Managing Common Tendon Disorders in General Practice

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Topics

• Definitions and pathologies of tendon disorders

• Clinical features of common tendinopathies
  – Upper limb
  – Lower limb

• Treatment principles for tendinopathies
If you shoot a gun straight it will go around the world and shoot you in the back.

*Time to abandon the tendinitis myth*

Dogma about tendinitis is deeply entrenched

Usual histology in tendon disorders
- collagen fibrillation
- increased tenocytes
- no inflammatory cells

This is the pathology of degenerative tendinopathy

Tendinosis = tendinopathy with structural changes confirmed radiologically or histologically

*Khan KM et al BMJ 2002; 324: 626-7*
Inflammatory disorders

Tendinitis
- Inflammation of the tendon
- rare
- related to inflammatory arthritides

Paratenonitis
- Peritendinitis
- Tenosynovitis
- Tenovaginitis
- Features
  - Pain and swelling over tendon
  - Crepitus
- Treatment
  - Rest
  - Ice
  - Anti-inflammatory gels or tablets

Where does the pain come from?

angiofibroblastic hyperplasia (Nirschl 1979)
**Possible causes of tendinopathy**

- Repeated overloading may lead to microfailure of collagen fibrils
- Compression of tendons – eg supraspinatus, gluteus medius.
- Stress shielding – pathology on less loaded aspect of tendons, eg patellar tendon
- Underloading of tendons may lead to catabolic response

Normal → Proliferative → Failed Healing → Degenerative

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**Risk factors for tendinopathy**

- Modifiable
  - Flexibility – reduced in ankle and knee
  - Obesity?
  - Tendons that repeatedly undergo eccentric contractions at length
    - Patellar tendinopathy in jumping athletes
    - Netball players and runners get Achilles tendinopathy
Risk factors for tendinopathy

Training errors
- too rapid increase
- Concrete floors
Rotator cuff tendinopathy

**Synonyms**
- Supraspinatus tendinitis and subacromial bursitis

**Symptoms**
- Pain
  - with abduction and internal rotation (cf all directions with capsulitis)
  - often occurs at night (consider calcific tendinitis if severe)
- Weakness secondary to pain
- Often no injury
Rotator cuff tendinopathy

Signs

Painful arc of abduction
Pain and limitation of internal rotation
Preservation of external rotation

• Impingement test -
  http://www.youtube.com/watch?v=q9P8zDYsERs&feature=related

Palpation

Common tender/trigger points

• A-C joint
• Biceps tendon/pec major/subscapularis attachments
• Subacromial bursa/rotator cuff attachments
• Posterior capsule, Supraspinatus/infraspinatus/teres minor
Rotator cuff tendon tears

Partial tear
• Pain with active & passive movements
• Little weakness
• Positive impingement test

Full tear
• Pain with active movements but not passive movements
• Weakness – Jobe test for supraspinatus tear.

GOLDEN RULE
NO SHOULDER EXAMINATION IS COMPLETE WITHOUT AN EXAMINATION OF THE NECK
ALWAYS CONSIDER COEXISTENT PROBLEMS, eg.
– rotator cuff dysfunction and cervical dysfunction

Video: [http://www.youtube.com/watch?v=tdmRTQidaiI&feature=related](http://www.youtube.com/watch?v=tdmRTQidaiI&feature=related)
Investigations

Xrays
• important for trauma and suspected red flag conditions.
• beware interpretation of calcific tendonitis

Ultrasound
• shows anatomy AND function of shoulder
• very sensitive and specific for rotator cuff tears (more so for full thickness than partial thickness).
• Interpretation of bursitis and tendinitis can be difficult
Lateral epicondylosis - tennis elbow

Pathology
Tendinopathy or partial tear of attachment of common wrist extensor muscles

Symptoms
• Pain with gripping and wrist extension

Signs
• Pain with resisted extension of third finger
• Tender over lateral epicondyle +/- radiohumeral joint +/- extensors of wrist

