy Angular deformity less than 5 degrees
Fair	Moderate loss of knee or ankle motion More than 2-cm muscle atrophy Angular deformity 5-10 degrees
Poor	Marked loss of knee or ankle motion Marked muscle atrophy Angular deformity more than 10 degrees

8 , 28 14.4

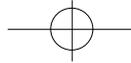
9 , 24 14.2

13.2 , 13

15.5 . 14

13.4 , 14





78 • / 13 1

14.7 (Table 5). 22 16 , 4
 가 (p>0.005). , 1 , 1 , 1 1/3
 , 10
 가 15 12.3 (Table 7).
 , 10
 , 2 17.0 가 ,
 , 17.2 가 85%,
 . 가 90%
 13 12.8 (p>0.005). 1 , 3
 , 8 15.3 가
 , 1 24 가
 (Table 6). 4-6
 Klemm Borner 가 .
 27 16 , 27 3 ,
 7 , 3 , 1 , 1 . 1
 6 , 3 1 ,
 , 5 . 22
 1 10 , 1

Table 5. Radiographic union according to fracture patterns

	ICN	Ordinary nail
Transverse, Oblique, Spiral	13.2	13.4
Comminuted, Segmental	15.5	14.7
Average	14.4	14.2

Table 6. Radiographic union according to initial displacement

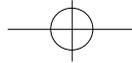
	ICN	Ordinary nail
Mild	12.3	12.8
Moderate	17.0	15.3
Severe	17.2	24.0
Average	14.4	14.2

Table 7. Functional results by Klemm and Borner

	ICN	Ordinary nail
Excellent	16	16
Good	7	4
Fair	3	1
Poor	1	1
Total	27	22

가
 1960 ,
 가 6,7),
 . Gonschorek⁴⁾ ,
 가
 (Osteo IC-Nail)
 , 402 가
 .
 (locking method) 3가
 (compression
 locking) ,
 ,
 , (compression screw)
 가 .





(dynamic-oscillating compression)

1995 3 1998 11

27

22

14.4

14.2

1

가

가

가

가

가

85%,

90%

가

가

가

가

가

REFERENCES

(telescoping)

가

가

가

가

가

가

1

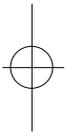
가

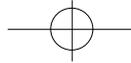
. Gonschorek⁴⁾

, 5mm

2%

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Abstract

Interlocking Compression Nails for the Treatment of Acute Tibial Shaft Fractures

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Purpose : To evaluate the differences between interlocking compression nail and ordinary compression nail in the treatment of acute tibial shaft fractures

Material and Methods : From March, 1995 to November, 1998, 67 patients were treated with intramedullary nail for the acute tibial shaft fractures. Among them, 27 cases treated with interlocking compression nails and 22 cases, with ordinary interlocking nails were analyzed in terms of average union time, complications and functional results.

Results : One tibial shaft treated with interlocking compression nail failed to unite. Average union time was 14.4 weeks in the group treated with interlocking compression nails, 14.2 weeks, with ordinary interlocking nails. Functional results were graded as excellent and good in 85% in the group treated with interlocking compression nails, 90%, with ordinary compression nails.

Conclusion : There was no difference in the treatment results between the groups treated with interlocking compression nails and ordinary interlocking nails.

Key Words : Tibia, Acute fracture, Interlocking compression nail

