

Orthofix Retrograde Nailing System



**The long
and the
short of it**

CHANGE YOUR PERSPECTIVE



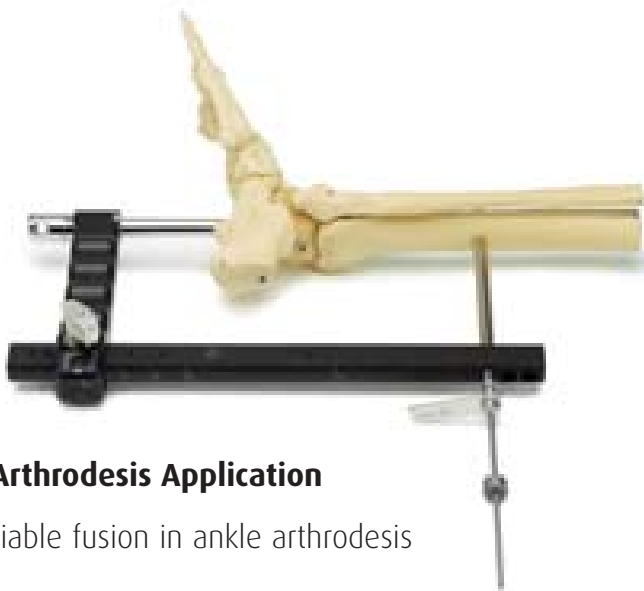
Short Supracondylar Application

- Targeting for the shorter nail



Femoral Retrograde Application

- Targeting system for longer nail



Ankle Arthrodesis Application

- Reliable fusion in ankle arthrodesis

Straight nail design

Easier insertion of nail by rotational movements

Variable plane of insertion

Locking screws may be placed at ideal angle of insertion

Greater versatility in patients with existing knee prosthesis

Tried and tested implant design

Strong implant reduces risk of implant failure

Allows earlier weightbearing

Reliable healing

Reliable targeting for all nail lengths

Minimally invasive technique

Minimises operating times

Reduces radiation exposure

Intuitive instrumentation

Short learning curve

RETROGRADE NAILS

17607 Sterilization Box for nails and Locking Screws, empty.

For the first 50 mm all nails are 12 mm in diameter; they then taper to the diameter stated.

Nails up to 220 mm long have three locking holes at each end. The longer nails have two at each end.

Nails listed on the blue background are short nails for supracondylar and ankle arthrodesis applications.

Total length (mm)	Nail diameter		
	10 mm	11 mm	12 mm
140	77014		77214
160	77016		77216
180	77018	77118	77218
190	77019	77119	77219
200	77020	77120	77220
210	77021	77121	77221
220	77022	77122	77222
240	76024	76124	
260	76026	76126	
280	76028	76128	
300	76030	76130	
320	76032	76132	
340	76034	76134	
360		76136	

RETROGRADE NAIL END CAP	77900
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STANDARD LOCKING SCREWS

6 mm THREAD

Total length (mm)	Thread length		
	8 mm	12 mm	20 mm
30	73930		
35	73935		
40	73940		
45	73945		
50		73950	
55		73955	
60		73960	
65		73965	
70			73970
75			73975
80			73980
85			73985
90			73990
95			73995
100			73900
105			73905
110			73910

REVISION LOCKING SCREWS

8 mm THREAD

Washers are usually used with Revision Locking Screws or Compression Locking Screws.

Total length (mm)	Thread length			
	7 mm	9 mm	12 mm	20 mm
30	74530			
35	74535			
40	74540			
45	74545			
50		74550		
55		74555		
60		74560		
65		74565		
70			74570	
75			74575	
80			74580	
85			74585	
90			74590	
95				74595
100				74500
105				74505
110				74510

PACK OF 4 WASHERS	74405
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COMPRESSION LOCKING SCREWS

8 mm THREAD

Compression Locking Screws are only used with the Femoral Retrograde Nail and are used with a Compression Nut at the threaded end. They may also have a washer at the head end when the bone quality is poor.

