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Russell-Taylor

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= Abstract =

Treatment of the Femoral Shaft Fractures Using Reamed Russell-Taylor Intramedullary Nail

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The purpose of this paper was to evaluate the results of the femoral shaft fractures by reamed Russell-Taylor intramedullary nailing in the viewpoint of union time and complications. We reviewed 59 femoral shaft fractures. According to the type of fractures(Winquist-Hansen classification), average union time were 20.1 and 23.5 weeks in type 1, 2 and 3, 4, and nonunion rates were 12.5% and 10.5% in type 1, 2 and 3, 4. According to the level of fractures, average union time were 19.9, 20.3, 23.4 weeks in proximal, middle and distal fractures, and nonunion rates were 6.7%, 8.8%, 30% in proximal, middle and distal fractures. According to the reduction

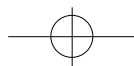
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techniques, average union time were 20.0 and 21.5 weeks in closed and open reduction, and nonunion rates were 5.9% and 20.0% in closed and open reduction. According to the methods of interlocking screw fixation, average union time were 19.3 and 20.7 weeks in dynamic and static fixation, and nonunion rates were 25% and 9.8% in dynamic and static fixation. There was no significant differences in average union time between closed and open fracture group, closed and open reduction group, and dynamic and static fixation group. There was significant differences in union time between simple and complex, comminuted fractures($p<0.05$), and between distal and proximal, middle fractures($p<0.05$). Also there was significant differences in nonunion rate between fracture reduced with closed and open technique($p<0.05$). In conclusion, reamed Russell-Taylor intramedullary nailing can be a useful treatment modality in femoral shaft fracture if closed reduction is available. However, there was high complication rate including failure of screw, varus deformity, delayed union time in distal femoral shaft fractures. In this situation, we should consider other treatment method.

Key Words :Femur, Shaft fracture, Reamed intramedullary nailing, Russell-Taylor nail

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1960

가 .

Taylor 1993 3 1997 12 Russell-
1 (16.8) 가
58 59 ,
(),
()

가

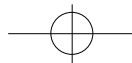
1/3 1/3

가

가 , 1.
58 42 (72.4%), 16 (27.6%)
가 가 . 12 , 82 32.4
가 21 (36.2%) 가 20

가





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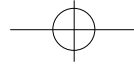
2. 가 stainless steel
가 49 (84.5%) 13 - 16mm
가 6 , 가 2 , 1.0mm, 12mm
1 1.2mm 2

3. (unthreaded) 2
59 50 2
(84.7%), 9 (15.3%) 6.3mm
Gustilo-Anderson¹⁷⁾ I 3 , Russell-Taylor
II 6 (slotted) (AO , Grosse-Kempf
Winquist-Hansen²⁵⁾
1 24 (40.7%) 가 , 2 (bending rigidities)
16 (27.1%), 3 8 (13.6%), 4 (torsional rigidities)
11 (17.6%) . Grosse-Kempf
1/3 가 34 (57.6%) 가 screws AO screws
1/3 가 15 (25.4%), 1/3 가 10 (17.0%) ¹⁵⁾ Russell-Taylor 가
가 .

4. 7.
59 36 57 가 1,
29 , 2 40
7 , , 6 1 -10
가

5. 가 , 4 ,
가 , 10
가
34 12 가
3, 4 19
가 6
Russell-Taylor , 16
,
hand-held method
51 8
3
가
가
6. Russell-Taylor 가 가
Russell-Taylor (nonslotted) 3/4
6





9
3
1).
1. 20.6 7
8
가 13
1) 19.9 ,
25.6
5 , 2 가
2) 1, 2, 3, 4
18.5, 20.1, 25.0, 22.6 1,2
20.1 , 3,4 23.5
($p<0.05$), 5 , 2
($p>0.05$).
3) 19.9 , 20.3 , 23.4
($p<0.05$),
1 , 3 , 3
($p>0.05$).
4) 20.0
21.5
($p>0.05$),
2 (5.9%) 5 (20.0%)
($p<0.05$).
5) 19.3 , 20.7
($p>0.05$) 2
5 (p>0.05).
2 30 가 가

2 , (5mm),
가 1 .
13 가 10
(8 ,
1 , 1), 7
, 3 , 2
1
(Table 1).

