Sport tendinous injuries around the elbow

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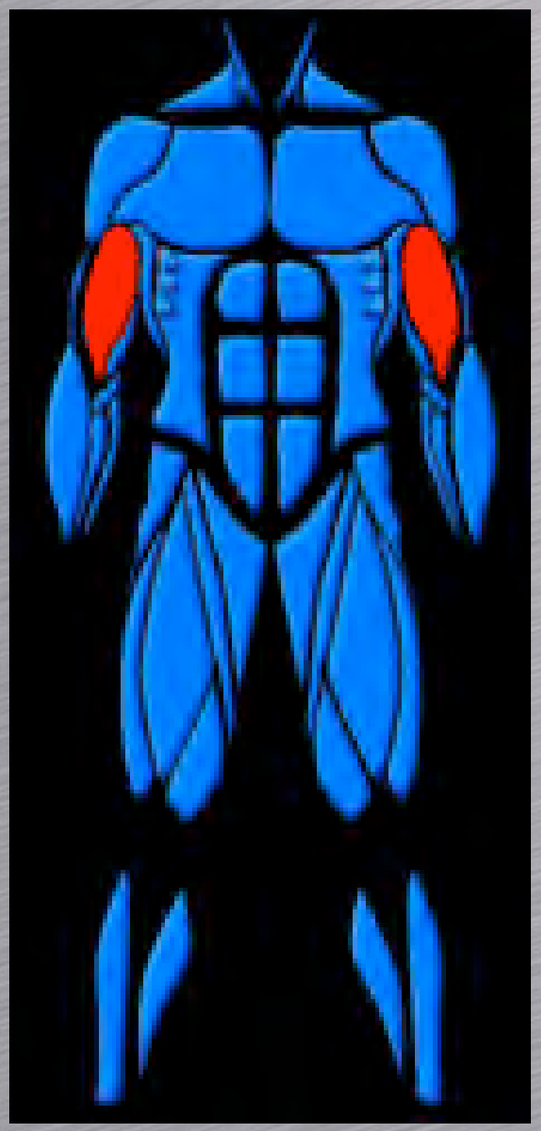
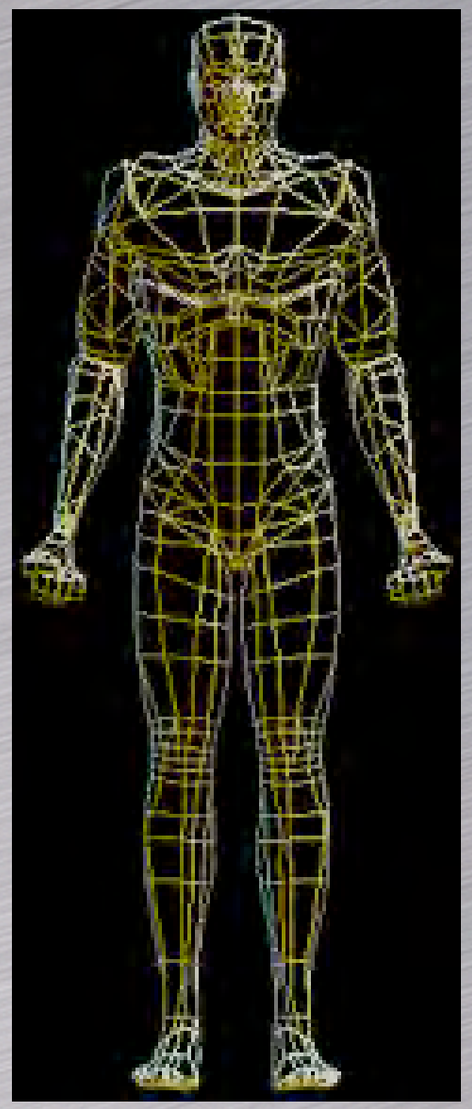
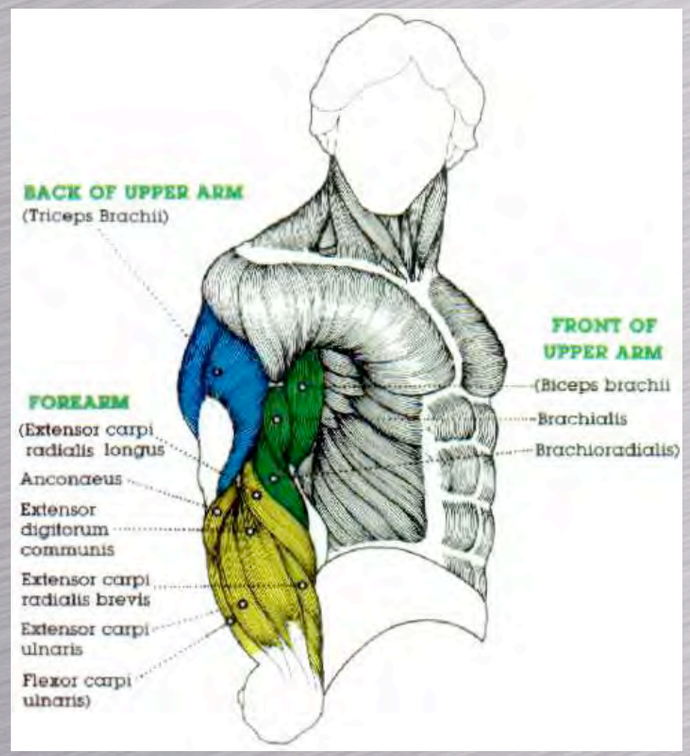


Biceps injuries





Bicipital tendinopathy

- Very rare
- Sports with repetitive elbow flexion from an (over) extended elbow
  - Gymnastics
  - Bowling
  - Weight lifting

Bicipital tendinopathy

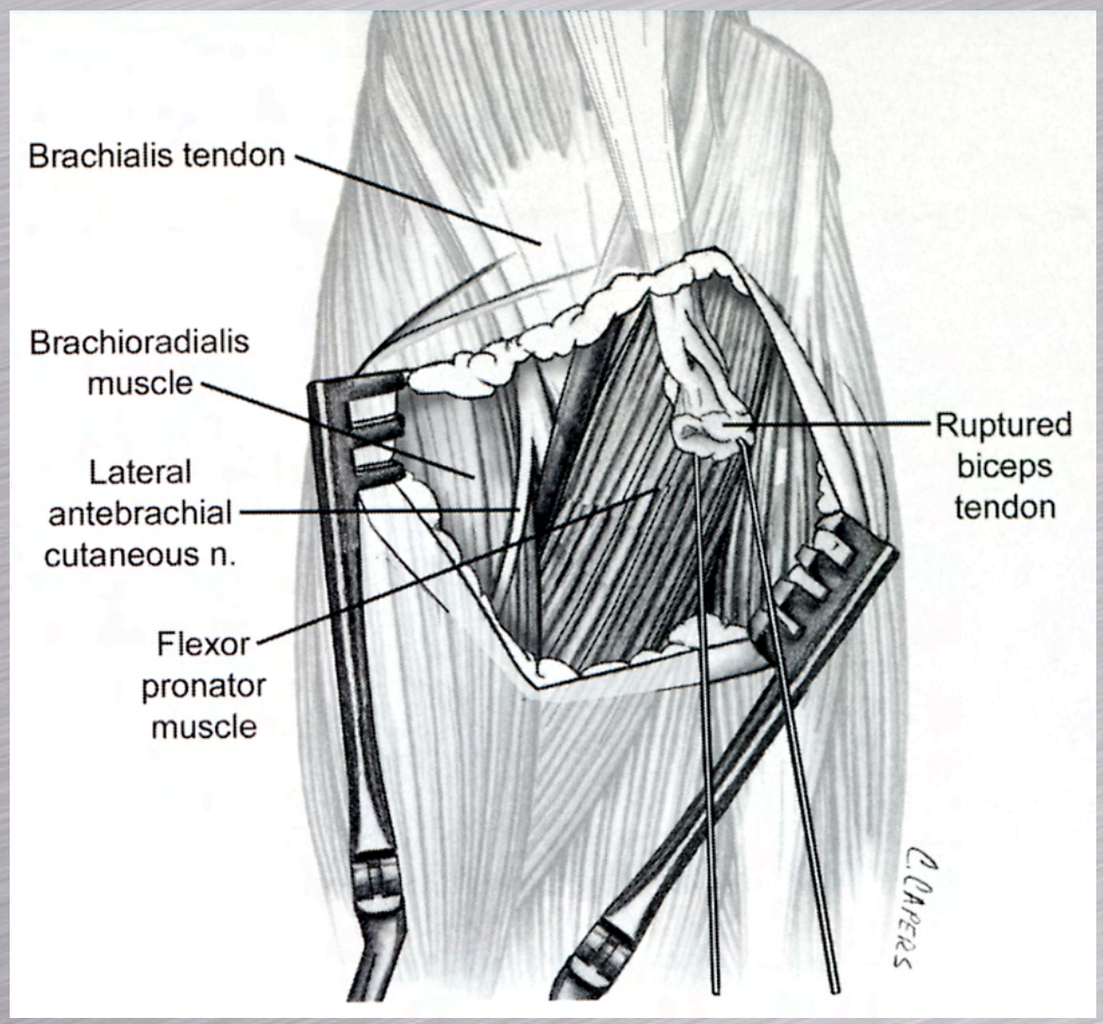
- Anterior pain
- ↗ by resisted flexion/supination
- Radiographs are normal
- Conservative treatment: rest, NSAID, rehabilitation

