Introduction

An otherwise uncommon injury is prevalent in the climbing community
• Approximately 1.6% of Americans participate in the sport of Rock Climbing (5 million people)¹
• Soft tissue strain in the upper extremity is intensified while climbing.
• Approximately 40% of all reported climbing injuries occur at the A2 and A4 pulleys of the flexor tendons²,⁵
• Mechanism of injury is predictable
  • Closed crimp hand position
  • Repetitive motion
  • Excess force
  • Acute loading

Key Questions

- How can the injury be treated conservatively?
- How can Chiropractors work to rehab this injury, and work with athletes to prevent further injury?

- Many climbers prophylactically tape their digits attempting to prevent injury however this method has proved ineffective³
- Climbing with a “closed” crimp as opposed to an open crimp yields higher rate of injury.
- As technology for climbing equipment improves, people are training harder and climbing more technical routes. Fall related injuries are less common, but soft tissue injuries are more common.

Discussion

• The crimp grip position is unique to rock climbing
  - The hand position induces up to 116N of force on the A2 pulley, and 30N of external force at the finger tip
  - A study on cadaveric hands shows the resulting tear and bowstringing of pulley tendons after acute loading ⁴

• Pulley ruptures most commonly affect the A2 and A4 sheaths, often in the third and fourth digit. ²,⁷

• Training modification and prevention of initial injury is paramount in building strength to tendons, and minimizing recovery time in the case of injury.
• A pulley protector splint provides optimal immobilization of the pulleys ²

Treatment Protocols

• Initial treatment includes NSAIDs, ice, and some occupational modalities
• Immobilization of the pulley for 2-6 weeks
• Gradual loading of the finger in flexion; climbing can begin at six weeks past injury, beginning on less than vertical walls.
• Crimp grips should be avoided until finger strength is at 80% or more ⁶
• Oppositional stretching as part of rehab strengthens extensor muscles
• Soft tissue therapies have shown effective on muscular and tendinous structures and may increase blood flow to the area ⁸,⁹
• Graston, Massage, ART

Conclusion

• Prevention of injury is paramount
• As a community, climbers benefit from chiropractic care, as well as many other soft tissue treatment

References