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## circumferential wire loop

= Abstract =

### Availability of Supplementary Circumferential Wire Loop in Treatment of Complicated Patellar Fracture

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We have treated 22 patients of complicated patellar fracture with generally proposed fixation methods and supplementary circumferential wire loop as a checkrein or load sharing cable from Mar. 1995 to Feb. 1997 and then compared its surgical results with 15 patients of patellar fracture treated with modified tension band wiring alone in terms of functional recovery of the injured knee.

The pattern of fracture was mostly comminuted(Bostman Type II), usually accompanying ipsilateral fractures with or without open wound, ligamentous injuries, or others.

Although obtaining more satisfactory functional results in supplementary circumferential wire loop (68%) than control group(46.6%) in according to Lysholm and Gillquist scoring system and statistically significant difference in duration of regaining the functional arc of knee motion between two groups( $p=0.007$ , Wilcoxon rank sum test) at 6 months postoperatively, we have found similar clinical results in two groups at 12 months follow-up(82% vs 80% in good results).

Nevertheless, we thought that supplementary circumferential wire loop is one of the effective

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methods to improve the early surgical results of the complicated patellar fracture in respect of prompt regaining in knee motion.

**Key Word** : patella, complicated fracture, supplementary circumferential wire loop

**Table 1.** Classification of Fracture (by Bostman O., et al. 1981)

	CWL(No.)*	MTBW(No.) <sup>†</sup>
I	4(18%)	2(13%)
II	14(64%)	10(67%)
III	4(18%)	3(20%)

\* ; Supplementary circumferential wire loop

<sup>†</sup> ; Modified tension band wiring

가  
가

(85%).

Bostman

4)

1 2 (13%), 2 10  
(67%), 3 3 (20%) ,  
1 4 (18%), 2 14 (64%), 3  
4 (18%) 2 (Table 1),  
7 (47%),  
8 (36.4%) .

9 (60%), 2  
(13%), 2 (13%),  
1 ,

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가

15 (68.2%), 4 (13%),  
1

가

22

load sharing cable  
(circumferential wire loop)

K-

15

pull-out

가

14 , 1

2.0mm

0.9mm

43.4 ,

wire passer

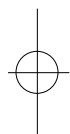
21 , 1

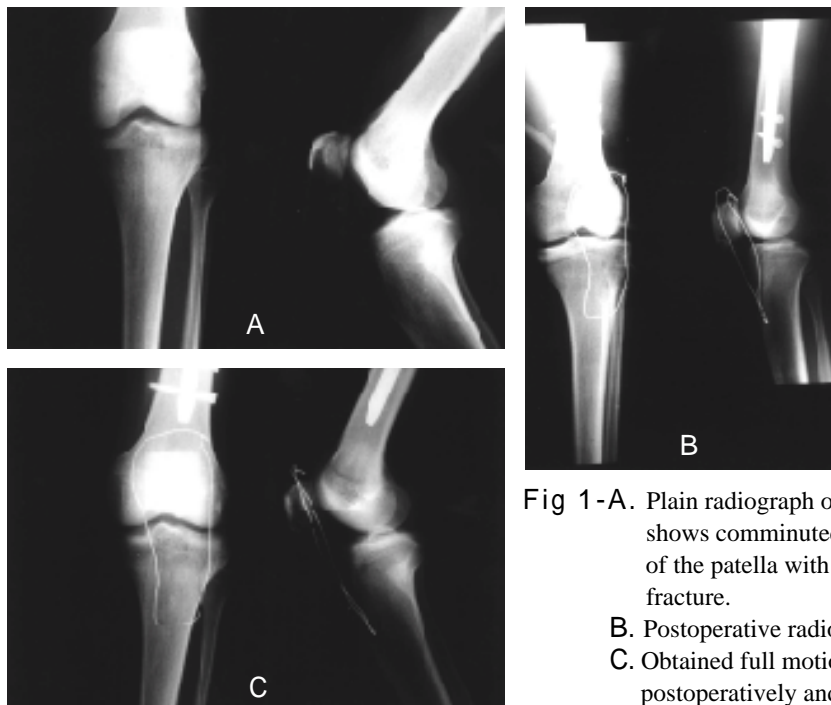
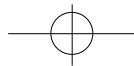
41.9 .