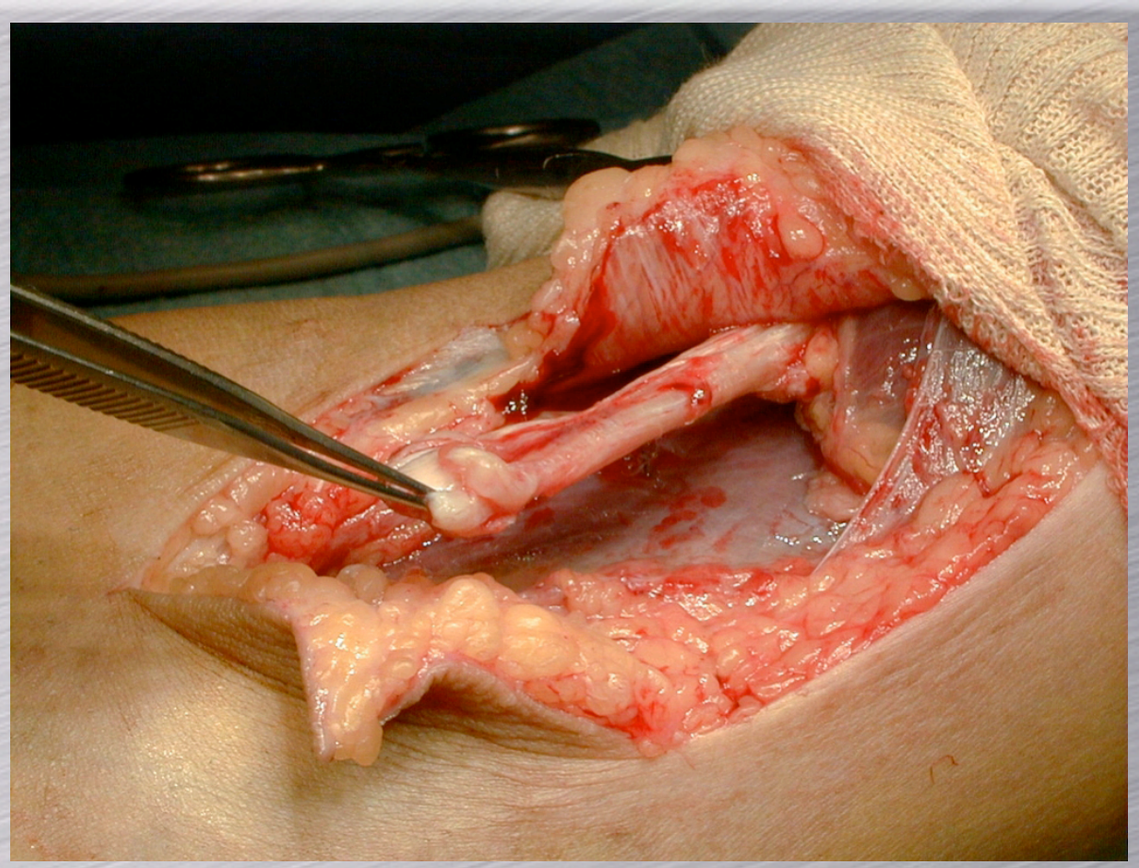
Biceps rupture

- 3-10% of all biceps ruptures
- (only) Male in the 40's,
- Dominant arm,
- Forceful flexion at 90° or forced extension on a contracted biceps
- Violent trauma +++ (corticoids)
- Clinical diagnosis

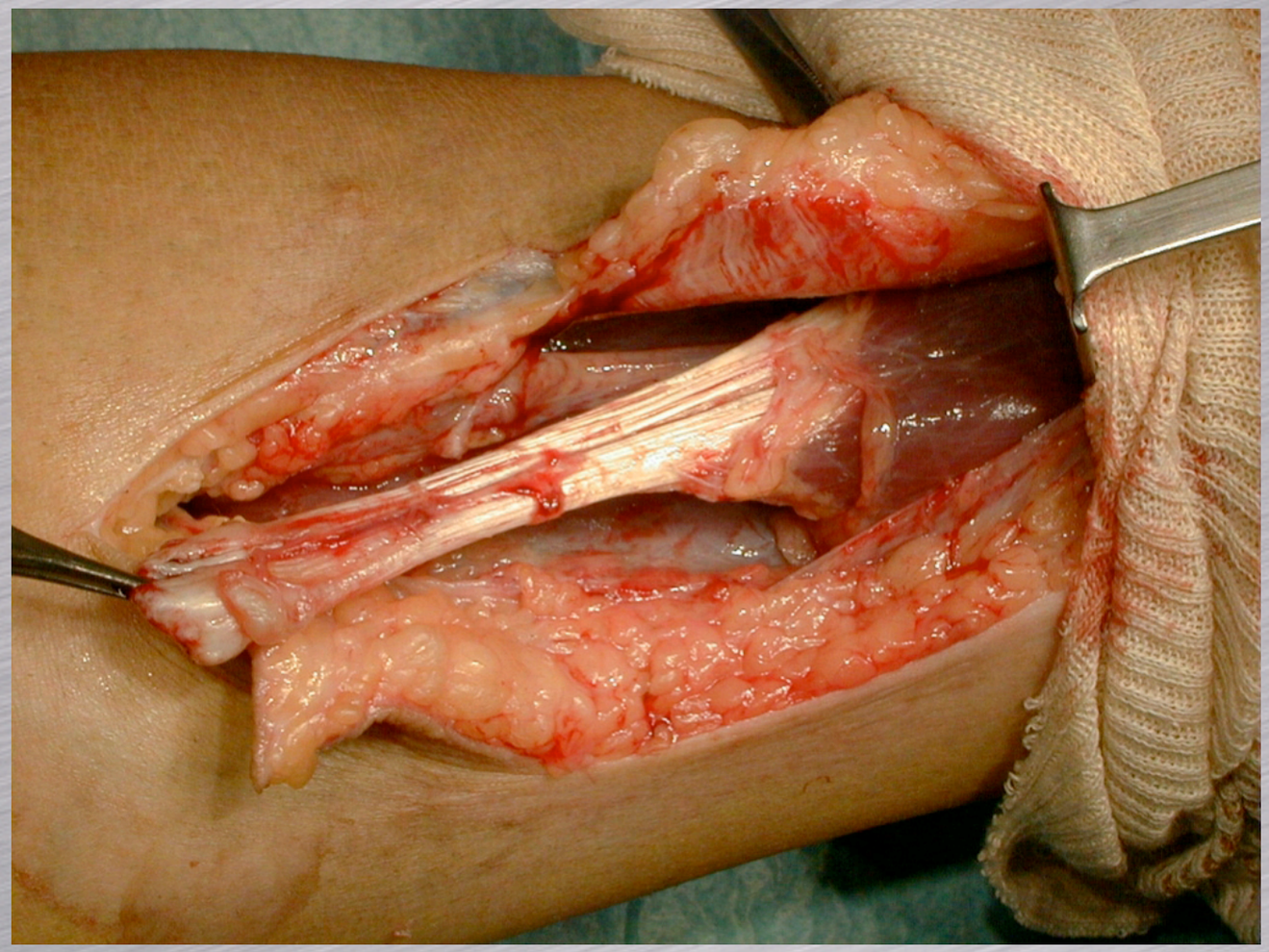
Treatment

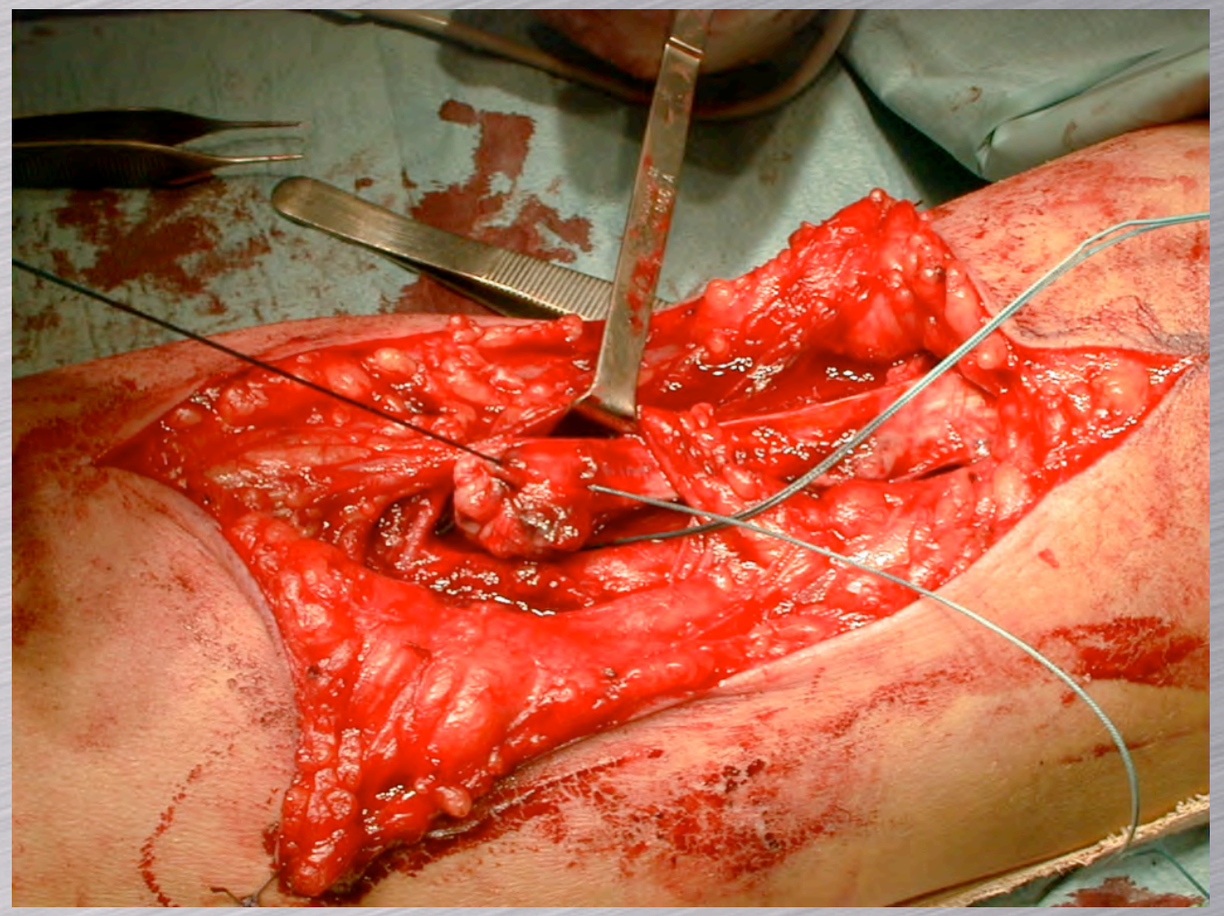
- Allways surgical if one considers recovery of strength and resistance in supination

