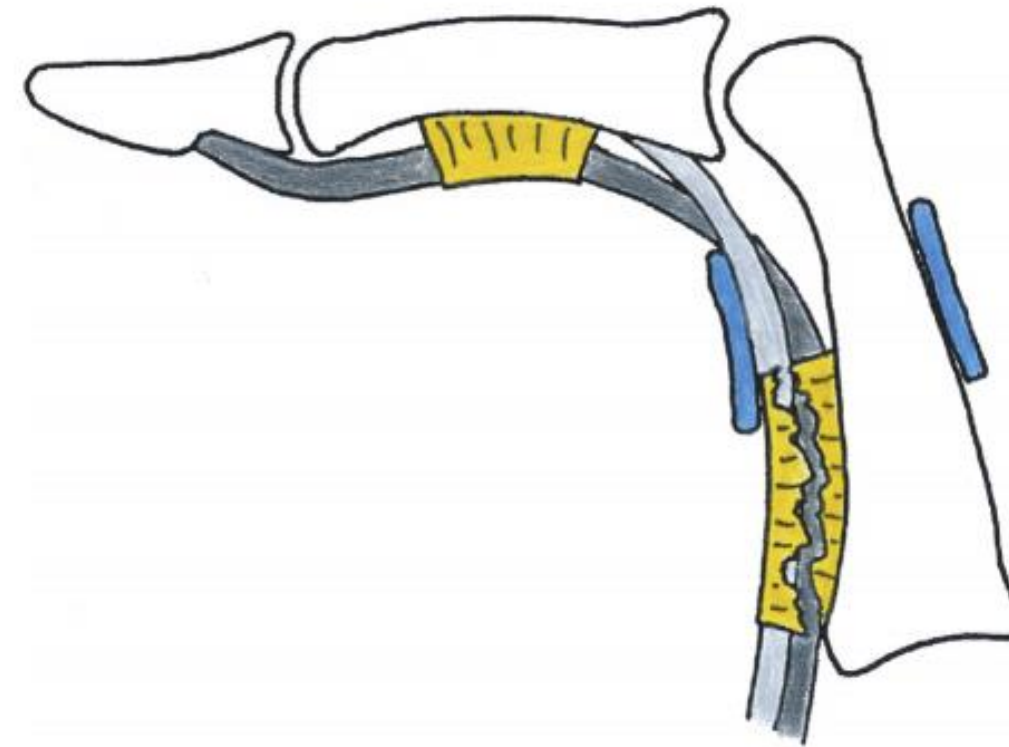
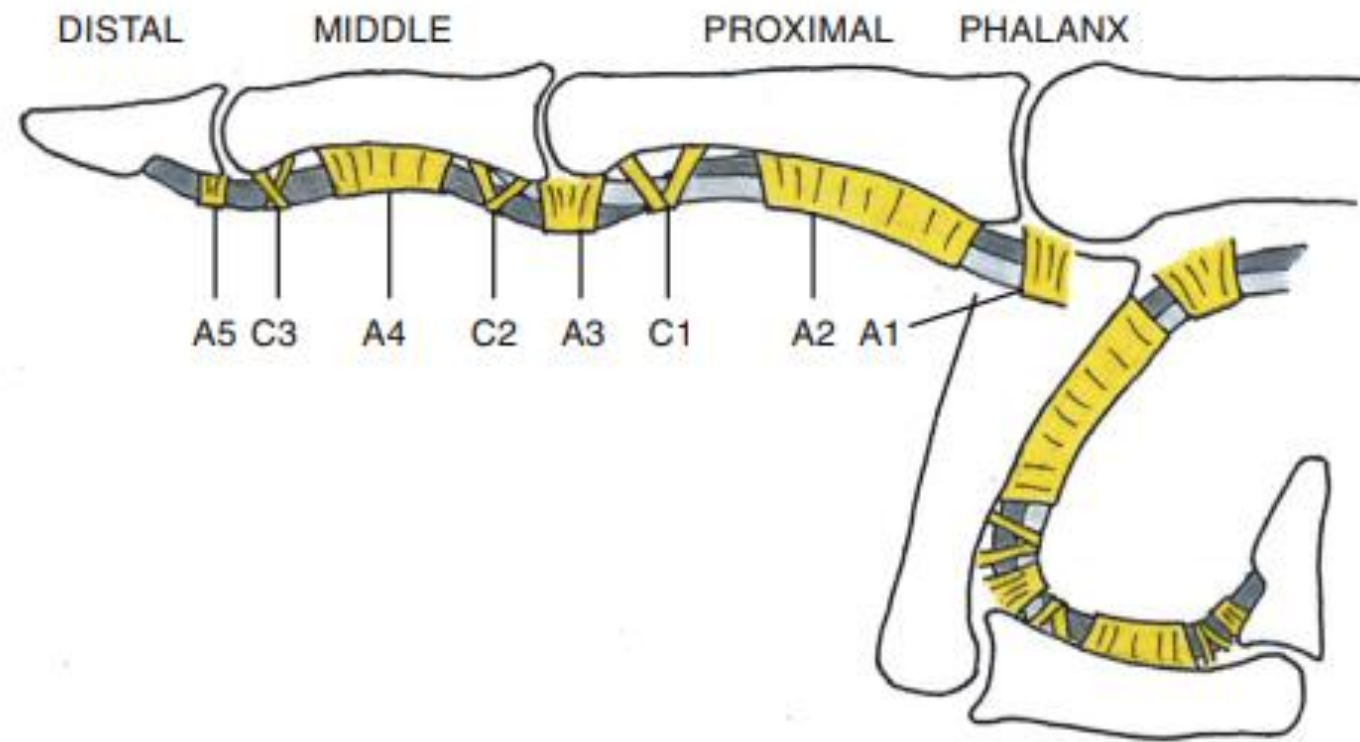


