

Supplementary material

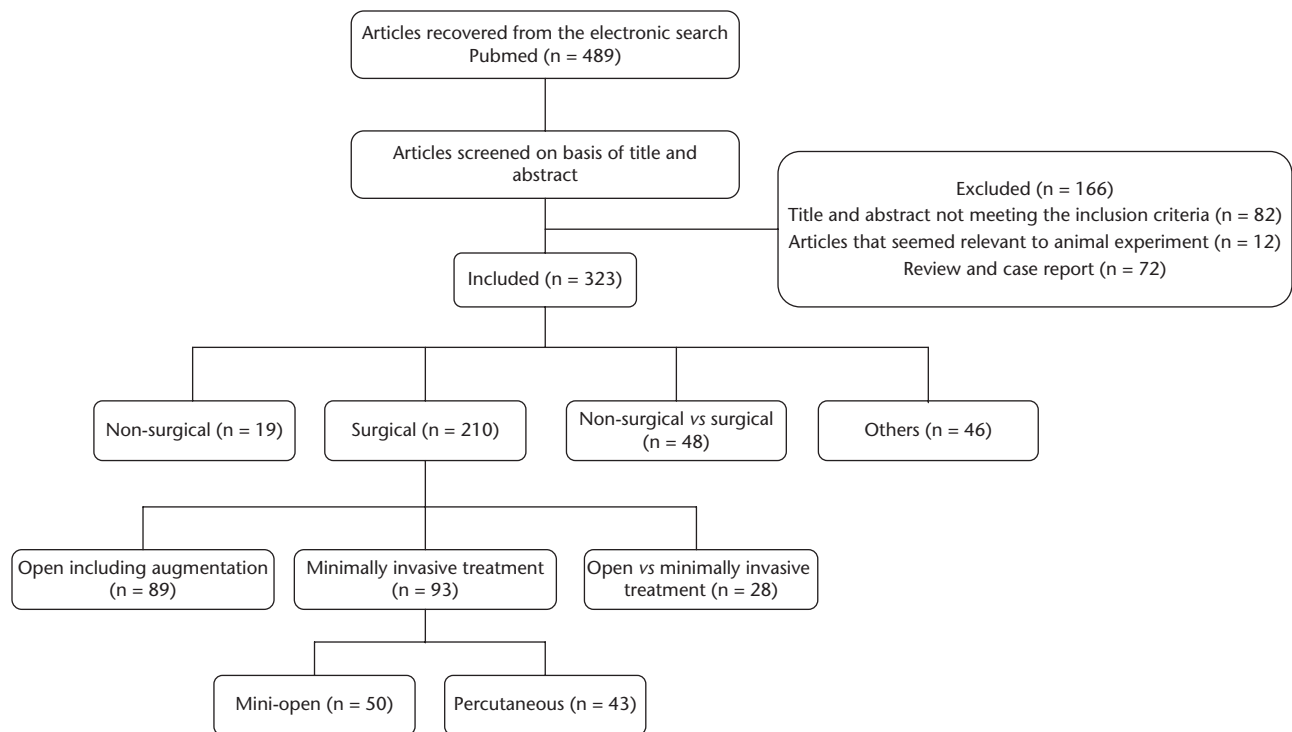


Fig. a

Flowchart of studies in the selection process for this review.