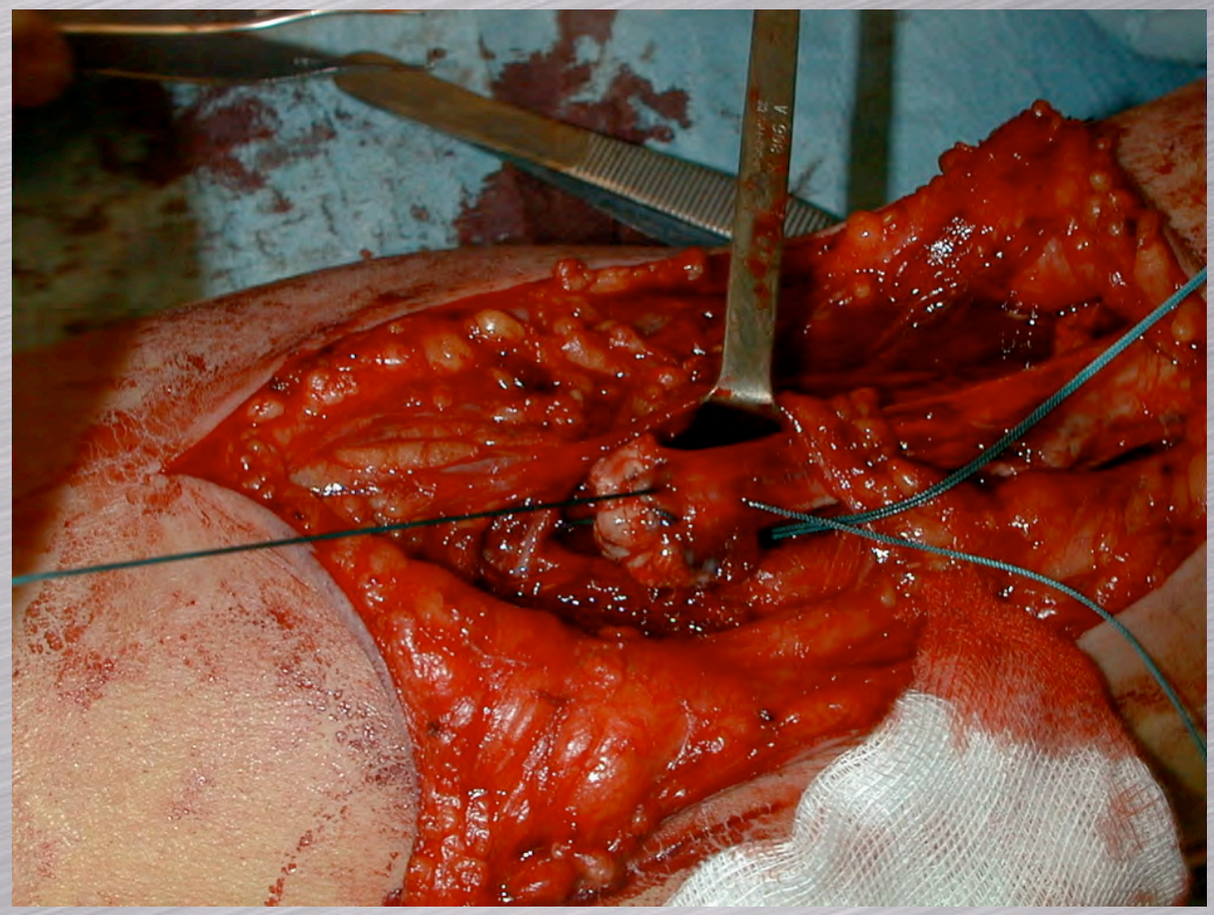




Question: Can we always bring back the tendon in its anatomical position ?







Post-op regimen

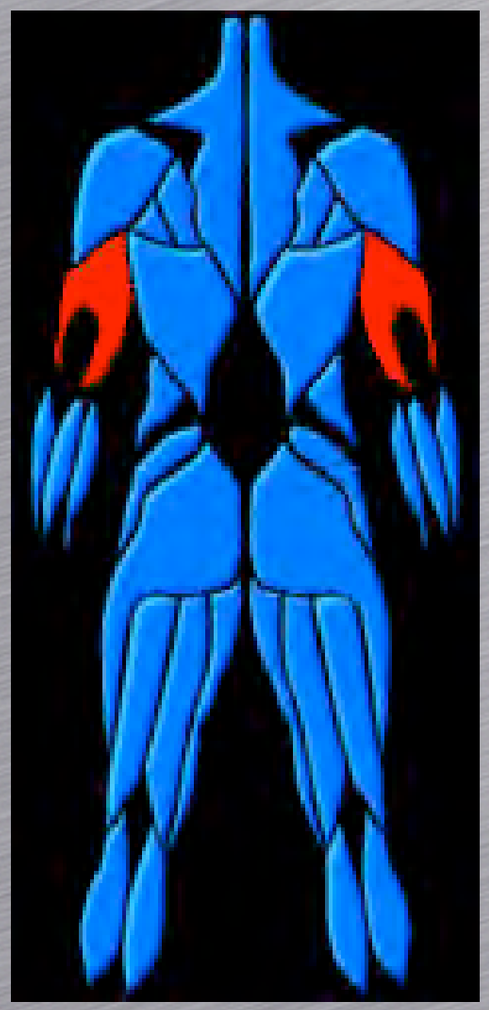
- Immobilization in a splint for 6 weeks
- No forceful flexion for 8 to 12 weeks
- Return to sport 4-6 months

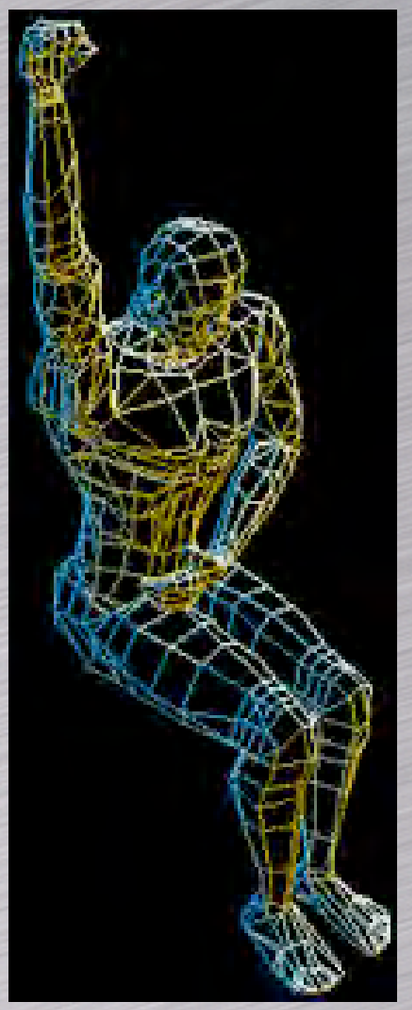
Results

- Good to excellent except for high level sportsmen
- Complete mobility
- ↘ 30% strength and 30% endurance in supination for anatomical reinsertions

➡ *(↘ 50% strength/endurance in supination and 20-30% in flexion without treatment)*

