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= Abstract =

## Treatments of Tibial Condylar Fractures

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The tibial condylar fractures are characterized by intra-articular extension of fracture line and associated soft tissue injuries, and could affect knee alignment, stability, and range of motion after treatments. Therefore, anatomical reduction and rigid internal fixation is mandatory to get satisfactory results. But this method of treatment can not be always possible due to technical demand of surgical skills and high risk of postoperative infection.

The authors analyzed 43 cases of tibial condylar fractures, which were treated at the orthopaedic department of the Dongguk University Hospital from March 1990 to May 1996. Males were 34, and females were 9. Average age of patients was 41.4 years, and average follow up period was 18 months. The most common causes of injuries were traffic accidents (36 cases), and most common type of fracture was Schatzker type I. Associated soft tissue injuries were observed in 21 cases. Treatment methods were chosen by degree of displacement of fracture fragment and associated soft tissue injuries. Conservative treatments were done in 23 cases and operative treatments in 20 cases. Satisfactory results were obtained in overall 32 cases(74%) regardless of the methods of treatment. Unsatisfactory results were observed in patients who had associated soft injuries and significant displacement of fracture. Conclusively, satisfactory

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1997





results could be obtained in patients with tibial condylar fractures by appropriate selection of treatments according to displacement of fracture and associated soft tissue injuries.

**Key Words :** Fracture, Tibial condyle, Treatments

가 34 , 가 9 , 43  
16 73 41.4 30  
40 가 21 (47%) 가  
가 36 가  
27 , 4 ,  
5 가 ,  
4 , 3 .  
가 ,  
2.  
18 (42%), 25  
(58%) , 32 (74%), 6  
(14%), 5 (12%) (Table 1).  
Schatzker 30) , I  
20 (47%), II 11 (26%), III 1 (3%), IV  
6 (12%), V 3 (7%), VI 2 (5%)  
(Table 2). 12 ,  
4 , 2 .  
1.  
1990 3 1996 5  
1 가가 43  
가 14 , 가 8 ,  
가 14 .

**Table 1.** Sites of injury

Site	Right	Left	Total(%)
Med condyle	3	3	6(14)
Lat condyle	19	13	32(74)
Bicondyle	3	2	5(12)
Total	25	18	43(100)

**Table 2.** Classification of fracture

Type	Case(%)
I. Pure cleavage	20(47)
II. Cleavage with depression	11(26)
III. Pure central depression	1(3)
IV. Medial condyle	6(12)
V. Bicondyle	3(7)
VI. Plateau fracture with dissociation of metaphysis and diaphysis	2(5)
Total	43



Table 3. Methods of treatments

Method	Cases
Conservative	23
Operative	20
CR* +screw	6
OR#+screw	4
OR+plate	10
Total	43

CR\* : closed reduction

OR# : open reduction

Table 4. Associated soft tissue injuries

Type	I	II	III	IV	V	VI	Total
Soft tissue							
MCL	6	3		1			10
LCL		1					1
Meniscus		2					2
ACL+PCL		1					1
Cruciate+Collateral	3	1					4
Collateral+Meniscus	1						1
Cruciate+Collateral +Meniscus	1		1				2
Total	11	8	1	1			21

5mm (23 ) ,

5mm (20 ) ,

4.

6 , 10 (Table 3).

(Q-setting exercise)

5.

6.8 4.6

12

1.

43 21 (49%)

10 ,

1 , 1 , 1

Schatzker I 12 (60%) 가 8

4). I cancellous cannulated screw , II , III , IV cancellous cannulated screw 1

butress plate , V

1 butress plate , VI 1

butress plate 17

3 10mm 10 가

2.

15.4

Blokker 3)(Table 5) 14 (70%), 16 (80%)

3mm 9

가 가 (Table 6,

7). 5mm 10

**Table 5.** Assessment of Results ( Blokker et al. 1984)

	Satisfactory	Unsatisfactory
pain	Mild	Mod. to severe
ROM	> 90 °	< 90 °
Depression	< 5 mm	> 5 mm
Widening	< 5 mm	> 5 mm
Angulation	< 10 °	> 10 °

**Table 6.** Results according to associated soft tissue injuries.

	Satisfactory	Unsatisfactory
No	18	4
Collateral lig	9	2
Meniscus	1	1
Complex injury	4	4
Total	32	11

**Table 7.** Results according to degree of displacement

	Satisfactory	Unsatisfactory
< 3 mm	4	1
3-5 mm	15	3
> 5 mm	13	7
Total	32	11

IV 1 , VI 1

3

1.