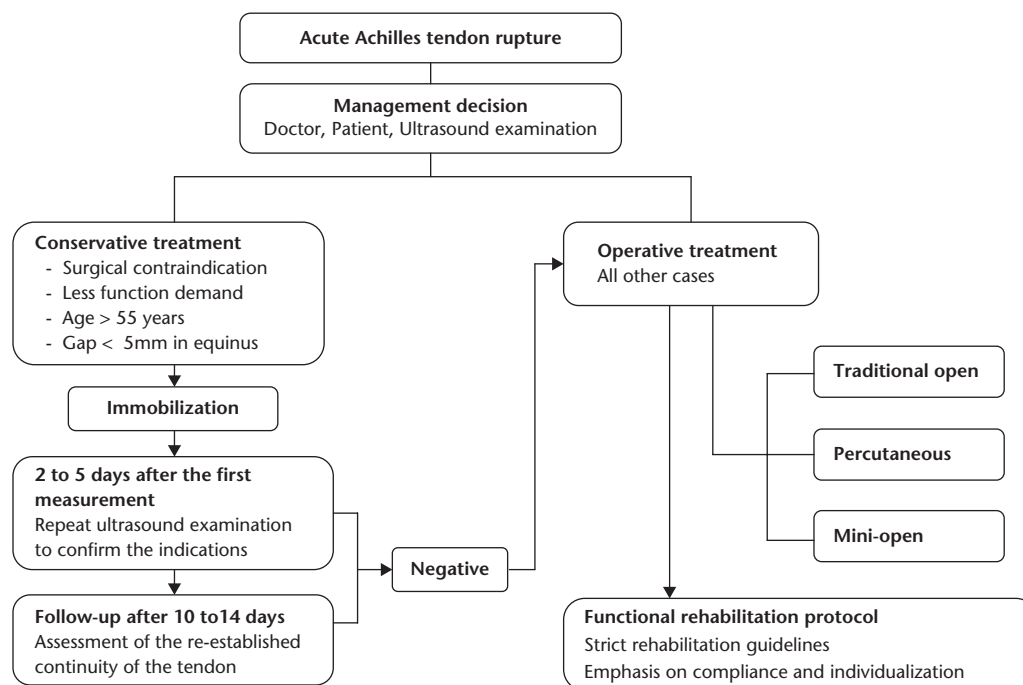


Fig. b

Treatment algorithm for management of the acute Achilles tendon rupture.

Table i. Functional recovery steps and the corresponding results of different treatment methods in various randomized controlled trials of Achilles tendon rupture