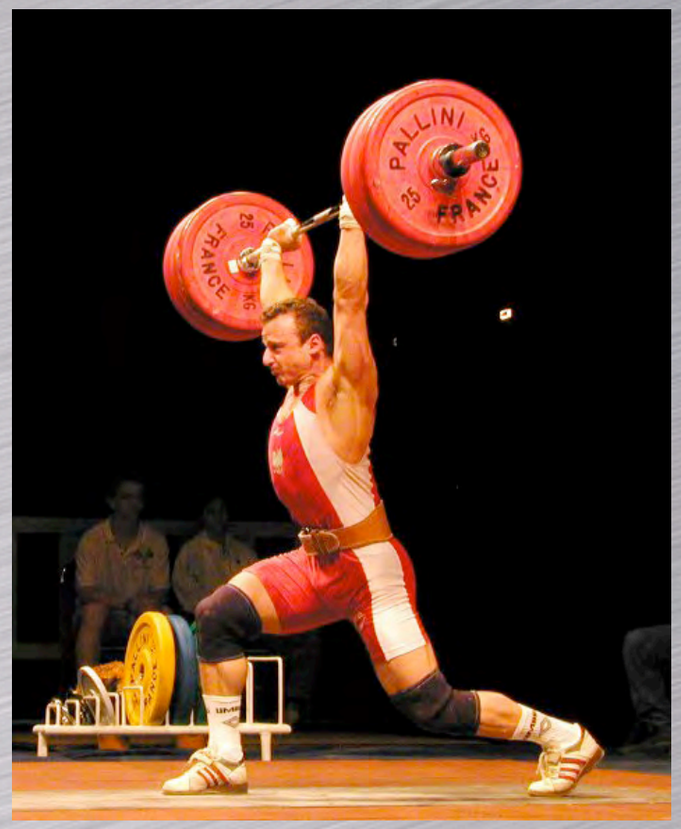
Lesions of the triceps





The triceps is an extensor of the elbow

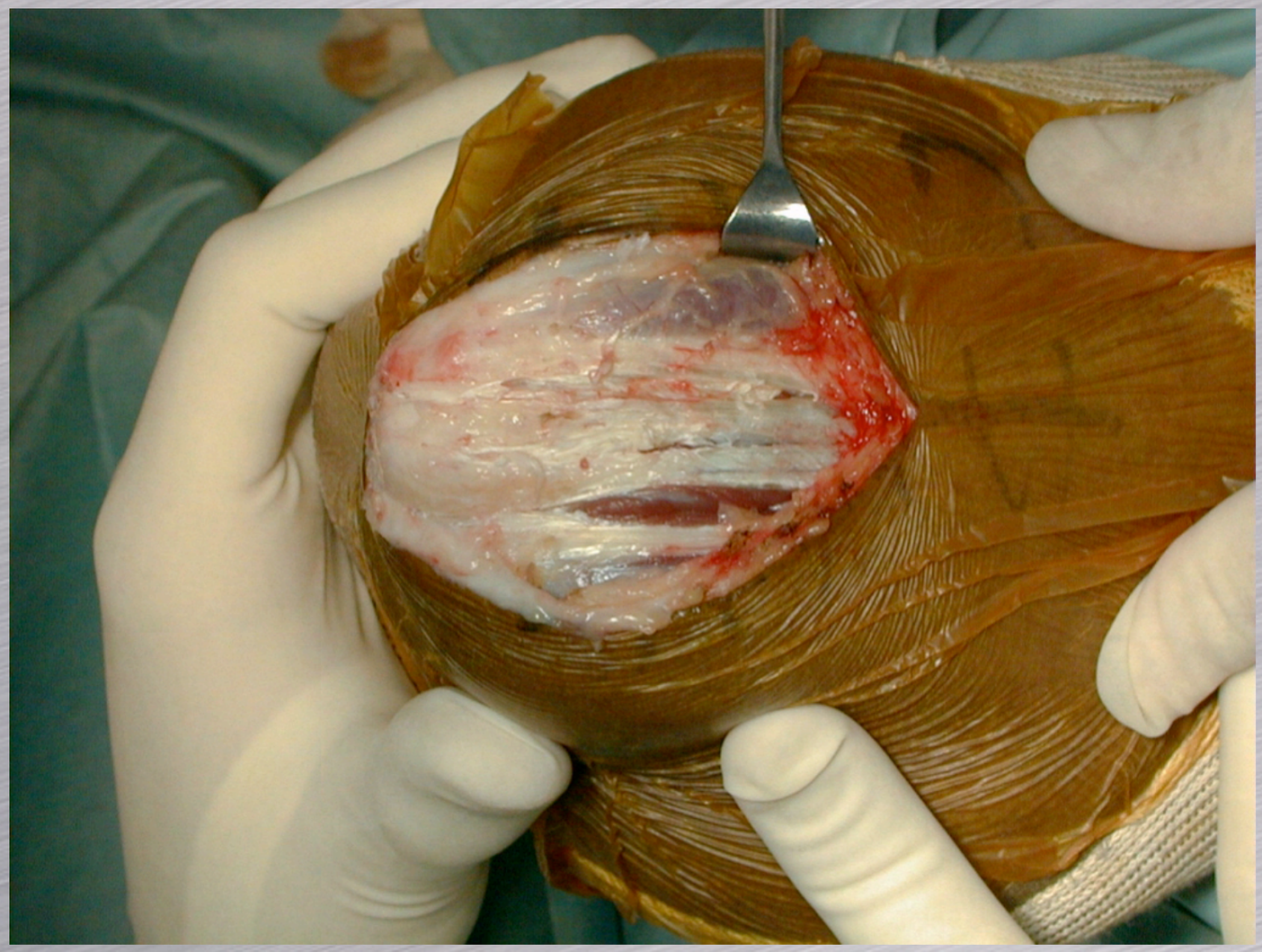
- It is sollicitated in sports which require a forceful and repetitive extension
  - Throwing
  - Racket's sport
  - Gymnastic
  - Boxing
  - Weight lifting



Tricipital tendinopathies

- Posterior pain, ≈ 1 cm proximal to the olecranon, increased by resisted extension
- Normal radiographs
- Treatment: Rest, NSAID, then rehabilitation with stretching and reinforcement - Very efficient
- No steroid infiltration

Surgery ?



- Very few indications
- “combing” of the tendon

Rupture of the triceps

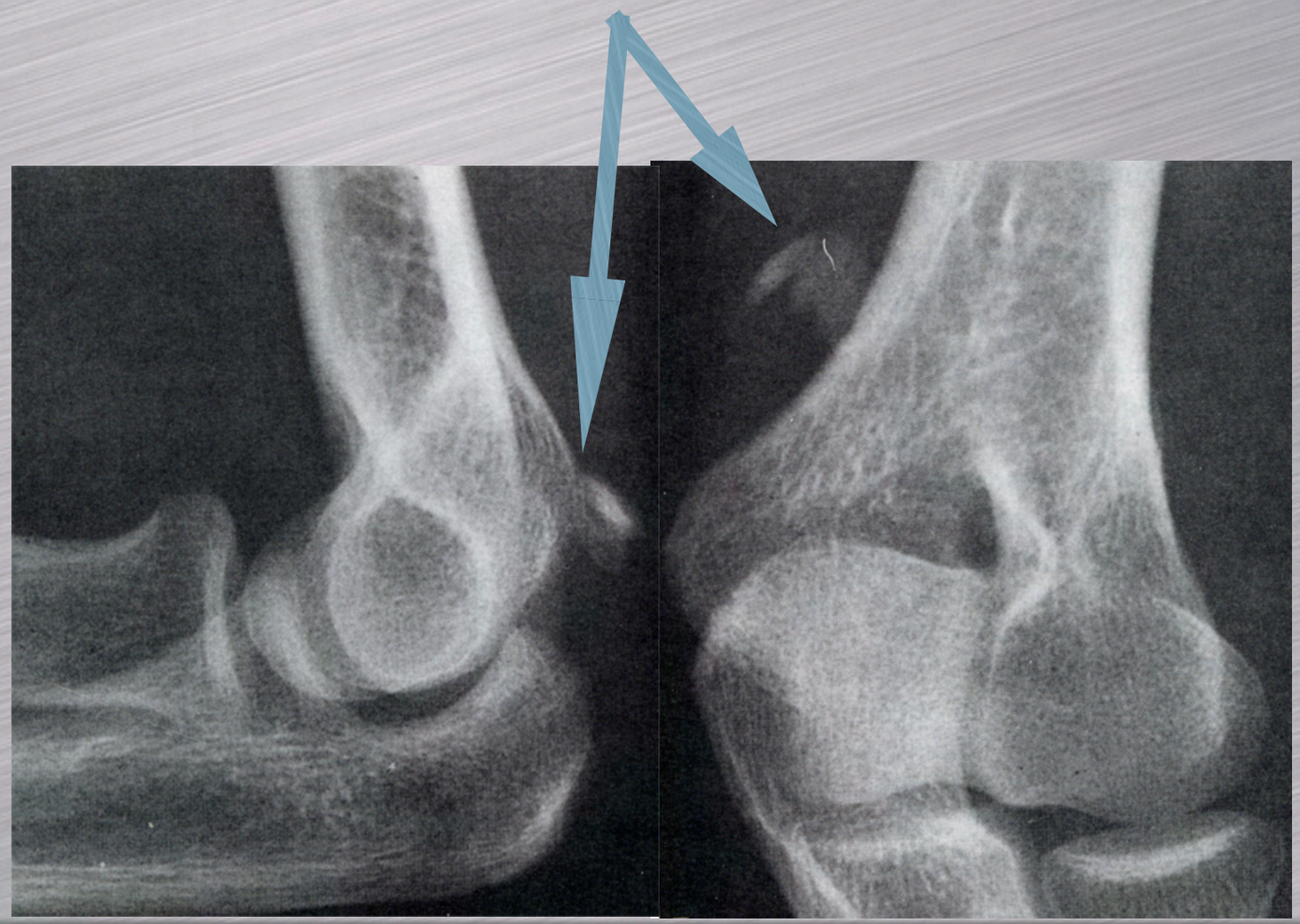
- Very rare, 0,8% of the 1014 tendinous lesions of the upper limb
- Mean age 33 yrs (all ages described)
- Facilitating factors: renal failure, hyperparathyroidy, quinolons, injections (corticoids), ...
- Mechanism: excentric constraints on a tight triceps (fall) or direct injury

Rupture of the triceps

- Pain, weakened active extension - difficult diagnosis
- Palpable deficit (16/23)
- “Modified” Thompson’s test
- Partial ruptures > total (15/8 in the Mayo clinic series)