Trigger finger

Pathology
• Nodule in flexor tendon catching in A1 pulley

Symptoms
• Painful catching with finger flexion and extension

Signs
• Triggering – visible and palpable
• [http://www.youtube.com/watch?v=xAg2C9EY-Qs&NR=1](http://www.youtube.com/watch?v=xAg2C9EY-Qs&NR=1)
• Tender nodule over head of metacarpal
Gluteus medius tendinopathy

• Due to compression of tendon insertion against bone
• Lateral hip and thigh pain
• Worse with getting up, walking, crossing legs and lying on either side
• Unstable Trendelenburg test
• Tender origin, insertion and midpoint of muscle (trochanteric bursitis)

Achilles tendinopathy

Pathology
• Mid-portion in 75%
  – better prognosis
• Insertional in <25%
  – worse prognosis
  – may be associated with Haglund’s exostosis on calcaneus
Achilles tendinopathy

Symptoms
• Pain coming on after exercise (during exercise if worse)
• Morning stiffness
• Swelling

Signs
• Tender swelling
  – in mid-portion, 2-6 cms from insertion (mid-portion) or
  – at insertion on calcaneus (insertional)
• Reduced dorsiflexion of ankle
**Treatment**

Acute phase - rest with early rehabilitation

Little support for stretching

Graded introduction of eccentric loading exercises (ELE)

- may be harmful to neovessels and accompanying nerves\(^1\)
- affects type I collagen production – increases tendon volume\(^2\)
- increases optimal length of muscle-tendon unit\(^3\)
- Works better with Achilles than with any other tendon

**Rehabilitation**

Unload tendon
- Eg. glut medius tendinopathy
  - avoid crossing legs and side sleeping
  - stand with legs apart
  - sit on wedge cushion
  - pillow between legs if side sleeping
  - cease stretching
- improvements in training techniques and reduction in training load. Great care with reintroduction of
  - Speed/sprinting
  - Jumping

Address deconditioning of muscle-tendon unit
- Load tendon progressively
  - Slow exercises
  - Gradually increase reps and weight.

*Dr. Jill Cook and Dr. Craig Purdam*

**Rehabilitation**

- Realistic return to sport times*
  - Achilles tendon 6-9 months
  - Patellar tendon 9-12 months
  - Hamstring origin 9-12 months
  - Lateral elbow 4-6 months
  - Rotator cuff 6-9 months
Treatment

Role of NSAIDs
- useful in the reactive tendon
- may inhibit collagen synthesis

Role of steroid injections
• Bigger role in proliferative tendinopathy (dexamethasone best)
• Role in rotator cuff tendinopathy
  – improved outcomes at 4 weeks
  – combine with exercises
• Role in acute calcific tendinitis with aspiration of calcium
• Role in trigger finger
  • [http://www.youtube.com/watch?v=ZXI3urAPZ24](http://www.youtube.com/watch?v=ZXI3urAPZ24)
• Avoid with Achilles tendinopathy, but may have role in Achilles paratenonitis
• Avoid with lateral epicondylalgia – higher relapse rate at 1 year
• Avoid in gluteus medius tendinopathy/trochanteric bursitis - ?higher relapse rate at one year.
When exercises fail

**EMERGING INJECTION TECHNIQUES**

- Platelet rich plasma injections & autologous blood injections
- Prolotherapy – glucose/lignocaine injections in or around tendons

**EVIDENCE**

- Effective for lateral epicondylagia, but not Achilles tendinosis
- Some effectiveness in Achilles tendinosis

**OTHER THERAPIES**

- GTN patches – increases nitrous oxide/collagen content and repair
- Autologous tendon implants – harvesting of tenocytes to grow tendon in vivo for implantation

**EVIDENCE**

- Good evidence of effectiveness
- Beware headaches
- Still in experimental phases
When exercises fail

Surgery
• Main role in complete tears of rotator cuff & Achilles.
• Role in trigger finger
• Smaller role in recalcitrant tendinopathy
• ~70% success rate in recalcitrant Achilles tendinopathy

Prevention
• Biomechanical assessment
• Address training errors
  – Varied training routines
  – Better pre-season preparation
  – Gradual increases in training loads
  – Wary of hard surfaces in running
• Close monitoring during season
• Good warmup and cooldown
What have we covered?

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