# FINGER FLEXOR TENDON PULLEY INJURIES IN ROCK CLIMBING: DYNAMIC ULTRASOUND

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RBSPRM Congress 2020

# NORMAL FINGERS & A2 PULLEY RUPTURE



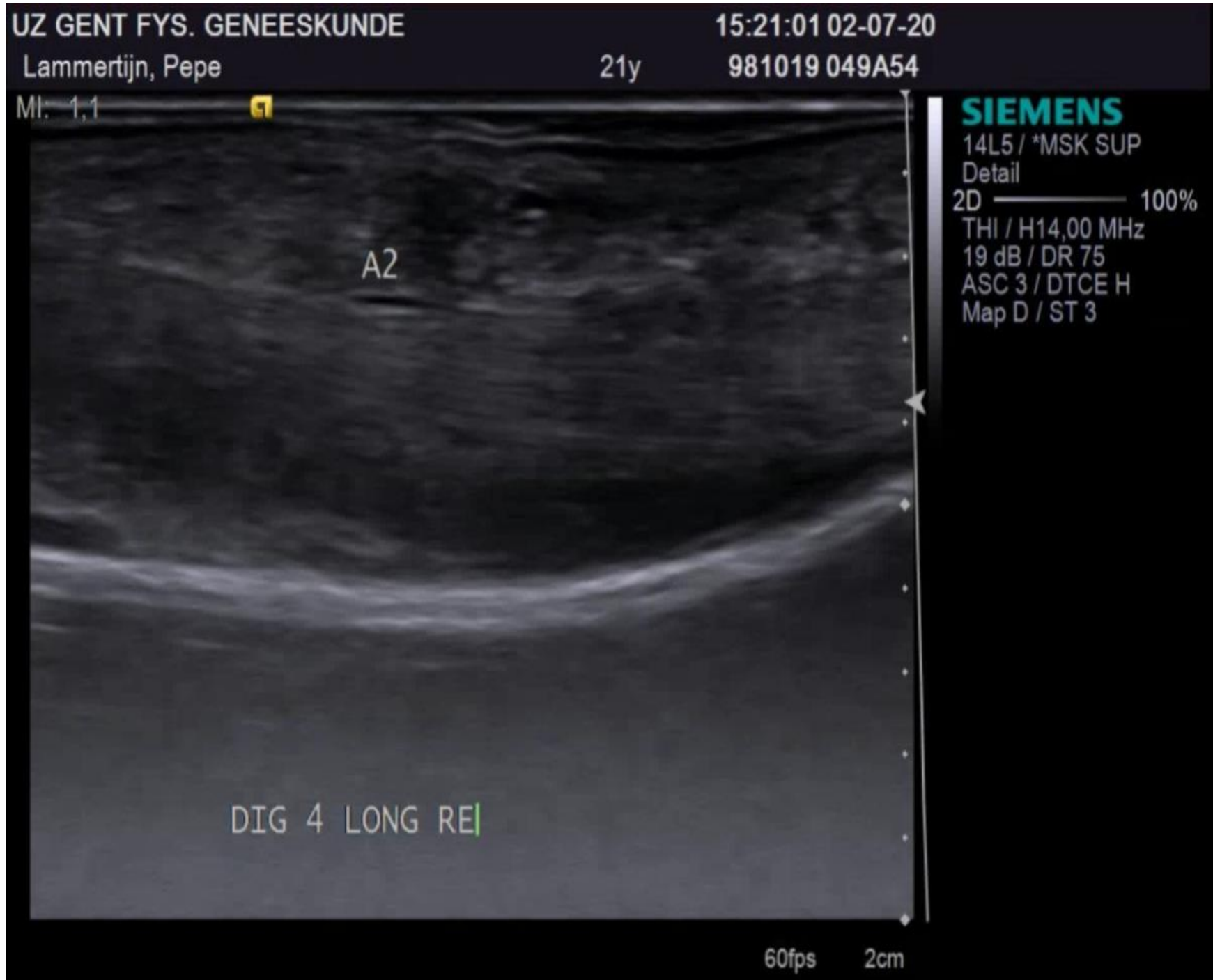
# PATIENT PRESENTATION

- Acute onset of pain with an audible snap
- During a move slipping off a foothold
- Swelling and pain at the phalanx
- Often A2 pulley ring finger
- Climber says “I have a pulley injury”