Rupture of the triceps

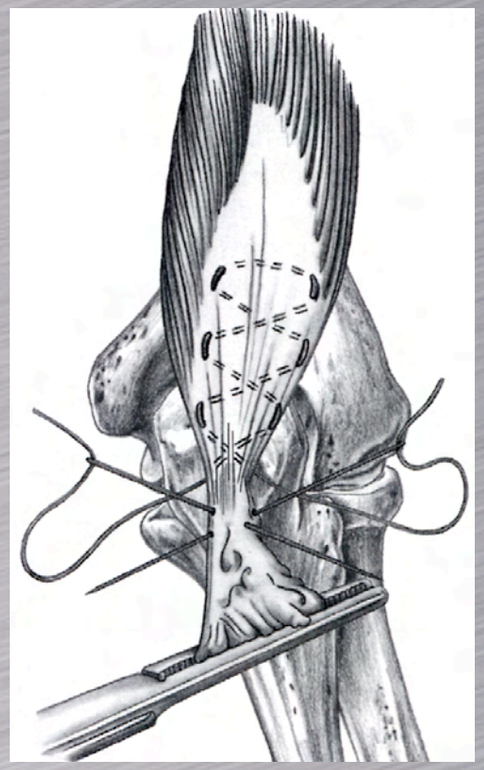
- Frequently bony avulsion visible on radiographs
- Sonography
- MRI

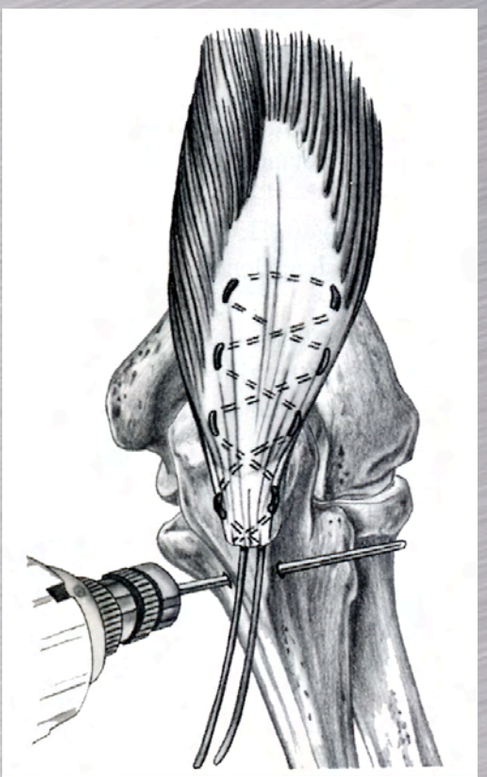


Rupture of the triceps

- Partial ruptures may be treated conservatively (4 weeks splint, 30° flexion)

- Complete ruptures are treated surgically. Sportsmen may return to sport after 12 weeks (3-6-8-12)





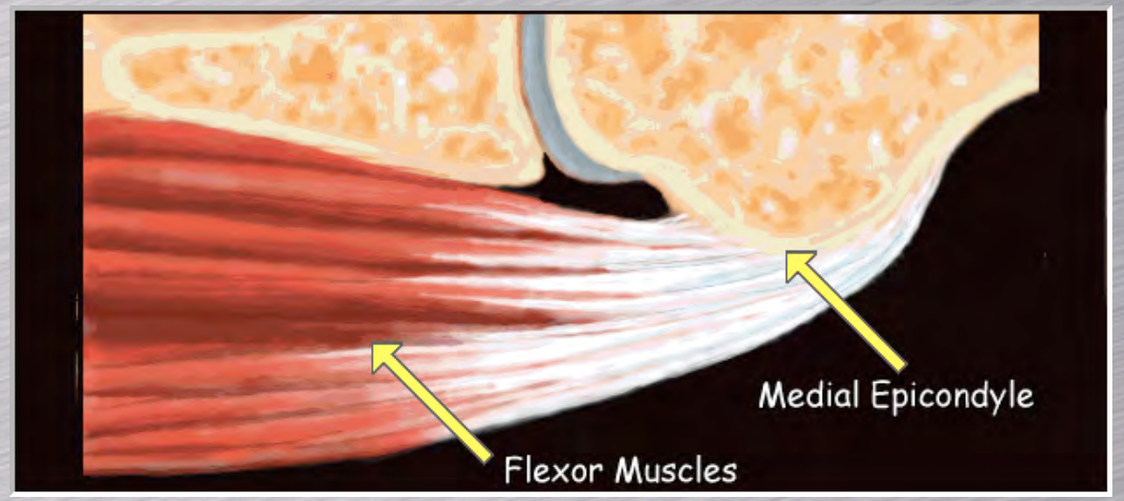
Medial epicondylitis

Medial epicondylitis

- 4 to 7 times less frequent than lateral epicondylitis
- Golfer's elbow (javelin, pitchers)
- Late forty's (except throwers 15-25 yrs)

Medial epicondylitis

- Pain on the insertion of the flexor-pronator mass
- ↗ Resisted pronation (+/- wrist flexion)
- Beware:
  - Of associated ulnar nerve entrapment (60%)
  - Of a stretching of the MCL in throwers

