

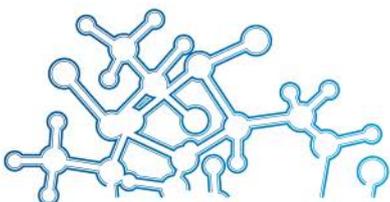
Fixation of Malleolar Fracture Using ActivaPin™s

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Summary Table

Patient no.:	1	Exitus:	No
Patient initials:	TLi		
Smoking:	No	Sex:	Female
Use of alcohol:	Normal use	Age:	58 years
Other disease:	No	Height:	165 cm
Contin. medication	No	Weight:	60 kg
<hr/>			
Operator:	Esa Partio		
Dg no.:	S82.6	Operation:	Fracture
DG:	Fr. Mall. Lat. non-consolidata L dx	Operation no.:	NHJ12
Injury date:	30.10.2006	Immobilisation:	Functional brace
Operation date:	23.5.2007	Prim. weight bearing:	Full w eight bearing at 6 w weeks
Operation time:	25 min	Sec. weight bearing:	-
Hospital stay:	1 days		
Sick leave:	45 days		
Bloodless field during operation:	Yes		
Prophylactic antibiotics:	No		
<hr/>			
Implant 1:	ActivaPin REF B-AP-2030	LOT:	S7002
Implant performed:	Excellent	Drilling:	Drill bit
Implant 2:	ActivaPin REF B-AP-2030	LOT:	S7002
Implant performed:	Excellent	Drilling:	Drill bit
Operation:	No technical difficulties		
Notice:	Good compression		

	Primary	3 w weeks	6 w weeks	1 year	2,5 years	5 Years call
Operator:	Esa Partio	Esa Partio	Esa Partio	Esa Partio	Esa Partio	Esa Partio
Obj. result:	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Subj. result:	Excellent	Excellent	Excellent	Excellent	Excellent	Moderate
Primary position:	Exact	Exact	Exact	Exact	Exact	-
Bone union:	Non-union	Fair	Union	Union	Union	-
Sw elling:	Slight	Moderate	No	No	No	Slight
Redness:	Slight	Moderate	No	No	No	No
Pain:	Occasional medic.	Occasional medic.	No	No	No	Occasional medic.
Second operation:	-	No	No	No	Yes	No
Range of motion:	Deficiency 10-30deg.	Deficiency<10deg.	Deficiency<10deg.	Normal	Normal	Normal
Sports activities:	Ended activities	Ended activities	Changed activities	Like before	Like before	Like Before
Tissue reaction:	No	No	No	No	No	No
Infection:	No	Superficial	No	No	No	No
Thrombosis:	No	No	No	No	No	No
Radiol. final posit.:	-	Stable	Stable	Stable	Stable	-

Extra notices: The same foot was operated again at 2.5 years for removal of neurinoma between third and fourth metatarsal bone. MRI imaging of the foot was carried out at that time. At 5 years patient needs to use occasional medication for pain due to multiarticular arthrosis.

1 Case Description

Patient was a 58 years old normal weight female, with Weber A -type lateral malleolar fracture. Primary treatment was done conservatively with 6 weeks plaster cast immobilization. Pain persisted and clinical examination suggested a nonunion of the fracture. MRI investigation confirmed the nonunion of the fracture and thus patient was operated 7 months after the injury. The figure below shows the MRI finding.



Figure 1 Preoperative MRI showing nonunion of conservatively treated Weber A -type malleolar fracture.

2 Surgical Procedure

Two ActivaPin™s were used in angle to create rigid stability and compression to the fragment line. Drilling was performed (in situ) through the proximal cortex creating a good cortical platform for the implant. Both implants were fully inserted and proximal heads of the pins were sunk 1 mm under the cortical level. Insertion feel was smooth and pins slid in easily with good friction. During the insertion when pin went through the fixation line, blood came out of the fixation line indicating good compression already after insertion of the first implant.