Category	Open vs non-surgical	Open	Percutaneous	Percutaneous	Percutaneous	Mini-open	Nonoperative
Author (year)	Lantto et al ¹ (2016)	Bevoni et al ² (2014)	Carmont et al ³ (2013)	Lacoste et al ⁴ (2014)	Chiu et al ⁵ (2013)	Taşatan et al ⁶ (2016)	Barfod et al ⁷ (2014)
Involved cases	60	66	73	75	19	20	60
Operative technique or group	Surgical (n=32) (end to end by Krackow) vs non-surgical (n=28)	End to end by triple bundle	Modified percutaneous method	Tenolig device under intraoperative ultrasound guidance	Endoscopy-assisted percutaneous with modified Bunnell sutures	Achillon	Weight-bearing group (WG; n=30) vs control group (CG; n=30)
Rehabilitation protocol	Surgical and non-surgical	0 to 2 wks: orthosis, NWB, elevate the leg	0 to 6 wks: functional bracing, FWB, DF forbidden	0 to 3 wks: splint, 30° PF, NWB, ROM passive	0 to 6 wks: Orthosis, 45° PF, PWB	0 to 6 wks: PF 20° to 30°, active ROM (toe, knee, hip joints), muscle strengthening exercises (knee, hip muscles), crutches assist	1 to 2 wks: orthosis with three wedges, WG:WB allowed, crutches recommended CG:NWB
	0 to 1 wks: plaster splint, BKC, maximally PF, NWB	3rd wk: orthosis, neutral position, PWB 1.5 kg	3 to 6 wks: PWB, orthosis	6 to 8 wks: ROM	6 to 8 wks: ROM	6 to 12 wks: remove cast, stretching and strengthening exercises, DF stretching and PF stretching exercises, heel elevation, stand on tiptoes and walking	3 to 4 wks: orthosis with two wedges, controlled ROM, WG:F WB, CG:NWB
	2 to 3 wks: orthosis, 30° PF, FWB	4 to 5 wks: orthosis, ROM 0° to 30° PF, PWB 2.5 kg	7 to 12 wks: FWB, orthosis (decreases heel lift/ 2 wks)	9 to 12 wks: stretching exercises, increase the load	9 to 12 wks: stretching exercises, increase the load	12 to 24 wks: sports such as jogging permitted	5 to 6 wks: orthosis with one wedge, controlled ROM, WG:F WB, CG:NWB
	4 to 5 wks: orthosis, 15° PF, FWB	6th wk: PWB-FWB, ROM up to 5° DF		3 to 6 mths: rising on toes or heels, limited sports	3 to 6 mths: rising on toes or heels, limited sports		7 to 8 wks: orthosis daytime, controlled ROM, WG:F WB, CG:F WB
	6 to 7 wks: free ROM from 0° to 30° PF	7 to 8 wks: progress up to full ROM		After 6 mths: FWB	After 6 mths: FWB		9 to 16 wks: individualized protocol
	8 to 11 wks: 1 cm insole heel						
	3 to 6 mths: jogging, cycling, and swimming exercises						
	After 6 mths: allow jumping and 'sudden acceleration' sports						
Mean follow-up, mths	18	36	12	20.7	24	58.5	12
Results	The mean Leppilahti scores were 79.5 (surgical) vs 75.7 (non-surgical).	Mean AOFAS score was 93.9.	Median ATRS score was 89	Mean AOFAS score was 95.	Preoperative and postoperative Tegner Activity Level Scale scores were 3.6 and 6.8, respectively.	The mean AOFAS score was 99.2 at 18 mths.	Mean ATRS scores: 73.4 (WG) vs 74.4 (CG).
	The mean peak torque 110.3 Nm (surgical) vs 96.5 Nm (non-surgical).	Mean Leppilahti score was 91.8.	Median ATRS score was 91.3.	Median ATRS score was 91.3.	The mean AOFAS score was 92.	No statistically significant differences were found between the surgically treated side and the healthy side in the assessment of dynamic gait.	The total heel raise work relative to uninjured limb was 53% (WG) and 58% (CG).
	SF-36 indicated better results in the domains of physical functioning and bodily pain in surgical group.	The mean differences in DF and PF between the healthy side and the operated side were 4.38° and 6.98°, respectively. 80.3% of the patients resumed their previous level of sport.		73.3% were able to return to their previous sport.	The mean calf diameter was 38 cm.		
					Final DF was 16° and PF 26°.		
					95% of the patients returned to their previous level of sporting activity.		

Table i. (Continued)

Category	Open vs non-surgical	Open	Percutaneous	Percutaneous	Percutaneous	Mini-open	Nonoperative
RTW and RTS	Not reported	Not reported	Not reported	Mean time RTW: 54 days Mean time RTS: 8.6 mths	Mean time RTW: 11.7 wks	Not reported	Mean time RTW: 52 days (WG) vs 58 days (CG) Mean time RTS: 143 days (WG) vs 181 days (CG) 0
Complications	Deep wound infection (surgical) (n=1)	0	Superficial infection (n=2) DVT (n=2) Prominent suture knot (n=1) Adhesion (n=1)	Superficial infection (n=3) Distal skin ulcers (n=8)	Superficial infection	0	0
Re-rupture	Surgical, n=1 vs non-surgical, n=4 0	0	1	1	0	0	3 (WG) vs 2 (CG)
Nerve injury	0	0	4	Paraesthesia (n=2) resolved spontaneously	2	0	0

NWB, non-weight-bearing; FWB, full weight-bearing; DF, dorsiflexion; PF, plantar flexion; ROM, range of movement; PWB, partial weight-bearing; WB, weight-bearing; BKC, below-knee cast; AOFAS, American Orthopaedic Foot and Ankle Society; ATRS, Achilles Tendon Total Rupture Score; SF-36, 36-Item Short-Form Health Survey; RTW, return to work; RTS, return to sports; DVT, deep vein thrombosis

References

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