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= Abstract =

The Problems on Removal of the tibial intramedullary nails

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Closed intramedullary nailing with interlocking screws has been a widely accepted method for the fixation of fractures of the long bones. As a rule, the nail can be removed during the second year. Before the operation, solid healing of the fracture must be demonstrated by x-rays in two planes. When solid bone healing of the fracture has occurred, a connective tissue interface forms around the foreign body. This connective tissue can ossify later and make it difficult to remove the nail after it has been in place for a number of years. Theoretically, removal of the nail should be an uncomplicated procedure. Occasionally, one runs into problems, however, and every surgeon who has had enough experience with intramedullary nailing can remember cases in which removal of the nail was more difficult than its insertion. So, we tried to review our cases for problems on removal of the tibial nails and to discuss its etiologies.

Key Words : Removal, Tibial intramedullary nail

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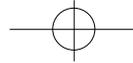


Table 2. Types of nails

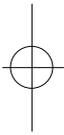
type	cases
Küntscher nail	6
Ender nail	2
Rush rod	1
ACE nail	1
AO nail	1
Russel-Taylor nail	11
Total	22

1970 Klemm Schellmann⁴⁾ Küntscher⁵⁾
 detensor effect
 interlocking nail

가

44 19.9
 Küntscher 6 , Ender 2 , Rush rod가 1 , ACE 1 , AO 1 , Russell-Taylor 11 (Table 2).

가



1990 1 1998 6 22 5 (4) 1
 39 2
 가 17 22 2
 가 16 , 가 6 10
 31.2 가 8 , 가 4 44 (19.9) 5 (4)
 가 5 , 가 5 (Table 1). 20 44 (32.8)
 10

Table 1. Causes of injuries

causes	persons
fall down	4
pedestrian TA.	8
in car TA.	5
motorcycle TA.	5
Total	22

1.
 29

Küntscher
 40

1/3
 (Fig. 1).



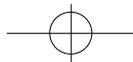


Fig 1. 29 years-old female patients. Postop. 40 months roentgenogram shows complete union of left tibial fracture.

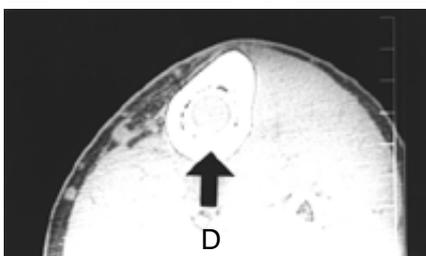
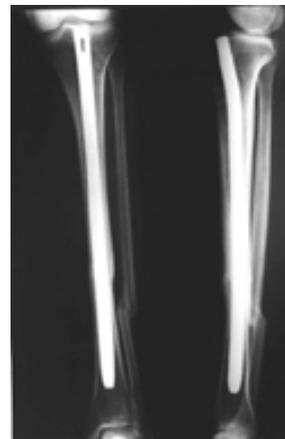


Fig 2-A. 20 years-old male patients. Postop. 27 months roentgenogram shows complete union of fracture site and breakage of the distal locking screws.

- B.** After removal of the nail, fracture of the posterior cortex of tibia is seen.
- C.** CT finding of fracture site shows fracture of posterior cortex and rectangular shaped intramedullary bony growth.
- D.** CT finding proximal to fracture site shows round-shaped condensation of cortical bone around medullary canal.

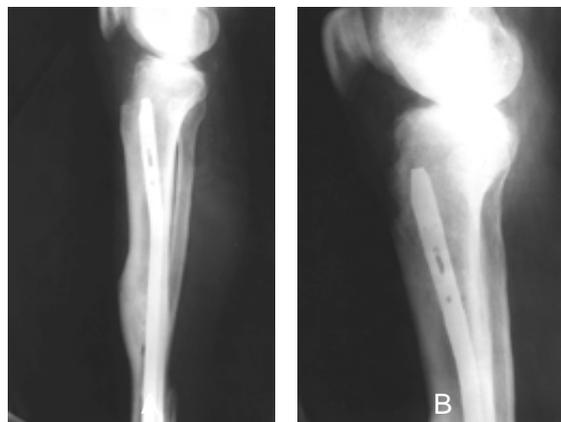
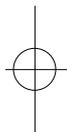


Fig 3-A. 30 years-old male patients. Postop. 27 months roentgenogram shows deep seated proximal end of AO tibial nail.

- B.** Roentgenogram after trial of the removal of the nail shows evidence of removal of anterior cortex of the proximal tibia.



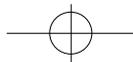


Fig 4. Posterior slot is seen in ACE nail.

(slot) ' □ '

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(Fig 2-C,D).

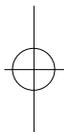
3.

30

AO

27

(Fig 3-A).



가 가

(Fig 3-B).

1 2

2.

20

ACE

가

27

2

(Fig 2-A)

10 2 ACE

5

10mm (slot)

(Fig 4).

3 가

가

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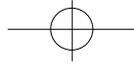
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(Fig 2-B).

CT

ACE





가 1 가

가 가 3

, 가 .Lentz 7)

.1980

ACE
2

23) 1)

Takakuwa 8)

ACE

4

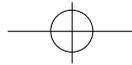
Lottes⁶⁾

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