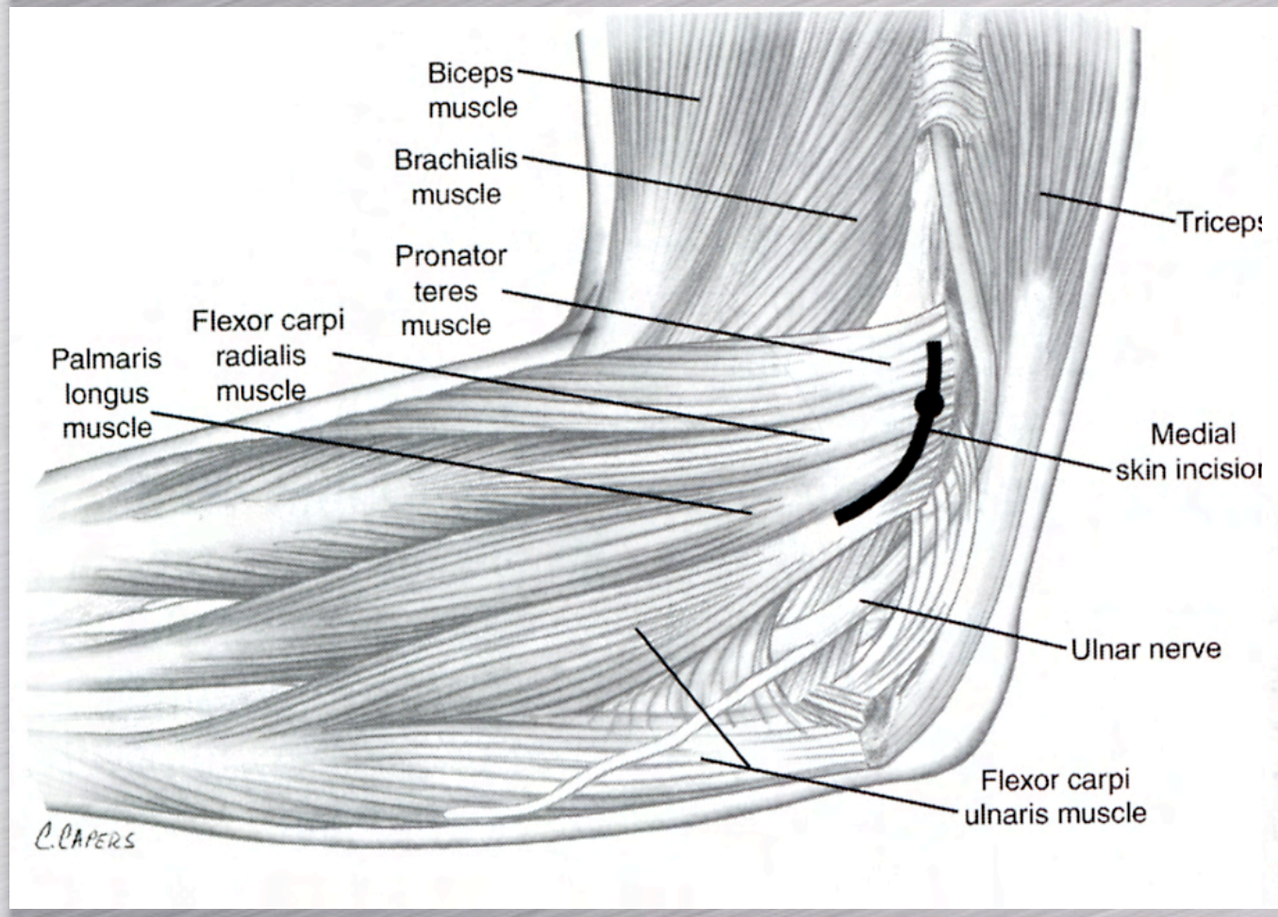


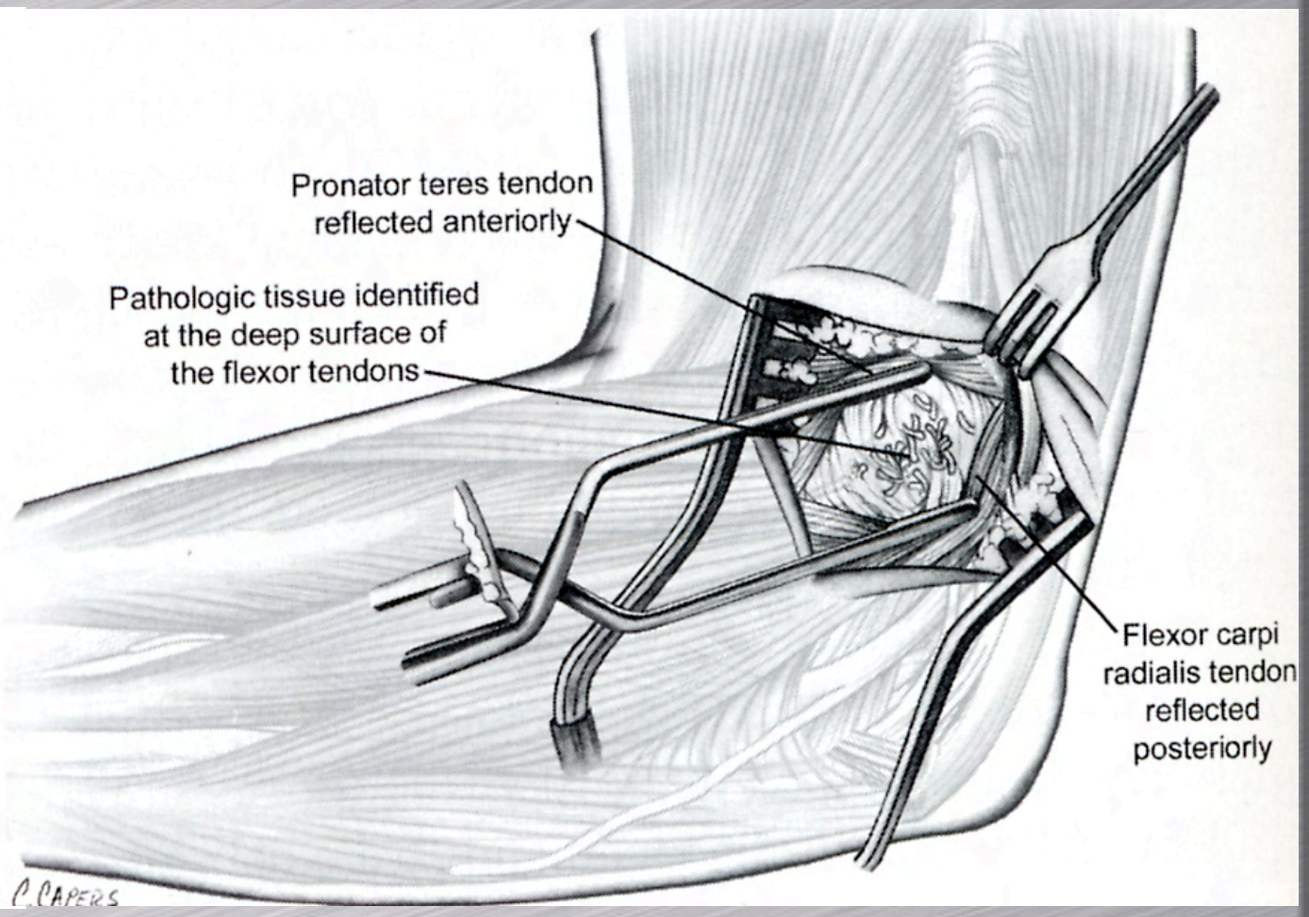
Conservative treatment

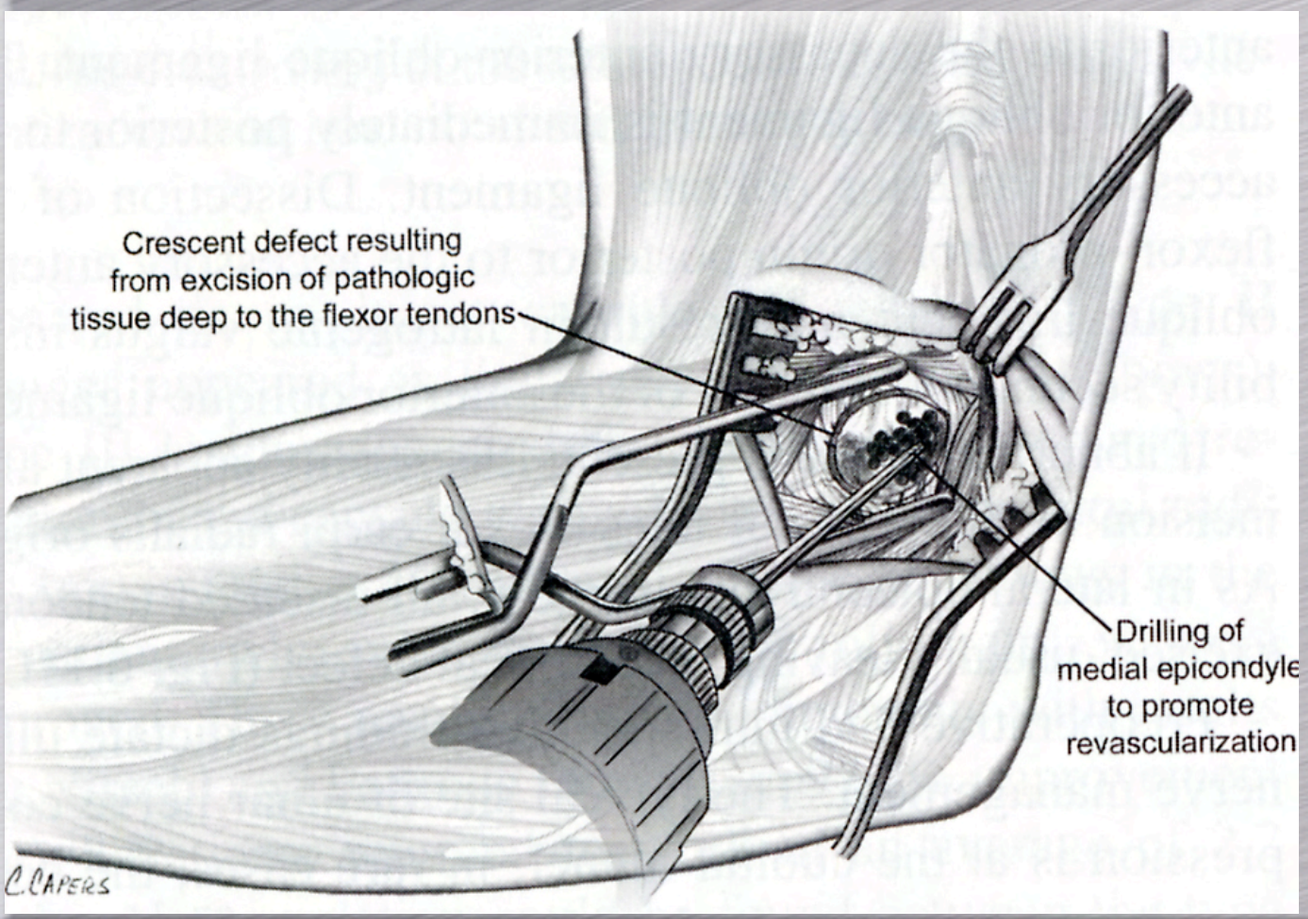
- "Rest", NSAID, orthosis, physical therapy

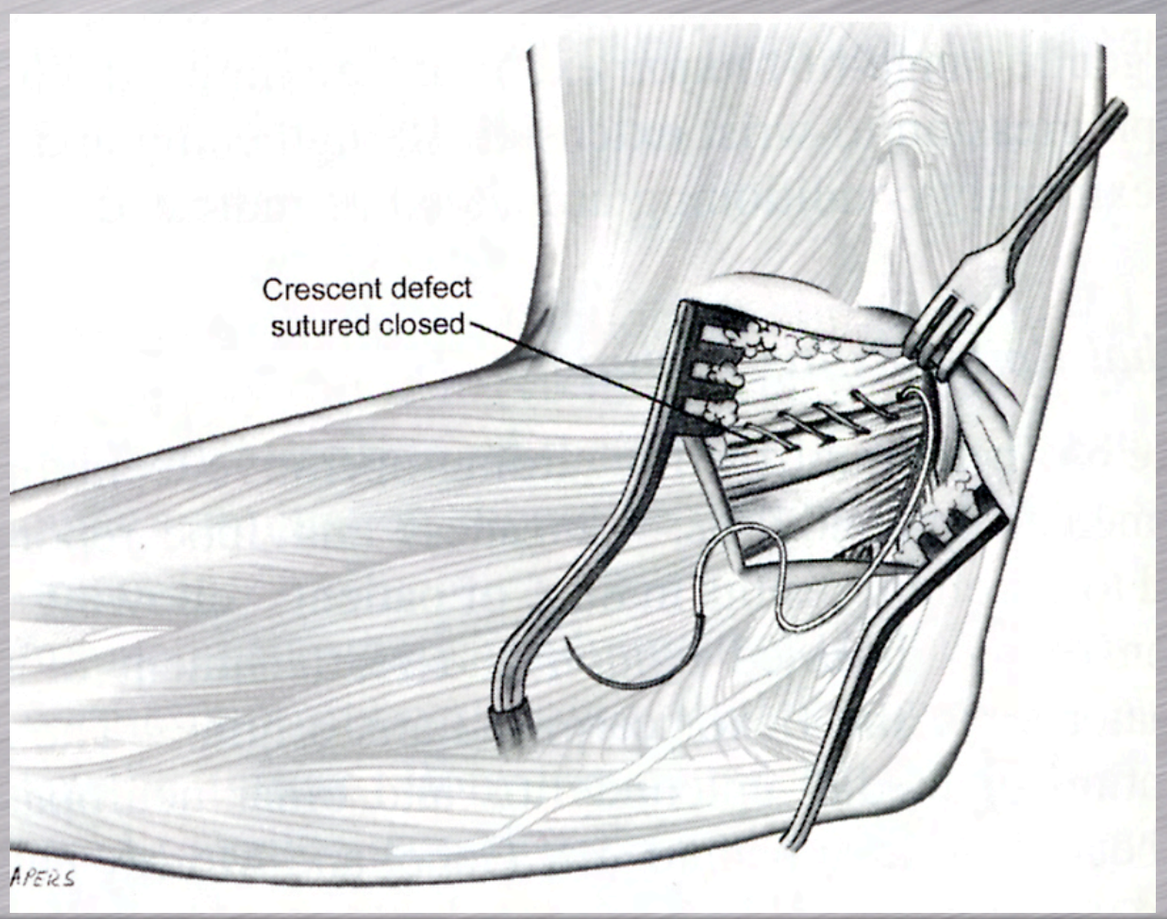
- Prevention (warming or icing, stretching, isometric worm)

