

# **The Challenge of the Problem Shoulder Tendinopathy, Tendinosis & its Management**

Mr C R Constant

Emeritus Consultant T & O Surgeon

Addenbrooke's Hospital

Clinical Anatomist

University of Cambridge

**Shoulder Symposium**

**28<sup>th</sup> September 2009**

# Anatomy & Biomechanics

Understanding of both is essential.

# Tendinosis – Tendinitis - Tendinopathy

- Tendinosis
  - Abnormality – Irritation
- Tendinitis
  - Inflammation
- Tendinopathy
  - Pathology – Tear

**Beware of Loose Terminology**

# Rotator Cuff Tear

- Specific diagnosis
  - Partial Thickness Tear
  - Full Thickness Tear
  - Intra-substance Tear
- Global Cuff Tear

# Biomechanical Failure

- Loss of Scapular Control
- Loss of Glenohumeral Soft Tissue Tension
- Loss of Glenohumeral Snugging
  - Labrum
  - Rotator Cuff
- Loss of Muscle Balance to stabilise Humeral Head in Glenoid

# Result of BMF

- In the presence of a working Deltoid
  - Approximation of Hum Head to Acromion
  - Narrowing Subacromial Space
  - Squeezing of Subacromial Contents
  - Tendinosis! Tendinitis!
  - Tear of Supraspinatus Tendon

# Biomechanical Failure

- Loss of Scapular Control
- Loss of Glenohumeral Soft Tissue Tension
- Loss of Glenohumeral Snugging
  - Labrum
  - Rotator Cuff
- Loss of Muscle Balance to stabilise Humeral Head in Glenoid

# Loss of Scapular Control

- Accessory Nerve Injury
- Serratus Anterior Palsy
- Pectoralis Minor Tendon Detachment
- Paralysis of Latissimus Dorsi

# Loss of Glenohumeral ST Tension

- Lax Capsule
  - Congenital
  - Traumatic
    - Single Injury
    - Repetitive Injury
- Tears of Glenohumeral Ligaments

# Loss of Glenohumeral Snugging

- Labrum
  - Vacuum Effect
  - Humeral Head deformity
- Rotator Cuff Failure
  - Individually
  - Combination
- SLAP Lesion
- Interval Defect

# Loss of Muscle Balance to stabilise GHJ

- Any muscle weakness with the exception of the prime movers
  - Deltoid
  - Pectoralis Major

Will cause narrowing of SAS

# Impingement

- The effect of narrowing of the subacromial space
  - BMF
  - External Causes

# External Causes of Impingement

- Acromioclavicular joint osteophytes
- Mobile Os Acromiale
- Greater Tuberosity irregularity
- Humeral Head Deformity
- Calcification – (? External)

# Finally

- Which comes first?
  - Chicken or Egg

Who knows?

# The Challenge

Identify the precise cause of Impingement

Offer specific treatment

# Remember

- Most Diagnoses are clinically based
- Good history & examination will make the diagnosis in > 90% of cases
- Investigations complement history & examination and do not act as a substitute

# Symptoms

- Pain
- Stiffness
- Weakness
- Noises

# Shoulder Pain

## Mechanical

Degenerative

-v-

Instability

# Shoulder Pain

## Causes - 1

### < 40 years of age

Instability

Trauma

### > 40 years of age

Degen Cuff Disease

Degen Joint Disease

# Pain

- At rest
- With Activity
  - Low, Mid, High - Arc of Pain ?
- At Night
  - prevents sleep
  - wakes the patient
- Relieved by?

# Stiffness

- True Stiffness
  - Bony
  - Soft Tissue
- Secondary Stiffness
  - Pain
  - Weakness
  - Apprehension

# Weakness

- Primary Muscle Weakness
- Secondary to Pain
- Secondary to Stiffness
- Neurological Weakness

# Noises

- Clicks    voluntary or involuntary
- Clunks                    “                    “
- +/- Pain
- Location    -    ACJ    SAS    GHJ    STJ

# Examination

- Age    under or over 40
- Neck    25% referred from neck
- Hands    RA

# Impingement / Cuff Tear

- Crepitus in SAS
- Pain in arc of movement
- Painful drop arm
- Impingement tests +++++
- Weakness
- Palpable defect

# Weakness / Lack of Endurance

- Symptomatic Rotator Cuff Tear
- Secondary to Pain
- Secondary to Stiffness
- Secondary to neck problems

# Caution

- Degenerative Rotator Cuff Tears are, in themselves, usually painless.
- A full active painless range of shoulder motion may be present in the presence of a FTRCT – even a global tear.
- All significant symptomatic tears will have a degree of shoulder weakness.

