



12, 2, 1999 4

The Journal of the Korean Society of Fractures
Vol.12, No.2, April, 1999

SPIRAL BLADE

. . . .

= Abstract =

Surgical Treatment of Subtrochanteric Fracture of Femur with Spiral Blade Unreamed Intramedullary Femoral Nail

In-Heon Park, M.D., Kyung-Won Song, M.D., Seong-Il Sin, M.D., Jin-Young Lee, M.D.,
and Keon-Hyung Lee, M.D.

*Department of Orthopaedic Surgery, Kang-Dong Sacred Hospital
College of Medicine, Hallym University, Seoul, Korea*

The treatment of the subtrochanteric fracture is technically very demanding, independent of the implant material used and presents a challenge in terms of surgical management. A multitude of implants based on very different biomechanical and operative concept are employed to deal with the special conditions relating to these fractures. The purpose of this study was to analyze the results of the surgical treatment of subtrochanteric fracture using spiral blade unreamed intramedullary femoral nail. Spiral blade unreamed intramedullary nails were applied in 9 subtrochanteric fractures. Fracture healing was uneventful and implant complications or loss of reduction were not observed. In conclusion, spiral blade unreamed intramedullary nail will be a valuable addition to the fixation techniques available for the treatment of subtrochanteric femoral fractures.

Key Words : Femur, Subtrochanteric fracture, Spiral blade intramedullary nail

:

445 (134-010)

Tel : (02) 224 - 2230 Fax : (02) 489 - 4321

*

1998

42

.



Patient No.	age sex	Type*	UFN [#]	blade ⁺ (wks)	union time	leg-length discrepancy	Knee & hip flexion	other complication
01	19/M	III-B	380/10	90/110	14	no	>140 / >140	wound infection
02	30/M	III-A	380/10	85/110	17	no	>120 / >120	
03	35/M	IV	380/10	85/110	18	1cm	>140 / >120	
04	31/F	III-A	360/9	85/110	16	no	>140 / >140	
05	28/M	III-A	400/10	85/120	16	no	>140 / >140	
06	22/M	IV	380/10	90/110	16	no	>140 / >140	
07	36/M	III-A	380/10	90/110	16	no	>140 / >120	
08	58/M	III-A	360/10	85/110	18	no	>120 / >120	
09	29/M	III-A	400/10	85/110	15	no	>140 / >140	

⁺ blade length/angle (mm/°)

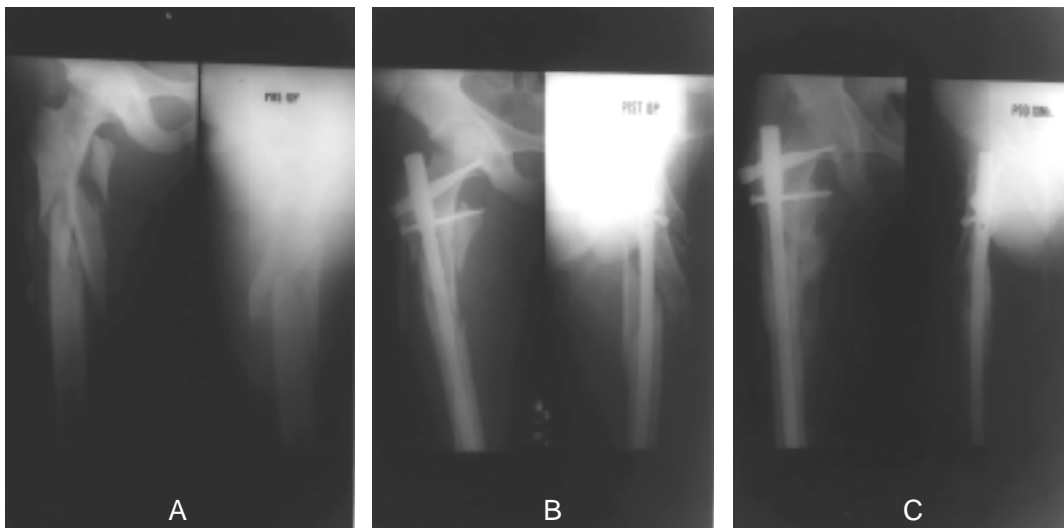


Fig 1-A. A 22 year old man with Seisheimer type IV subtrochanteric fracture of femur in a motor vehicle accident as seen in AP radiograph.