- Surgery if pain persists

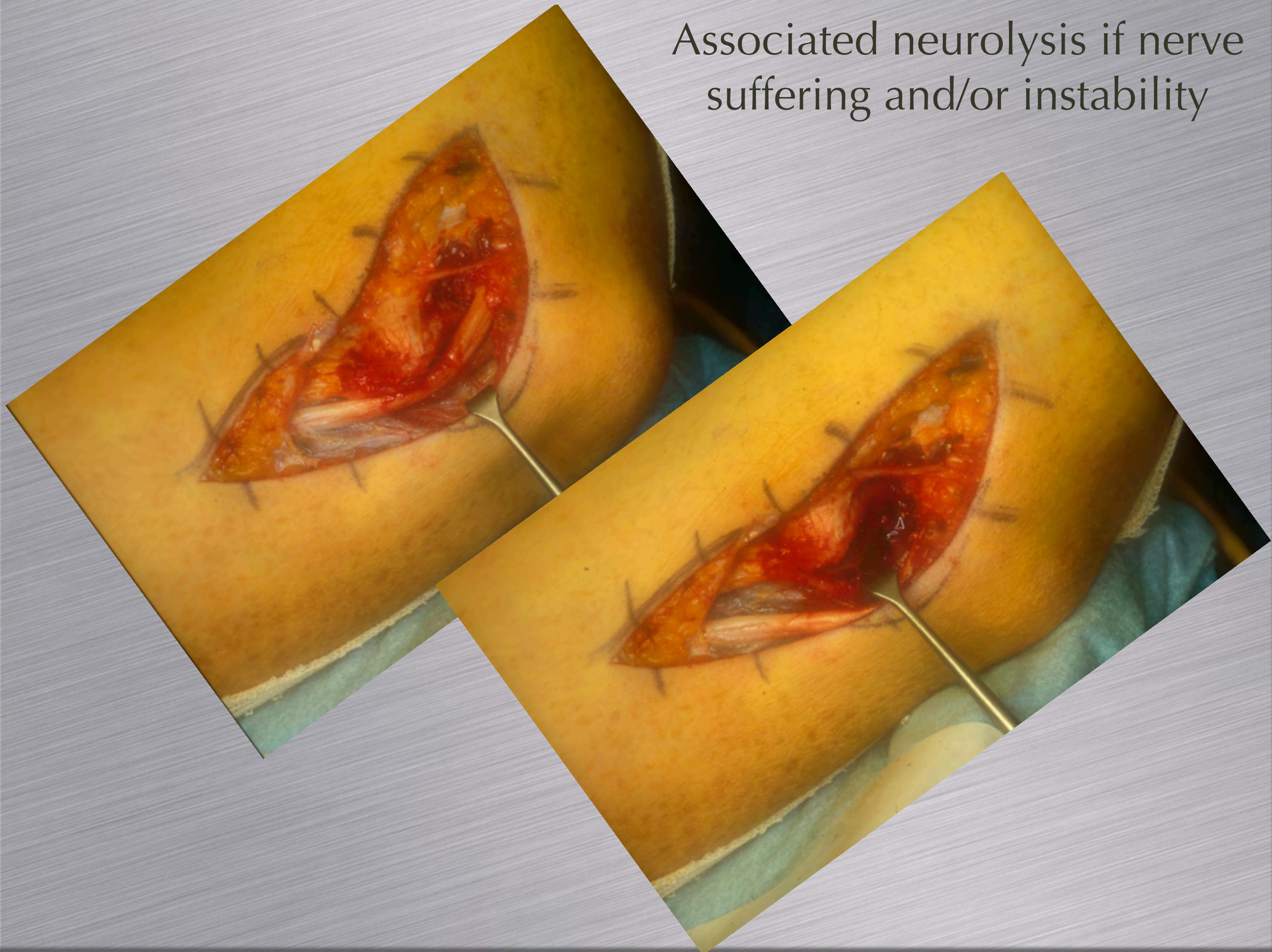

Biceps muscle
Brachialis muscle
Triceps
Pronator teres muscle
Flexor carpi radialis muscle
Palmaris longus muscle
Medial skin incision
Ulnar nerve
Flexor carpi ulnaris muscle
C. CAPERS


Pronator teres tendon reflected anteriorly
Pathologic tissue identified at the deep surface of the flexor tendons
Flexor carpi radialis tendon reflected posteriorly
C. CAPERS


Crescent defect resulting from excision of pathologic tissue deep to the flexor tendons
Drilling of medial epicondyle to promote revascularization
C. CAPERS

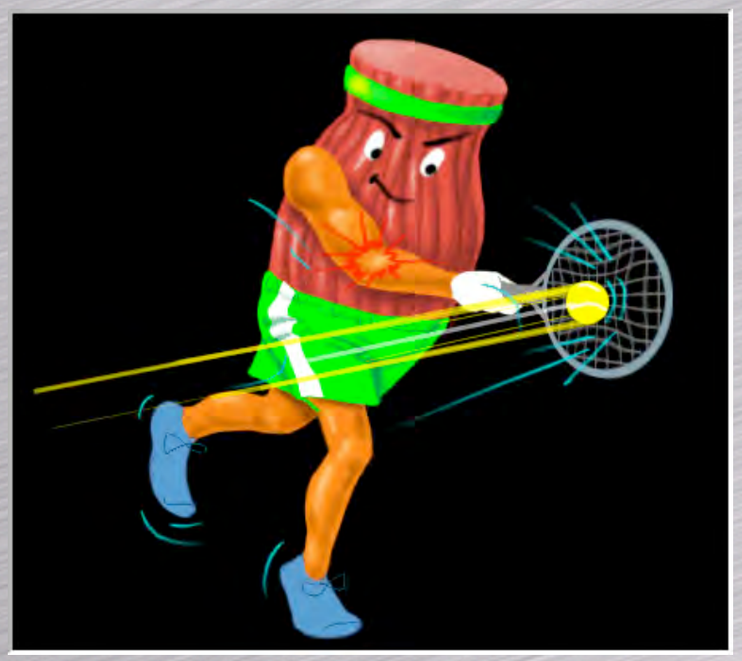

Crescent defect sutured closed
APERS

Associated neurolysis if nerve suffering and/or instability



Results

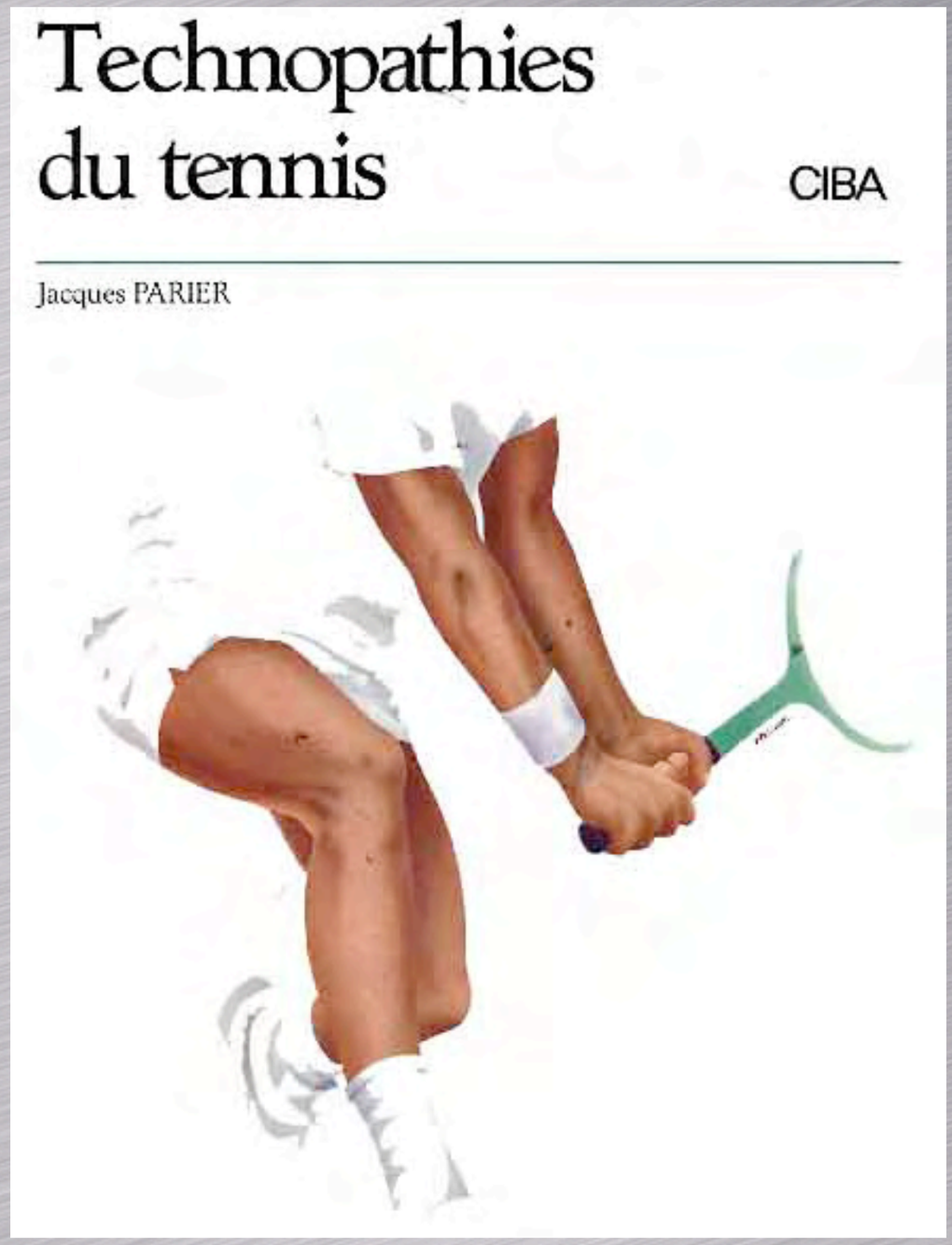
- Mostly good (≈ 80-90%) in athletes
  - Except if associated neurological lesion (≈ 50-60% good results)



