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Acute Achilles Tendon Ruptures

How do we treat them?

- Non-operative
 - NWB in plaster in equinus for 6-8 weeks
 - Early weightbearing, early ROM
- Operative
 - Open
 - Minimally invasive



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2004 Cochrane Database Metanalysis

- Surgical Treatment compared to non-operative
- 14 trials
- Risk of rerupture
 - Surgical 3.5%
 - Non op 12.6%
- Higher risk of skin and wound complications in surgical group.
- Most nonop trials used NWB in this review.



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What outcomes should we be looking for?

- Cochrane (2004)
 - Rerupture
 - Wound Complications
- Restoration of Strength
 - Likely more important
 - Return to sport;



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Return of Strength

Heel Rise Work Test

- Knee Surg Sports Traumatol Arthrosc, Auguts 2009
- Most articles report equivalent function regardless of treatment
- Perhaps tests are too crude i.e. heel height but not repetitions
- HEEL RISE WORK TEST- combines heel-rise height with number of repetitions.
- Results at 12 months:
 - When measuring only repetitions of heel rise, all patients restored 95% of function.
 - When measuring the total heel rise work, the achilles recovered only 76% of function.



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What is wrong with all treatments?

- Cochrane 2004
- Strength deficit of the calf musculature after an achilles rupture is 10-30% and difficult to overcome.
- Is there a better way?



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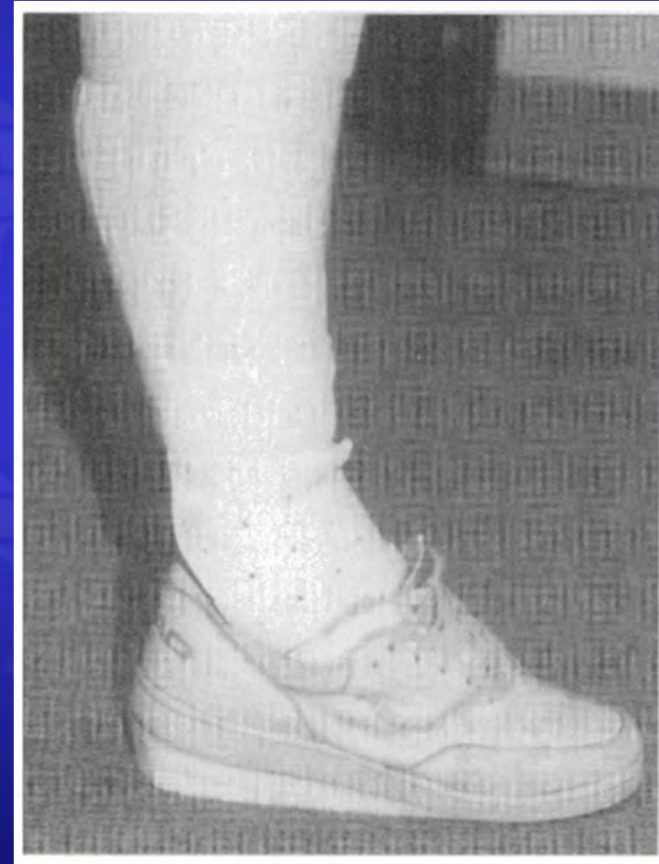


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What are the current trends?

- Functional Bracing
- Early Motion
- Early Weight bearing
- Non-operative
- Surgical Treatment



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What is Functional Bracing?

- Early motion
- Early weight bearing
- It is unknown which of these factors helps more to influence healing.
- May prevent muscle atrophy or cellular changes
- Favourably influence maturation of collagen fibres within the tendon during healing.



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Why early motion?

- Early motion leads to improved healing through release of growth factors.
- Animal studies show 3X increase in strength of achilles tendon with dynamic rehabilitation



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Why Early Weightbearing?

- Mechanical Loading improves tendon healing
- Randomised studies showed weight bearing groups had:
 - Better health related quality of life
 - Quicker return to normal walking
 - No detrimental effects



Older Studies favoured surgery

- Moller M, Movin T, et al. Acute Rupture of tendon achilles: a prospective randomized study of comparison between surgical and non-surgical treatment. JBS Br; 2001:83(6): 843-848.
- Reported a rerupture rate of 1.7% in patients treated with surgery and 20.8% with nonsurgery.
- Nonsurgery- 8 weeks of cast immobilization
- Surgery- had a moveable brace