B. Adequate stability was achieved with the use of spiral blade unreamed interlocking intramedullary nail(AP radiograph). Additional static locked intramedullary nail was fixed the lesser trochanteric fragment.

C. At 10 months follow-up AP and lateral radiographs, the fracture healed with good alignment and preservation of length.

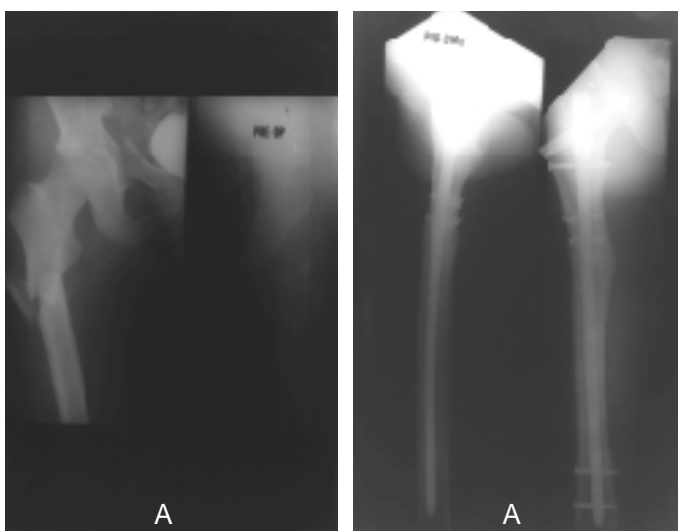


Fig 2-A. A 19 year old man with Seisheimer type III-B subtrochanteric fracture of femur in a motor vehicle accident as seen in AP radiograph.

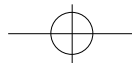
B. Closed interlocking nailing was performed with spiral blade unreamed femoral intramedullary nail(AP and lateral radiographs). There was solid union and excellent anatomical and functional results 8 months later.

fossa) (awl)

spiral blade locking

spiral blade 7†

(pyriform



242 • / 12 2

Spiral blade (aiming device) 100 . 12 , ,
 , 110 , 120 가 , , . 1
 cannulated blade 1cm , 1
 spiral blade 가
 locking sleeve , .
 spiral blade .
 interlocking sleeve
 가
 15 mm .
 blade 가 , 가 ,
 blade 가 , 가
 , Shenton . 가
 blade . Blade 5-10 mm 13 , 가 1,8).
 mm cannulated drill bit blade 가 가
 countersink . 가 1) 20
 T cannulated spiral blade 40 가 , 가 가
 blade , blade nail 가 가
 가 . . ,
 Blade가 blade가 가가 가
 polyethylen tip 가 15 mm 가
 end cap spiral blade 가 .
 Boyd & Griffin
 10 mm가 5) ,
 , spiral blade 85 mm 90 mm Fielding & Magliato 6),
 , blade 8 110 , 1 Zickel 19)
 120 . Seinsheimer
 1 가 , 1978 Seinsheimer
 three part spiral
 fracture(Type III-A) 가 가
 가
 14).
 가
 , ,
 가가
 9 ,
 16.2 .
 7 6 (DCS, DHS)^{3,16)}
 (Zickel nail^{4,18)}, Gamma