# ULTRASOUND

- Start in extension at proximal phalanx in long axis plane
  - Search
    - bony irregularity
    - increased joint fluid
    - thickening of the pulley & turn probe 90°
    - tendon thickening
    - **fluid between tendon and phalanx**
- Ask active flexion to investigate the tendon-phalanx distance
  - FDP-bone : 1 mm (normal)
  - **FDP-bone : > 2 mm ('bowstringing')**
    - **Partial tear > 2 mm**
    - **Complete tear > 4 mm**
- Compare to adjacent finger

# ULTRASOUND



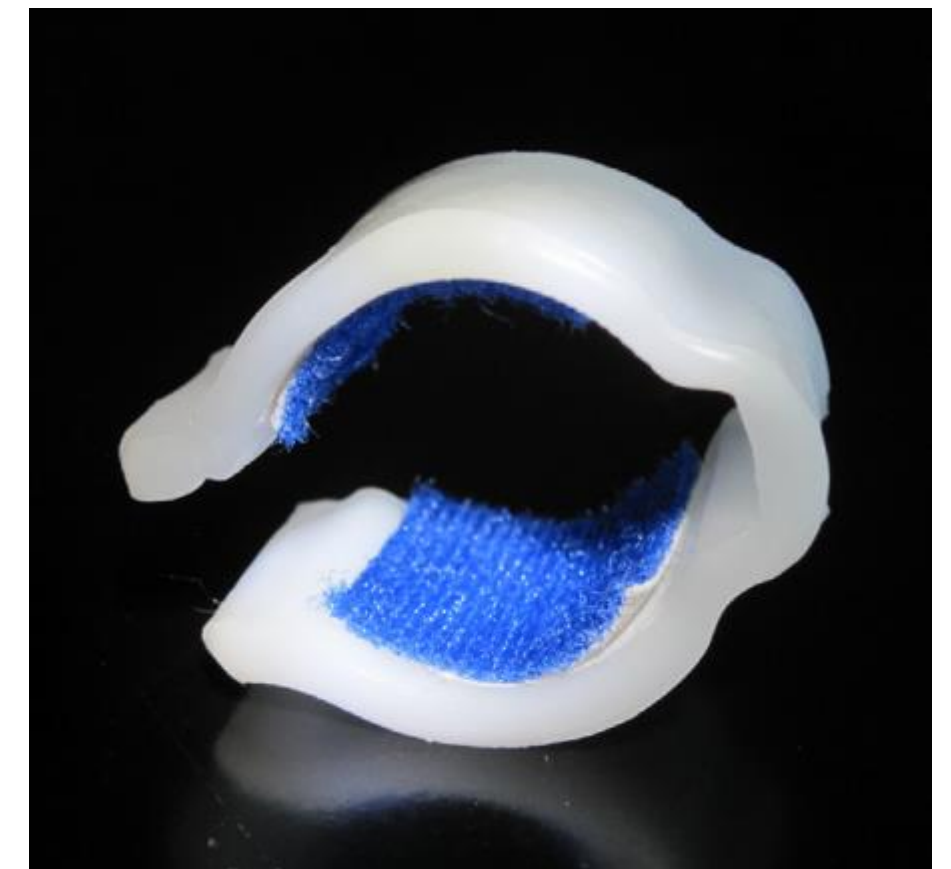
# GRADING

<i>Grade</i>	<i>Injury</i>
1	Pulley strain
2	Complete rupture of A4 or partial rupture of A2 or A3
3	Complete rupture A2 or A3
4	Multiple ruptures (as A2/A3, A2/A3/A4) or single rupture (as A2 or A3) combined with lumbricalis muscle or collateral ligament trauma



# TREATMENT

	<i>Grade 1</i>	<i>Grade 2</i>	<i>Grade 3</i>	<i>Grade 4</i>
Injury	Pulley strain	Complete rupture of A4 or partial rupture of A2 or A3	Complete rupture A2 or A3	Multiple ruptures, as A2/A3, A2/A3/A4 or single rupture (A2 or A3) combined with lumbricalis muscle or ligament damage
Therapy	Conservative	Conservative	Conservative	Surgical repair
Immobilisation	None	10 days	10–14 days	Postoperative 14 days
Functional therapy	2–4 wk	2–4 wk	4 wk	4 wk
Pulley protection	Tape	Tape	Thermoplastic or soft-cast ring	Thermoplastic or soft-cast ring
Easy sport-specific activities	After 4 wk	After 4 wk	After 6–8 wk	4 mo
Full sport-specific activities	6 wk	6–8 wk	3 mo	6 mo
Taping through climbing	3 mo	3 mo	6 mo	>12 mo



# REFERENCES

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- V. Schöffl et al. Pulley Injuries in Rock Climbers; *Wilderness and Environmental Medicine*, 14, 94-100 (2003)
- M. Schneeberger et al. Pulley Ruptures in Rock Climbers: Outcome of Conservative Treatment With the Pulley-Protection Splint: A Series of 47 Cases; *Wilderness & Environmental medicine*, 27, 211–218 (2016)