Total length (mm)	Thread length	
	12 mm	20 mm
70	76570	
75	76575	
80	76580	
85	76585	
90	76590	
95		76595
100		76500
105		76505
110		76510

COMPRESSION NUT WITH SELF-LOCKING WASHER (PACK OF 4)	76900
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INDICATIONS FOR THE FEMORAL RETROGRADE NAIL

Short Retrograde Nail



- Supracondylar and selected supra/intercondylar fractures of the femur
- Femoral shaft or distal femoral fractures in the presence of proximal femoral implants or total hip joints
- Fractures above the femoral component of a total knee joint
- Non-union in distal femoral fractures after plate fixation or antegrade nailing
- Osteotomies



40 year old male patient with comminuted supra/intercondylar and patellar fracture.



72 year old female patient with supracondylar fracture, 3 years after total knee replacement.



Supra/intercondylar fracture in a 75 year old female patient after total hip replacement.

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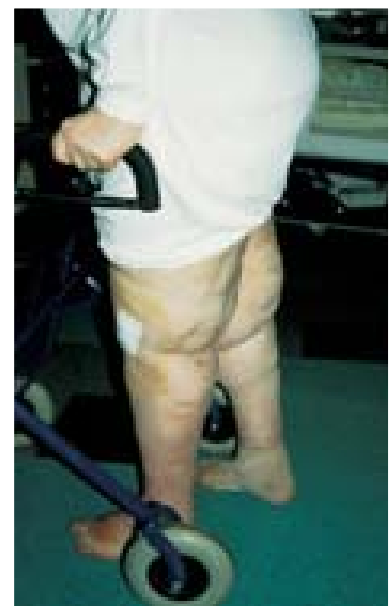
INDICATIONS FOR THE FEMORAL RETROGRADE NAIL

Long Retrograde Nail

- Femoral shaft fractures in very obese patients
- Femoral shaft fractures in pregnant patients
- Femoral shaft fractures with concomitant femoral neck fractures
- Femoral shaft fractures in patients with osteoarthritis of the hip (where impaired hip movement makes antegrade nail insertion difficult)
- Floating knee with both femoral shaft and tibial shaft fractures (where insertion of both nails is possible through a short medial para-patellar approach)
- Bilateral femoral shaft fractures
- Femoral shaft fractures where a traction table or other reduction equipment is not available



Femoral fracture in a very obese 75 year old female patient.



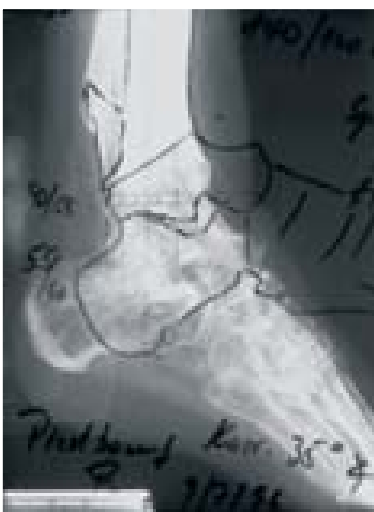
Weightbearing 3 weeks after trauma.

INDICATIONS FOR THE SHORT RETROGRADE NAIL IN ANKLE ARTHRODESIS



52 year old patient after polytrauma and ankle fusion in equinus and internal rotation. Free flap on anterior tibia.

- Painful arthritic deformity of the ankle joint with stiffness in the subtalar joint
- Failed fusion of the ankle joint
- Fractures of the tibial plafond and/or talus where reconstruction is impossible
- Fracture/dislocations of the ankle joint in the presence of severe arthritic changes and loss of function of this joint



Pre-operative planning.



Anterior wedge resection with correction of equinus and rotation. Minimally invasive stabilisation with retrograde locking nail.