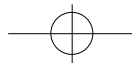


SPIRAL BLADE

• 243

nail⁷⁾, ^{12,16)} . 1939 .
 Kuntcher가 Y- 1994 Hoffmann ⁸⁾ 9 .
¹¹⁾ . spiral blade , 1
 1960 Zickel ,
 miss-a-nail
¹⁹⁾ . 1970 AO , 1 1cm
 95 (angled blade-plate) ,
 (tension band) , ,
⁹⁾ . Spiral blade blade가
 no- 가 ,
 touch ,
 (torsional stability)
 . spiral blade
 가
 1980 , (compressive trabeculae)
 (tensile trabeculae)가
^{2,12,16)} . ¹²⁾ . spiral blade
 가
 . 가
 ,
²⁾ .
 가 , spiral blade 가가
 가
 , 가
 가
 가 3) . 가 가
 spiral blade 9
 가 1
 가 .
 antegrade screw locking Seinsheimer type IV 1 1cm
 retrograde screw locking . 1
^{10,16)} . 1992 Wiss Brien¹⁶⁾
 95
 25.5 (, 16-45
) , 3 , 1 , 3
 , 가





Spiral blade

Seinsheimer type III

type IV

REFERENCES

- 1) , , , :
27-4:1006-1013, 1992.
- 2) , , :
, 30-3:686-693, 1995.
- 3) , , , , :
, 27-5:1302-1309, 1992.
- 4) **Bergmann GD, Winkquist RA, Mayo KA and Hansen ST Jr** : Subtrochanteric fracture of the femur. Fixation using the Zickel nail. *J Bone Joint Surg*, 69:1032-1040, 1987.
- 5) **Boyd HB and Griffin LL** : Classification and treatment of trochanteric fractures. *Arch Surg*, 58:853-866, 1949.
- 6) **Fielding JW and Magliato HJ** : Subtrochanteric fractures. *Surg, Gynec and Obstet*, 122:555-560, 1966.
- 7) **Halder SC** : The gamma nail for peritrochanteric fractures. *J Bone Joint Surg*, 74:340-344, 1992.
- 8) **Hoffman R, Sudkamp NP, Muller CA, Schutz M and Hass NP** : Osteosyntheses proximaler Femurfrakturen mit dem modularen Verriegelungssystem des unaufgebohrten AO-Femurmarknagels (UFN). *Unfallchirurgie*, 97:568-574, 1994.
- 9) **Kinast C, Bolhofner BR, Mast JW and Ganz R** : Subtrochanteric fractures of the femur. Results of treatment with the 95o condylar blade-plate. *Clin Orthop*, 238:122-130, 1989.
- 10) **Krettek C, Rudolf J, Schandelmaier P, Guy P, Konemann B and Tscherne H** : Unreamed intramedullary nailing of femoral shaft fractures - operative technique and early clinical experience with the standard locking option. *Injury*, 27-4:233-254, 1996.
- 11) **Kuntscher G** : Dauerbruch und Umbauzone. *Bruns 'Beitr klin Chir*, 169:557-572, 1939.
- 12) **Kyle RF** : Fractures of the proximal part of the femur. *J Bone Joint Surg*, 76:924-950, 1994.
- 13) **Ovadia DN and Chess JL** : Intraoperative and postoperative subtrochanteric fracture of the femur associated with removal of the Zickel nail. *J Bone Joint Surg*, 70:239-243, 1988.
- 14) **Seinsheimer III F** : Subtrochanteric fractures of the femur. *J Bone Joint Surg*, 60:300-306, 1978.
- 15) **Senter B, Kendig R and Savoie FH** : Operative stabilization of subtrochanteric fractures of the femur. *J Orthop Trauma*, 4:399-405, 1990.
- 16) **Wiss DA, Brien WW** : Subtrochanteric fractures of the femur. Results of treatment by interlocking nailing. *Clin Orthop*, 283:231-236, 1992.
- 17) **Yelton C and Low W** : Iatrogenic subtrochanteric fracture. A complication of Zickel nail. *J Bone Joint Surg*, 68-A:1237-1240, 1986.
- 18) **Zickel RE** : A new fixation device for subtrochanteric fractures of the femur. A preliminary report. *Clin Orthop*, 54:115-123, 1967.
- 19) **Zickel RE** : An intramedullary fixation device for the proximal part of the femur. Nine years ' experience. *J Bone Joint Surg*, 58:866-872, 1976.