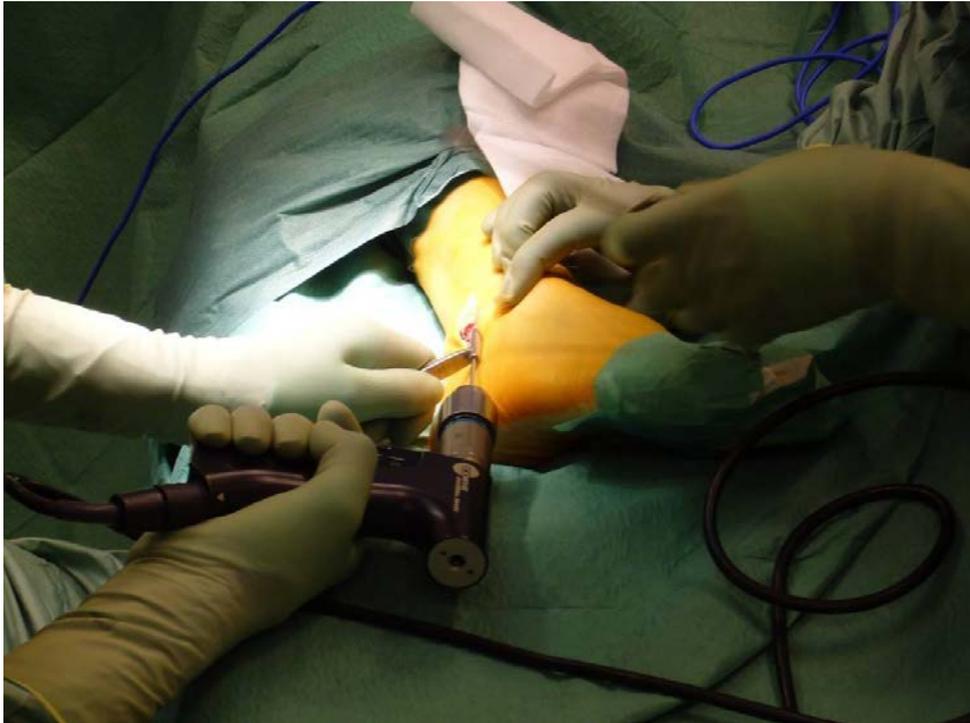


Figure 2 Drilling along cortical surface



Figure 3 Insertion of the pin with mallet

As a postoperative care a functional brace was applied. Full weight bearing was allowed after 6 weeks.

3 Results

At 5 weeks postoperative X-ray union of the fracture was seen.



Figure 4 5 week postoperative x-rays reveals union of the fracture.

The fracture healed well with exact position and pain in the ankle was relieved. Patient, however, claimed increasing pain in the forefoot. At 2 years 6 weeks MRI investigation was carried out to find a cause for the pain. X-ray was also taken to rule reoccurring of the nonunion of the treated fracture.



Figure 5 Left: MRI imaging at 2 years and 6 months shows well filled implant holes. Fracture line is still visible in MRI, Right: X-ray at 2 years and 6 months reveals a solid bony union.

In the MRI investigation a neurinoma between 2nd and 3rd metatarsal was found and later on surgically removed. Forefoot pain was relieved.

At 5 year follow up the patient reports pain in the ankle again. The cause of the pain is diagnosed to multiarticular arthrosis of the tarsal joints.

4 Conclusion

A nonunion after failed conventional treatment of a Weber A -type malleolar fracture was successfully treated with two ActivaPin™s. At 2 years and 6 months hardly any signs of the implant holes are visible in MRI, thus the implant has degraded and channels filled almost completely.

During the operation good compression of the fracture was achieved due to grooved pin surface. Grooved surface of the pin facilitates easy insertion and good holding power.

5 Contact Information Concerning the Case

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6 Suggested Reading

- [1] Böstman O, Vainionpää S, Hirvensalo E, Mäkelä A, Vihtonen K, Törmälä P, Rokkanen P; Biodegradable Internal Fixation for Malleolar Fractures, A Prospective Randomised Study; The Journal of Bone and Joint Surgery; Vol. 69-B, No.4, p.615-619; August 1987
- [2] Partio E, Böstman O, Hirvensalo E, Vainionpää S, Vihtonen K, Pätäälä H, Törmälä P, Rokkanen P; Self- Reinforced Absorbable Screws in the Fixation of Displaced Ankle Fractures: A Prospective Clinical Study of 152 Patients; Journal of Orthopaedic Trauma; Vol. 6, No. 2, p. 209-215; 1992