35

II

가

가 7 mm

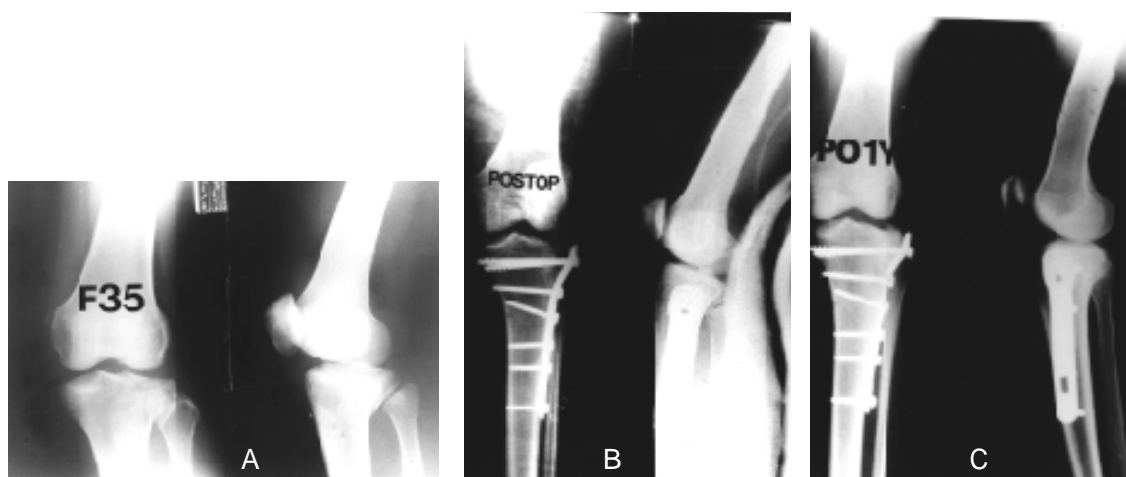
2

12

Blokker

3.

(Fig 1).

**Fig 1-A.** Preoperative x-ray shows Schatzker 's type II fracture of tibial condyle.**B.** Open reduction and internal fixation with plate and screws were performed.**C.** Radiograph at postoperative 1 year shows complete bony healing.

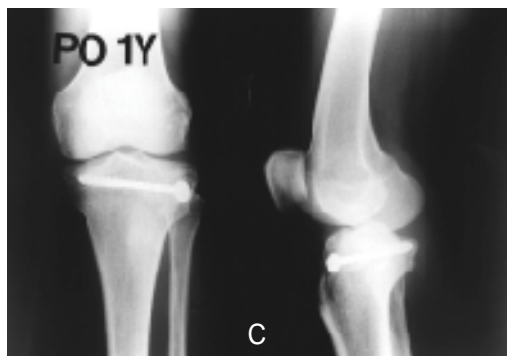
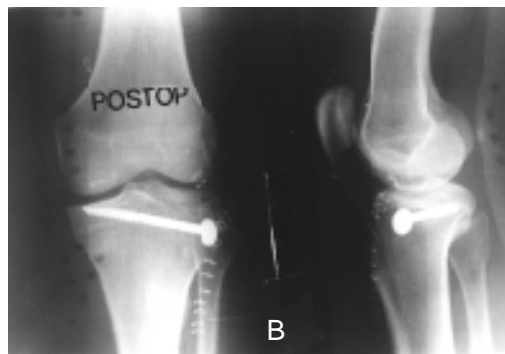
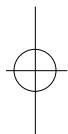


Fig 2-A. Preoperative x-ray shows Schatzker's type II fracture of tibial condyle.  
 B. Open reduction and internal fixation with screw were performed.  
 C. Radiograph at postoperative 1 year shows complete bony healing.



2.

8%

29).

48

II

Blokker Bakalim<sup>2,3)</sup>

가가

, Wilson<sup>35)</sup>

가가

가

3

80% 가

12

Blokker

(Fig 2).

21,34). Kennedy<sup>21)</sup>

가

1852 Thamhayn<sup>32)</sup>Bumper fracture<sup>9)</sup>, Feuder fracture<sup>8)</sup>, Plateaufracture<sup>23)</sup>

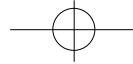
16,29).

Bradford<sup>4)</sup>, Palmer<sup>26)</sup>, Slee<sup>31)</sup>, Apley<sup>1)</sup>

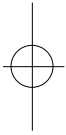
1%

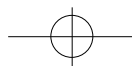
가

,



Hohl<sup>16)</sup> , 5mm 가  
 Schatzker<sup>30)</sup> , Hohl<sup>16)</sup> II III 52% 가 Koval<sup>22)</sup> , Gaudinez<sup>14)</sup>  
 Blokker<sup>3)</sup> V 가 Schatzker type I  
 가  
 가 가 76 ± 3.60 (tibial Honkonen<sup>18)</sup> 7,19)  
 Moore<sup>25)</sup> , Hohl<sup>16)</sup>  
 plateau view)  
 Martin<sup>24)</sup>  
 Dias<sup>12)</sup> , Jensen<sup>20)</sup> 가 가  
 Honkonen<sup>18)</sup> 가  
 Hohl<sup>16)</sup> 가  
 가  
 Kennedy<sup>21)</sup> 44 1 Hohl<sup>17)</sup> 가  
 , Blokker<sup>3)</sup> , Blokker<sup>3)</sup> 가  
 3) 64 38% Porter<sup>27)</sup> 4  
 가 Rasmussen<sup>28)</sup> 6 Gausewitz<sup>15)</sup> 가  
 Schatzker I 6  
 가 Blokker 6  
 6 , 4  
 Apley<sup>1)</sup> Hohl<sup>16)</sup> Blokker<sup>3)</sup>  
 , cast-brace 5,10,11,13,31) 가  
 , Schatzker<sup>30)</sup> 가  
 Schatzker<sup>30)</sup> 가  
 Burri<sup>6)</sup> 1mm (step off), Hohl<sup>16)</sup> 5mm 가  
 Waddell<sup>33)</sup> 10mm 가  
 5mm





1990	3	1996	5	
	가	가	43	1
1. Schatzker	I	20	(47%)	가
2.		43	21 (49%)	
	Schatzker I	20	11 (55%)	
	가			
	가			..
3.			가	
	가			
4.				
		가		가
	5mm			
		5mm	가	

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