REFERENCES

FEMORAL RETROGRADE NAIL

- Dunlop DG, Brenkel IJ. The supracondylar femoral nail in elderly patients with distal femoral fractures. *Injury* 1999; 30: 475-481.
- Gynning JB, Hansen D. Treatment of distal femoral fractures with intramedullary nails in elderly patients. *Injury* 1999; 30: 43-46.
- Hora N, Markel DC, Haynes A, Grimm MJ. Biomechanical analysis of supracondylar femoral fractures fixed with modern retrograde intramedullary nails. *Orthop Trauma* 1999; 13 (8): 539-544.
- Morgan E, Ostrum RF, DiCicco J, McElroy J, Poka A. Effects of retrograde femoral intramedullary nailing on the patellofemoral articulation. *J Orthop Trauma* 1999; 13 (1): 13-16.
- Ostrum RF, DiCicco J, Lakatos R, Poka A. Retrograde intramedullary nailing of femoral diaphyseal fractures. *J Orthop Trauma* 1998; 12 (7): 464-468.
- Ostrum RF, Agarwal A, Latakos R, Poka A. Prospective comparison of retrograde and antegrade femoral intramedullary nailing. *J Orthop Trauma* 2000; 14 (7): 496-501.
- Ponzer S, Tidermark J, Törnkvist H. Retrograde nailing of femoral fractures distal to a Moore Prosthesis. *J Orthop Trauma* 1998; 12 (8): 588-591.
- Ricci WM, Bellabarba C, Evanoff B, Herscovici D, DiPasquale T, Sanders R. Retrograde versus antegrade nailing of femoral shaft fractures. *J Orthop Trauma* 2001; 15 (3): 161-169.
- Torneta III P, Tilburzi D. Antegrade or retrograde reamed femoral nailing. A randomised prospective trial. *J Bone Joint Surg* 2000; 82-B (5): 652-654.
- Ward PJ, Goodwin MI. The use of the supracondylar nail in the management of femoral fractures in the presence of other femoral implants in the very elderly. *Injury* 1998; 29 (9): 671-675.

ANKLE ARTHRODESIS NAIL

- Anderson JG, Coetzee JC, Hansen ST. Revision ankle fusion using internal compression arthrodesis with screw fixation. *Foot Ankle Int* 1997; 18: 300-308.
- Berend ME, Glisson RR, Nunley JA. A biomechanical comparison of intramedullary and crossed lag screw fixation for tibiotalar calcaneal arthrodesis. *Foot Ankle Int* 1997; 18: 638-643.
- Buck P, Morrey BF, Chao EY. The optimum position of arthrodesis of the ankle. *J Bone Joint Surg [Am]* 1987; 69-A: 1052-1062.
- Carrier D, Harries C. Ankle arthrodesis with vertical Steinmann Pins in rheumatic arthritis. *Clin Orthop* 1991; 268: 10-14.
- Charnley J. Compression arthrodesis of the ankle and shoulder. *J Bone Joint Surg [Br]* 1951; 33-B: 180-191.
- Conti RJ, Walter JH Jr. Effects of ankle arthrodesis on the subtalar and midtarsal joints. *J Foot Surg* 1990; 29: 334-336.
- Gruen GS, Mears DC. Arthrodesis of the ankle and subtalar joints. *Clin Orthop* 1991; 268: 15-20.
- Helm R. The results of ankle arthrodesis. *J Bone Joint Surg [Am]* 1990; 72-A: 141-143.
- Kile TA, Donnelly RE, Gehrke JC, Werner ME, Johnson KA. Tibiotalar calcaneal arthrodesis with an intramedullary device. *Foot Ankle Int* 1994; 15: 669-673.
- King HA, Watkins TB Jr, Samuelson KM. Analysis of foot position in ankle arthrodesis and its influence on gait. *Foot Ankle* 1980; 1: 44-49.
- Moore TJ, Prince R, Pochatko D, Smith JW, Fleming S. Retrograde intramedullary nailing for ankle arthrodesis. *Foot Ankle Int* 1995; 16: 433-436.
- Morrey BF, Wiedemann GP. Complications and long term results of ankle arthrodeses following trauma. *J Bone Joint Surg [Am]* 1980; 62-A: 777-784.
- Papa JA, Myeerson MS. Pantalar and tibio-calcaneal arthrodesis for post-traumatic osteoarthritis of the ankle and hindfoot. *J Bone Joint Surg [Am]* 1992; 74-A: 1042-1049.
- Pinzur MS, Kelikian A. Charcot ankle fusion with a retrograde locked intramedullary nail. *Foot Ankle Int* 1997; 18: 699-704.
- Pochatko DJ, Smith JW, Phillips RA, Prince BD, Hedrick MR. Anatomic structures at risk: combined subtalar and ankle arthrodesis with a retrograde intramedullary rod. *Foot Ankle Int* 1995; 16: 542-547.

Orthofix Retrograde Nailing System



- **Straight nail design**
- **Variable plane of insertion**
- **Tried and tested implant design**
- **Reliable targeting for all nail lengths**
- **Strongest available locking screw design**

The Orthofix Retrograde Nailing System was developed in collaboration with Prof. Dr. D. Pennig, St. Vinzenz-Hospital, Cologne, Germany.

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ALWAYS INNOVATING