Table 1. Complications

Complications	No. of cases
Intraoperative	6
Proximal cracking fracture	2
Varus deformity	2
Fragment splitting	1
Distraction	1
Postoperative	37
Delayed union	13
Metal failure	10
Nonunion	7
Stiff knee	3
Infection	2
Total	43

Winqvist-Hansen 1
10*360 mm Russell-Taylor
10
12*380 mm
Russell-Taylor
1.5
6
(Fig. 1)
2.
가 가

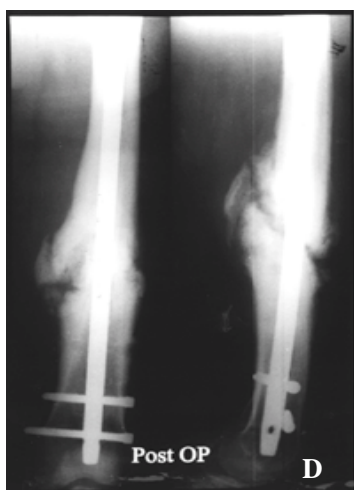
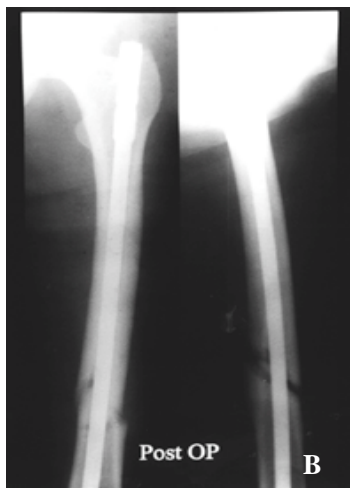
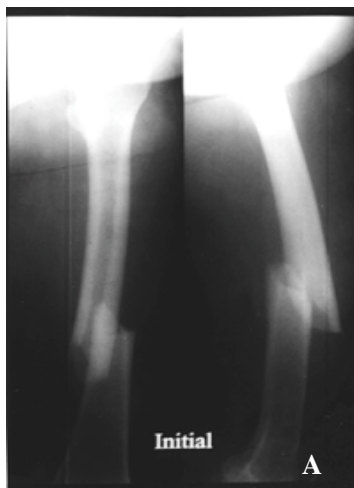
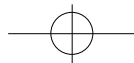


Fig 1-A. Preoperative radiograph showing a oblique fracture of distal femoral shaft, Winquist-Hansen type 1.

1-B. Immediate postoperative radiograph.

1-C. Radiograph showing metal failure and delayed union at 10 months after operation.

1-D. Radiograph after re-operation : Nail was removal and larger nail was inserted.

1-E. Radiograph showing complete union at 6 months after re-operation.

Winquist-Hansen 2

, 13*420 mm Russell-Taylor

7

.(Fig. 2)

가

4,19,23)

가

17,23)

가

가

6,20)

가

14)

가

가

26)

8,12,16)

가

가

9)