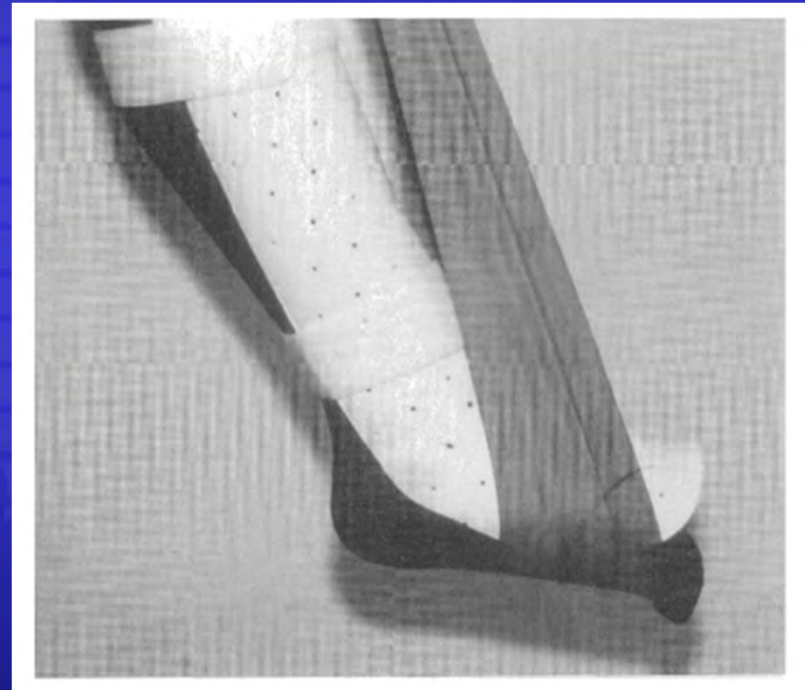
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Recent studies are mixed in conclusions

- Recent studies utilize different protocols
 - Early ROM
 - Early WB
- Generally reporting more equivalent results between surgery and nonop



Some studies say nonop is equivalent to surgery

- JBJS Am 2010;92.
 - Re ruptures equivalent
 - Same scores in strength, ROM.
- JBJS Am 2012:94.
 - Metanalysis
 - With functional rehab and early ROM, re rupture rates equal
 - Surgery risk of wound complications
- Conclusion
 - Function rehab and early ROM can yield equivalent re-rupture rates, and no differences in strength, functional outcomes.



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Studies report early weightbearing is beneficial

- JBJS Am 2010;92.
- JBJS 2008;90:1876-83.
- JBJS 2014;96 (New Zealand)
- J Bone Joint Surg Am, 2014;96.
- Compared early WB to NWB
 - After surgery, WB had better overall health, fewer limitations.
 - No differences in outcomes.



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Studies report early motion is favourable

- J Bone Joint Surg Am, 81(A), 7, July 1999. (Denmark)
- Am J Sports Med 2010 38:2186.
- Foot Ankle Int, 2017 vol 38.
- Compared rigid immobilization to early ROM
 - Resulted in shortened rehab time
 - No complications
 - Decrease in re rupture rates.



Some studies slightly favour surgery

- Am J Sports Med 2010 38:2186. (Sweden)
 - Metanalysis
 - Functional rehab with surgery and nonop
 - Rerupture 4% surgical and 12% nonop
 - Surgical group better in muscle function tests and heel rise work test.
- Foot Ankle Int, 32:4, April 2011. (New Zealand)
 - Compared surgery to nonop with functional rehab
 - Rerupture 1.4% surgical, 8.6% nonop
 - Surgery supported, especially less than 40 yrs
- LOWER RE RUPTURE
- BETTER MUSCLE FUNCTION



My Conclusions

- Surgery
 - Seems more reliable for strength
 - Young active patients
 - Delayed diagnosis
 - More compliance with instructions
- Non-operative
 - Within 48 hours
 - Older, less active patients
 - Comorbidities
 - Diabetes
 - Heart conditions
 - smokers



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My Nonoperative treatment

- Protocol by Willitis et al. JBJS Am 2010
 - NWB 2 weeks equinus boot
 - 2-4 wks, PWB, active PF and DF to neutral
 - 4-6 wks, FWB
 - 6-8 wks DF to neutral, and light strength
 - -8wks- no boot