20 40

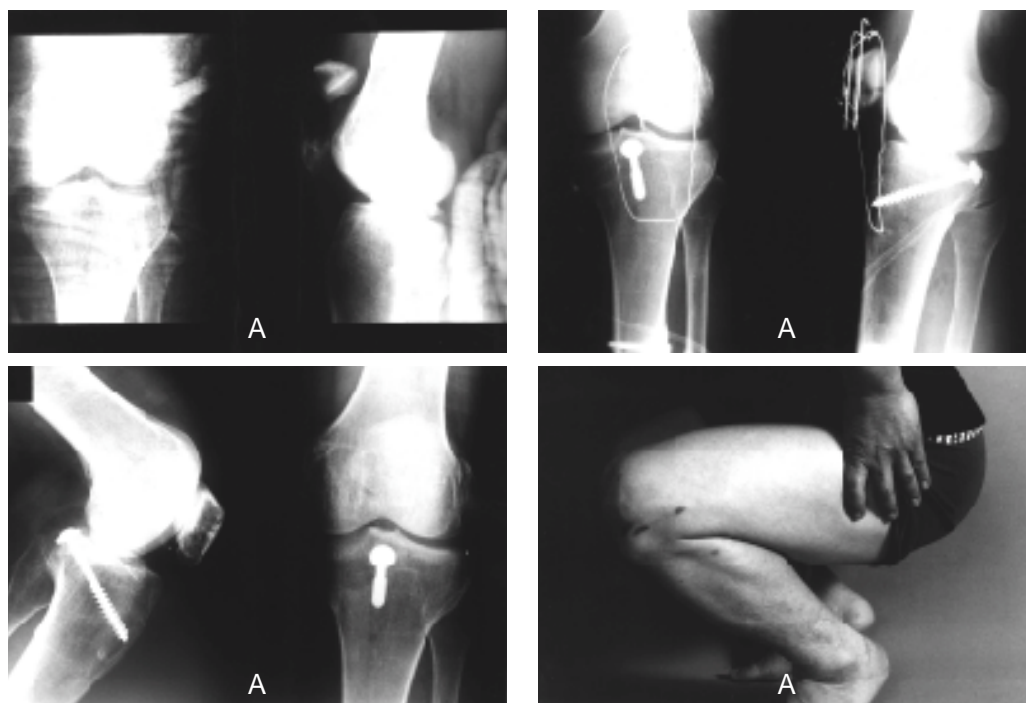
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가





**Fig 1-A.** Plain radiograph of 30 years old male patient shows comminuted fracture of the inferior pole of the patella with ipsilateral femoral shaft fracture.  
**B.** Postoperative radiographs.  
**C.** Obtained full motion of the knee at 6 weeks postoperatively and bony union at 3 months after



**Fig 2-A.** Plain radiograph of 40 years old male patient demonstrate comminuted fracture of the patella with concomitant PCL injury.  
**B.** Postoperative radiographs.  
**C.** The follow-up radiographs after removal of wiring at postoperative 3 months.  
**D.** Photographs shows nearly full squatting at 14 weeks postoperatively.



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**Table 2.** Functional results (by Lysholm and Gillquist, 1981)

	Postop. 6 months		Postop. 12 months	
	CWL(No.)	MTBW(No.)	CWL(No.)	MTBW(No.)
Good	15(68%)	7(47%)	18(82%)	12(80%)
Fair	5(23%)	5(23%)	2( 9%)	1(6.6%)
Poor	2( 9%)	2( 9%)	2( 9%)	2(3.4%)

† The maximal score was 12 point, with 12 to 10 points indicating an good results; 9 to 6 points, fair results; and below to 5 points, a poor results.

12  
(80%),

12  
18 (82%)  
(Table 2).

13.6 , 가  
7.4 Wilcoxon rank sum test  
P-value 0.007

(P<0.01 )

90

3 , 2 ,

1 , 2 가  
3 ,

가

3

6

가

11

10

14

Lysholm

Gillquist

가

12)

, 가 12-  
10 , 9-6 , 5  
, 120

10.4 ,

8.2

가

Lysholm

Gillquist

12)

가

moment

가

5,18)

30

6

가

가

-

7 (46.6%),

5 (33.3%),

3 (20%) ,

15 가

15 (68.2%),

2cm<sup>2</sup>

5 (22.7%),

2 (9%)

60-90

5cm<sup>2</sup>

가



11). 가 - 8  
가 6-7  
가 10,16)  
가 2mm -  
3mm  
5) Bostman 4mm 3mm ,  
가 가 가  
4)  
가 9  
-  
-  
-  
가 8,9,17)  
가  
가  
1,2,3,6,7,12,17)  
가 30-60  
1-3  
3).

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6  
8  
14,15).
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