Extra-articular cortisone
TREATMENT OF THE ELBOW AND SHOULDER
Treatable conditions

Why would cortisone help?

Mode of action of cortisone

When not to give cortisone

Side effects

In combination with other drugs

Technique subacromial

Technique over epicondyle

When to repeat
Extra-articular conditions treatable with cortisone

- Inflammation in
  - Bursa
  - Tendon
  - Fascia
  - Tendon sheath
Inflammation

- Physical or chemical event
- Localised protective response
- Dilated blood vessels
- Increased blood flow
- Increased capillary permeability
- Leukocyte exudation
Inflammation on cellular level

- Inflammatory mediators produced by damaged cells
- Inflammatory genes are activated by mediators
- Activation of the transcription factors
- Stimulate transcription of inflammatory genes
- Production of more mediators
Mode of action of cortisone

- Glucocorticoid binds to receptor
- Receptor interact and block effect of transcribing factors
- Bind to promoter of inflammatory genes in DNA thereby inhibiting it’s action
In combination with other drugs

- Multiple targets in inflammation cascade
- Cortisone as described
- NSAIDs blocking action of COX enzyme in inflammatory cascade
  - COX-1 and COX-2
  - Reduction of pro-inflammatory metabolites
    - prostaglandin E$_2$
Inflammation in subacromial area - serous

- Mechanical stimulus
  - Acute injury
    - Compression of cuff/bursa
    - Muscle jerk effect on tendon
  - Chronic
    - Impingement
- Chemical stimulus
  - Calcific tendinitis
  - Gout cristal deposits
Inflammation in subacromial area - serous

- **Bursitis**
- **Impingement**
  - **Stage 1**
    - Inflammation
  - **Stage 2**
    - Tendinosis
  - **Stage 3**
    - Tendon tear
- **Calcific tendinitis**
Why would cortisone help?

- Reduce inflammation
- Eliminate pain inhibition of cuff
- Cuff opposes superior force of deltoid on humeral head
- Centres head in glenoid and reduces tendency to impinge
- Reduce swelling of bursal tissue and tendon
- Restore volume of subacromial tissue relative to space available for sliding under acromion
Side effects

- Acts on gene expression and subsequently protein syntheses
Side effects - Literature review over 54 years

- **Serious – 0-5.8%**
  - Osteomyelitis
  - Necrotising fasciitis
  - Cellulitis
  - Ecchymosis
  - Tendon/fascial rupture
  - Atrophy sub cut fat
  - Skin hypopigmentation
  - 1 fatality

- **Transient 0-81%**
  - Skin rash
  - Flush
  - Change in menstrual cycle
  - Flare
  - Soft tissue calcification
When not to inject cortisone

- Uncontrolled diabetes mellitus
- Presence of infection
- Tendon rupture suspected/confirmed
- Multiple previous cortisone infiltrations in same area
Who will find benefit?

- Subacromial bursitis
- Stage 1 rotator cuff syndrome (tendinitis)
- Extensor/flexor origin tendinitis at elbow
- Sinovitis acromioclavicular joint
What stage is the condition in?

- Rotator cuff syndrome age 25 – 45
- Duration of symptoms < 3 months
- Episodes of pain
- Calcific deposits in tendon
- Tear absent on ultrasound
Technique subacromial

1. Aim for anterolateral tip of acromion
2. Strike bone
3. Pull back +-7mm
4. Advance in original line but deep to acromion
5. Can skip step 2 and 3 but aim to avoid rotator cuff
Technique over epicondyle

- Deep to subcutaneous fat
- Superficial to aponeurosis

Figure 3 - Illustration of the ideal location for performing infiltration with corticosteroids for lateral epicondylitis.
When to repeat

- Not within 4 weeks (adrenal response normalise 2-3/52)
- Symptom history under 3 months
- Good response to previous cortisone infiltration
- Minimal structural changes on ultrasound and X-ray pictures
Cortisone’s effect on disease stages

- Impingement stage 1 (tendonitis/bursitis)
  - Reduce bursitis and tendinitis
- Impingement Stage 2 (chronic symptoms with tendinosis and sometimes bursitis)
  - Reduce bursitis
  - Cortisone has possible negative effect on tendinosis
- Impingement stage 3 (tear)
  - Probable negative effect
- Lateral epicondylitis
  - Reduce tendinitis