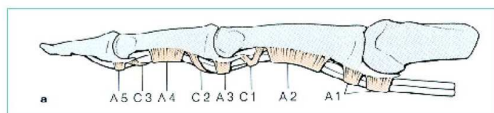


MANAGEMENT OF RUPTURES OF FINGER FLEXOR TENDON PULLEYS IN SPORTCLIMBERS

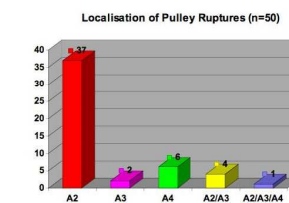
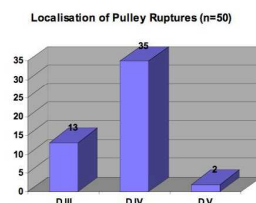
Schöffl V.*, Hochholzer Th.#, Winkelmann H.-P*

In the last 10 years sportclimbing developed from a high risk sport for individuals to a funsport for people off all age. With this, the numbers of active sportclimbers and of indoor climbing walls increased. Also new injury mechanism and pathologies occurred. The closed traumatic rupture of a flexor tendon pulley of sportclimbers appeared as a new complex finger trauma in the mid eighties. As the diagnostic and therapeutic procedures were variable in the beginning, nowadays a non surgical approach, at least for the single rupture, becomes standard.



The finger flexor pulley system

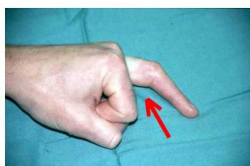
With fifty documented cases of pulley ruptures we are showing the diagnostic and therapeutical criteria. In our group, we had 90% singular and 10% multiple pulley ruptures. Leading is the ring finger, second the middle finger.



The „pinching“ position, used for holding on to small edges transfers a high stress to the pulley system.

Diagnostic

After clinical suspicion and exclusion of fracture or injury to the capsula/ligament-system, the diagnosis can be proven with ultrasound examination. If this fails to give an exact diagnosis an MRT should be performed.



Clinical Aspect: Bowstring; visible dehiscence of the tendon to the bone; palpatory shift.



MRI: Dehiscence, haematoma



Ultrasound: Dehiscence of flexor tendons to the bone > 2 mm, haematoma

Therapy:

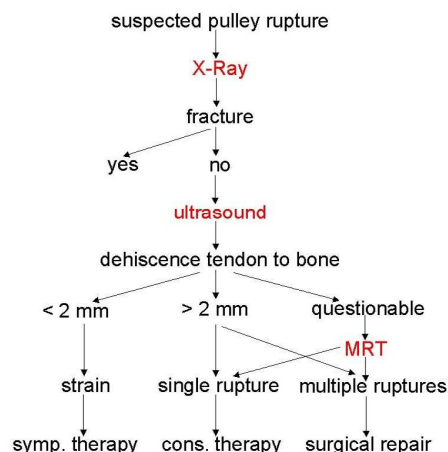
Singular Rupture:

- Conservative
- Initial immobilisation (10 days)
- early functional treatment with pulley protection through tape or thermoplastic ring-splint, finger gymnastics e.g. theraband hand exerciser.
- Easy sportspecific activities after 6-8 weeks, under pulley protection (tape).
- Full sport activity after 3 month, taping for at least 6 month.

Multiple Rupture:

- Surgical – „loop and a half“ Technique of Widstrom (1989) or Weilby-(1978) Repair.
- Postoperative:
- initial immobilisation (2 weeks)
- early functional treatment (hand exerciser, water gymnastic) under external pulley protection (thermoplastic ring) for 4 w.
- After 6 weeks removal of pulley protection
- moderate sport after 3 month
- climbing after 4 month (tape > 12 month).

Diagnostic - Therapeutical - Algorithmus



CHRONIC EXERTIONAL COMPARTMENT SYNDROME OF THE FOREARM FLEXOR MUSCLES IN SPORTCLIMBERS

– EVALUATION OF PHYSIOLOGIC STANDARD PRESSURES IN THE FOREARM FLEXOR MUSCLES DURING SPORTSPECIFIC ERGOMETRY

Schöffl V¹, Klee S², Winkelmann H-P¹, Strecker W¹

Introduction:

Chronic exertional compartment syndromes (ccs) are a well known problem in sportsmedicine. Mostly affected is the m.tibialis anterior compartment, mainly in runners and walkers. Diagnostic and Therapeutic criteria for this group are widely discussed.

For ccs of the forearm flexor muscles, as suspected in an increasing number of sportclimbers, only few cases are reported. The objective of this study was to determine pressure levels inside the deep flexor compartment of the forearms during a sportspecific stress.



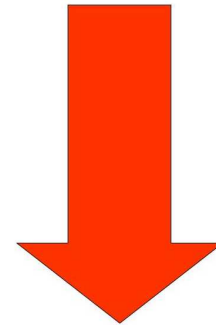
Results:

All athletes could perform the climbing ergometry until physical exhaustion of the forearms, all reaching also cardiac exhaustion. Compartment pressure was related to physical stress, exceeding 30 mmHg only in 3 individuals. A critical pressure of more than 40 mmHg was never observed. Lactid acid increased in relation to physical stress, reaching an average of 3.48 mmol/l.

After the test in 7/10 individuals the pressure decreased within 3 minutes to normal values. The 3 athletes with higher pressure levels (>30 mmHg) required a longer time for recovery.

Methods:

10 healthy high level climbers were enrolled in a prospective study. All climbers underwent sportspecific climbing ergometry, using a rotating climbing wall (step-test, total climbing time 9-15 min). Pressure measurement was performed using a slit catheter, placed in the deep flexor compartment of the forearm. Pressure registration, as well as lactid acid and heart beat rate measurement was done before the test, during the test every 3 minutes and while recovery. The test was performed until physical exhaustion of the forearms.



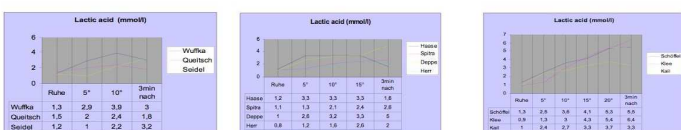
Conclusion



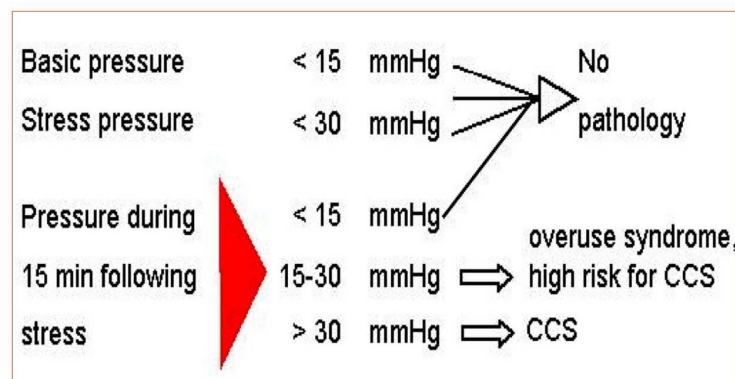
Compartment pressure, grouped according to number of steps performed in the test



Heart beat rate



Lactic acid



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