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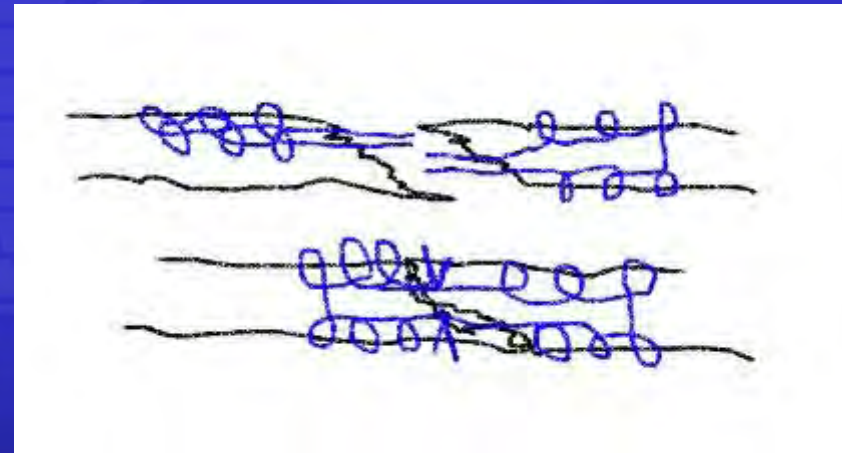
NONOP is ACTIVE TREATMENT

- Patients needs guidance
- MUST be compliant
 - Harder with non-operative
- Usually see them every two weeks
- All get DVT prophylaxis until WB



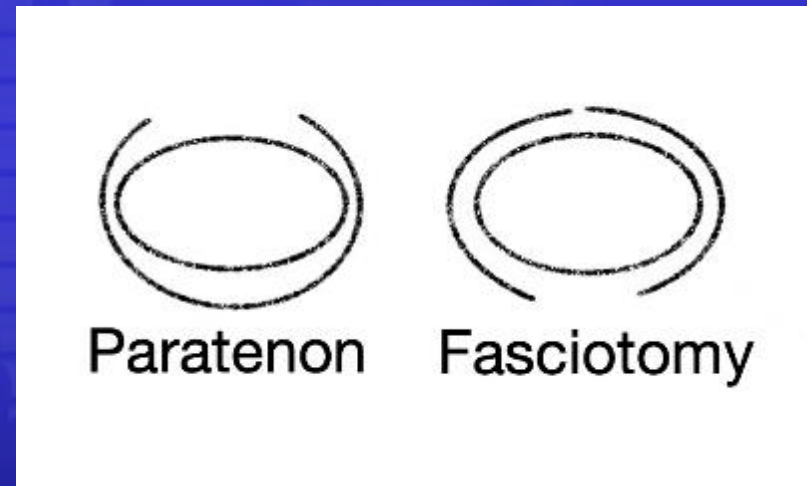
My Operative Treatment

- Posteromedial incision
- Incise paratenon
- Modified krackow with #1 PDS
 - Find the tear
 - Not end to end usually
- Restore relaxed PF
- ALL ABSORBABLE SUTURES



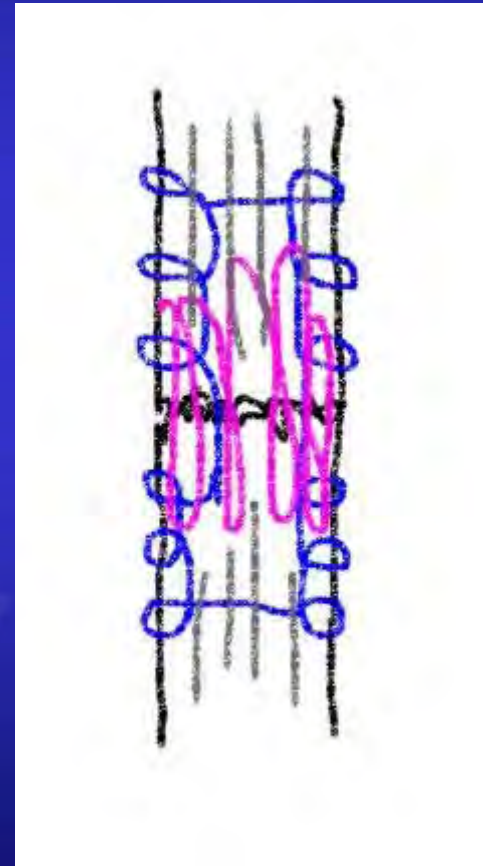
My Operative Treatment

- ***ANTERIOR FASCIOTOMY
 - Allows more space for thick tendon repair
 - Brings FHL muscle closer to repair, blood supply
 - Allows for easier paratenon closure



My Operative Treatment

- Circumferential #1 vicryl
 - Rip stop sutures behind #1 PDS
- Paratenon closure 2.0 vicryl
 - Do not tear!!
- Skin closure with 3.0 monocryl



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POST SURGERY

- SAME protocol as with Non-op patients.
- NWB 2 weeks
- WBAT equinus 6 weeks
- 6-8 wks: Change to neutral
- 8wks: boot d/c



SUMMARY

- Functional rehab important to reduce re ruptures and help with rehab
- Surgery still has roll to ensure calf strength
- Non-operative treatment can work well in the right patients



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