# Symptoms of Cuff Pathology in Athletes

- Pain from ACJ problems
- Pain from impingement – specify cause !!
- Weakness
  - True loss of Strength
  - Lack of Endurance
  - Loss of Distance / Accuracy in Throwing Athletes and Racquet Sport athletes

# Symptoms of Degenerative Cuff Disease

- Pain
- Stiffness
- Weakness
- Inability to control arm through full range

# Elements of Cuff Problems in Athletes

- Acromioclavicular Joint problems
- Os Acromiale – Unfused Acromial Epiphysis
- Tendon Pathology
  - Impingement secondary to Instability
  - Impingement with overstuffing of subacromial space
- Interval Defect
- SLAP Lesion – essentially not a cuff lesion
- Intra-Tendinous Calcification

# Elements of Degen. Cuff Disease

- Acromioclavicular Joint
- Acromial Irregularity and Spur formation
- Cuff Tendon pathology
  - Swelling
  - Fraying
  - Tearing
- GH Arthropathy secondary to cuff tear

# Pain in athlete cuff problems

- Due to Instability
  - Cock up position
  - Point of impact on Racquet
  - Casting in throwing athlete
- Due to Impingement – arc of pain is usually more extensive than in Degenerative cuff

# Pain in Degenerative Cuff Disease

- High Arc of Pain : above 90 degrees
  - ACJ problems
- Mid Arc Pain : 80 – 120 degrees
  - Subacromial problems, Impingement
- Low Arc Pain : 0 – 80 degrees
  - Gleno-humeral joint problems

# Investigations - Summary

- Plain Xrays
  - poorly reported, crude
- Ultrasound -----
- Arthrogram
  - Adhesive Capsulitis, RCT
- CT Arthrogram
  - ? Instability
- MRI Scan
  - Impingement, ACJ
- Arthroscopy
  - Instability

# Surgery for Cuff Disease

- Stiffness
  - Physiotherapy
  - Manipulation

Essential to regain motion before surgery

Not usually a problem in the athlete

# Arthroscopic Surgery

- Has revolutionised shoulder surgery for cuff disease
- Can treat the athlete with RCT
- Allows easier recovery and short hospital stay
- Rehab just as important as in open surgery but easier for the patient
- Must be realistic about objectives from surgery

# Degenerative Cuff Disease

## Causes of Surgical Failure

1. Stiffness
2. Failure to adequately decompress
3. Infection
4. Patient non-compliance
5. Unrealistic Expectations - esp. strength.

# Special Considerations

- Bilateral Problems
- Multiple joint problems in limb
- Lower Limb Problems
- Upper Limb Weight bearing
- Unilateral Limb loss
- Patient Expectations

# **Rehabilitation**

## **Aims**

**Early Motion**

**No Stress on Repair**

**Progression with Tendon Healing**

# RETURN to WORK

**Interval between Surgery  
and Return to Work  
varies from one week to  
one year**

# **Return to Work**

**Employed at the time of Surgery**

**Good Motivation**

# **Return to Work**

- **27% Fail to Return to Work**
- **Majority Retired or Unemployed at Time of Surgery**
- **Seeking Compensation**
- **Retirement during Recovery**
- **Job Loss during Recovery**

# **Return To Work**

**Age of Patient**

**Type of Work**

**Compensation**

# Return to Work

## Age of Patient

- **< 55 years - 75% RTW within 7 months**
- **> 60 years - 40% RTW**

# **Return to Work**

## **Type of Work**

**Sedentary**

**Active**

**Strenuous**

# Return to Work

## Type of Work

	<u>Sedentary</u> <u>Work</u>	<u>Active</u> <u>Work</u>	<u>Strenuous</u> <u>Work</u>
<u>RTW</u>	<b>88%</b>	<b>67%</b>	<b>57%</b>
<u>No. of</u> <u>months</u>	<b>5</b>	<b>6</b>	<b>10</b>

# **Return to Work** **Compensation**

- **Majority of RCT are Degenerative**
- **20% history of Associated Trauma**
- **50% with a Trauma history seeking Compensation**

# Return to Work Compensation

Sedentary  
Work

Active  
Work

Strenuous  
Work

WC

Return  
to Work

88%

67%

57%

44%

Months

5

6

10

13

# Conclusion & Challenges

- Get our terms right
  - What are we talking about?
- Understand the Anatomy & Biomechanics
- Get the diagnosis right
  - What is the cause of the problem?
- Hx & Examination make the diagnosis
- Investigations confirm it
- Treat the cause of the problem