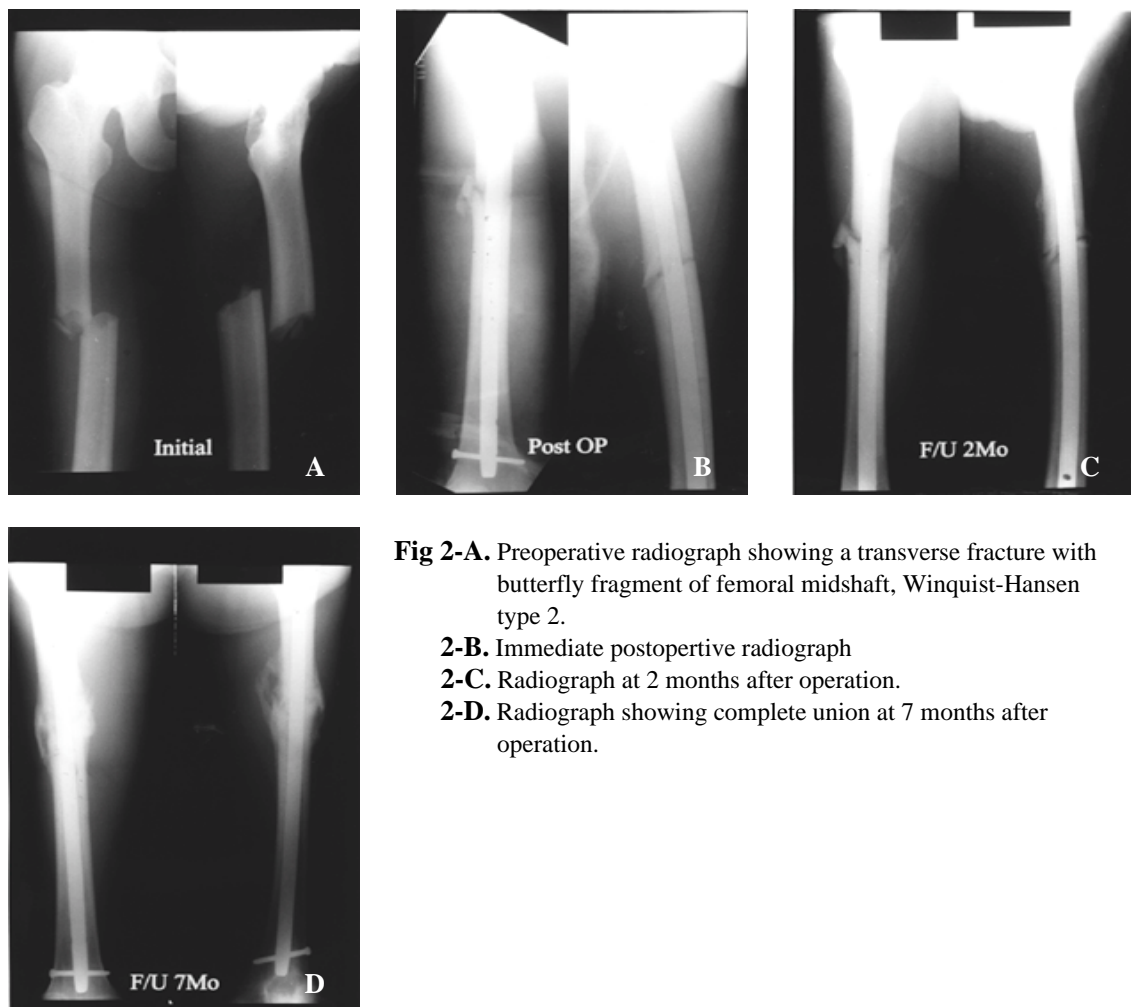


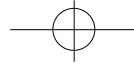
Fig 2-A. Preoperative radiograph showing a transverse fracture with butterfly fragment of femoral midshaft, Winquist-Hansen type 2.

2-B. Immediate postoperative radiograph

2-C. Radiograph at 2 months after operation.

2-D. Radiograph showing complete union at 7 months after operation.

Winquist-Hansen 1,2 12 , 3,4
 19 , 5 32 , 3) 1,2
 , 3 , 4 15 , 18 , 20
 1,2 20.1 , , 가 ,
 3,4 23.5 가
 (p<0.05).
 5)
 2 가 .
 3
 (p<0.05). 14,18) 59 34
 , 25



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20.0 , 21.5

5.9%, 20.0%

(p>0.05).

3

(p>0.05)

2

(p<0.05),

2

,

,

,

가

가

,

가

,

,

,

가

7).

.

,

3

,

2

가

1

5,9,25).

가

가

가

.

Blachut²²⁾

가

5

10

가

가

2

10

16)

가

가

26).

,

,

,

가

가

26).

(8)

. Franklin

16)

가

5cm

가

가

2,10,11,20).

20.7

19.3

3

5cm

가4 ,

(p>0.05)

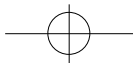
3 ,

가1

25% 9.8%

가





가 1 , 가

16) 10mm

가 , 가

5cm
13,16)

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21)

1) , , , , :

23,24)

1

9:547-556, 1996

(10mm)

2) , , , :

(12mm)

Winqvist

25) 0.9%,

9) 4%

, 10:289-294, 1997.

Gustilo-

3) , , , , ,

Anderson II

2 (3.4%)

:

, 8:533-

537, 1995.

4) , , , , , :

, 28:1684-1690, 1993.

Russell-Taylor

5) , , :

, 30:686-693, 1995.

6) , , , , :

Interlocking

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1993.

7) , , :

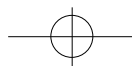
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8) , , :

, 27:1319-1327,

가

1992.



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