Lateral epicondylitis

"Tennis elbow"

- 10 to 50% of amateur tennis players
- Around the 40's
- Suffer or will suffer from a "tennis elbow"
- Half for 6 months, the other half for 2 and 1/2 yrs



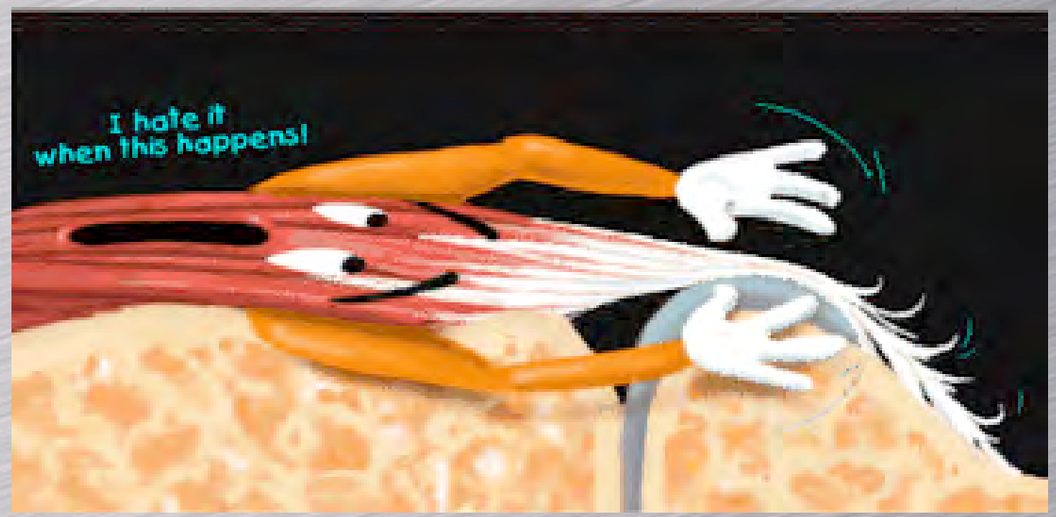
- It is not necessary to play tennis to suffer from the elbow (95% of patients cannot play tennis)
- 1 to 3% of the population

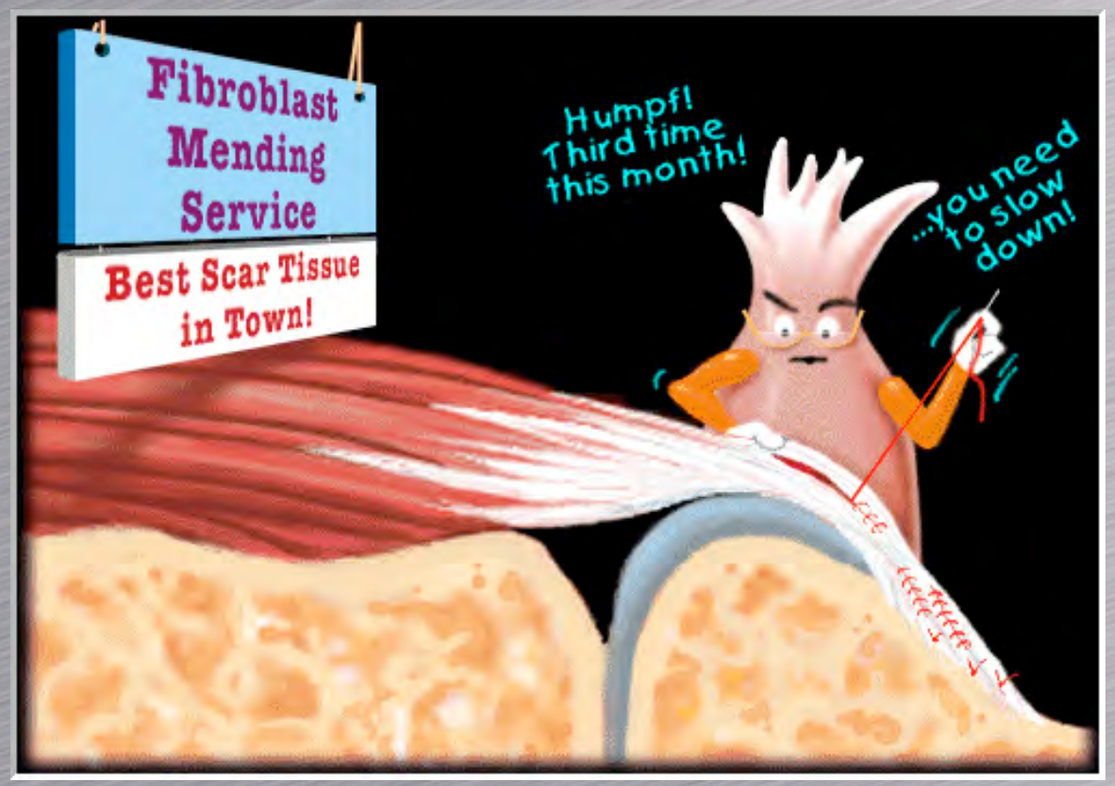
Diagnostic

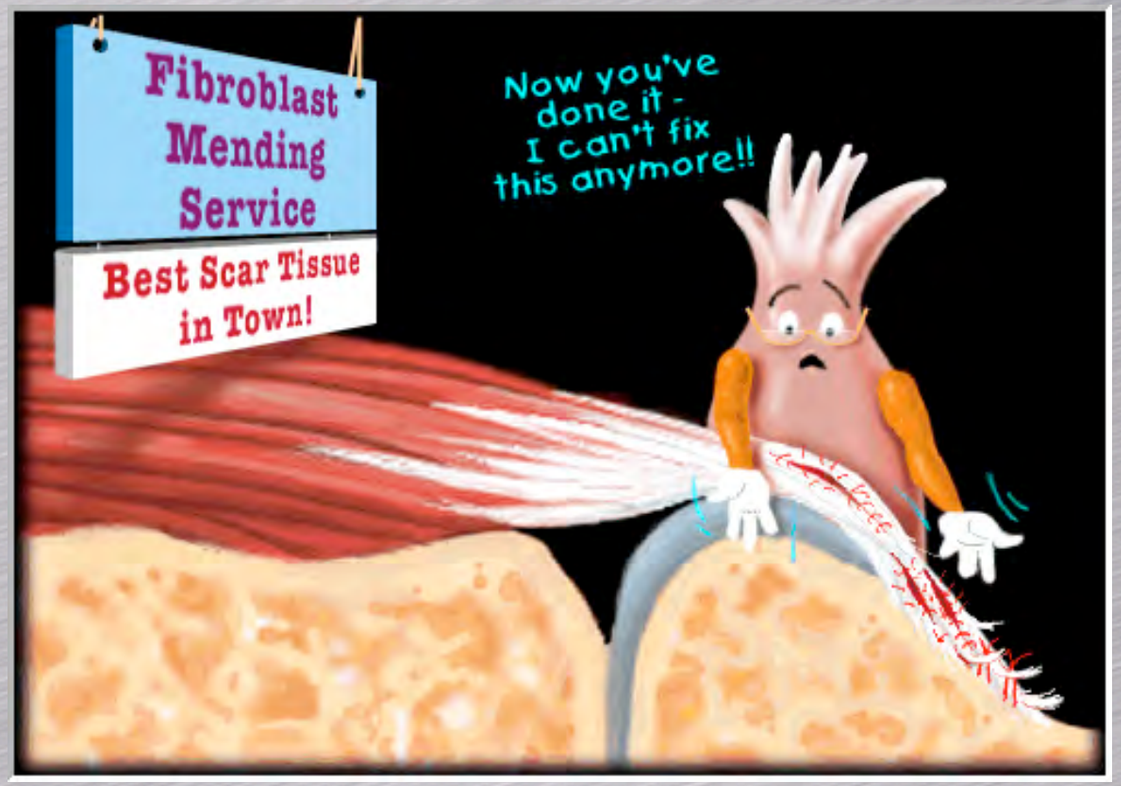
- In athletes, only tennismen suffer from a “tennis elbow” (baseball, throwing)
- Pain appears during the backhand
  - Eccentric constraints on contracted muscles
  - The elbow is in both extension and supination

Physiopathology

- Unknown
- "Angiofibroblastic tendinosis"

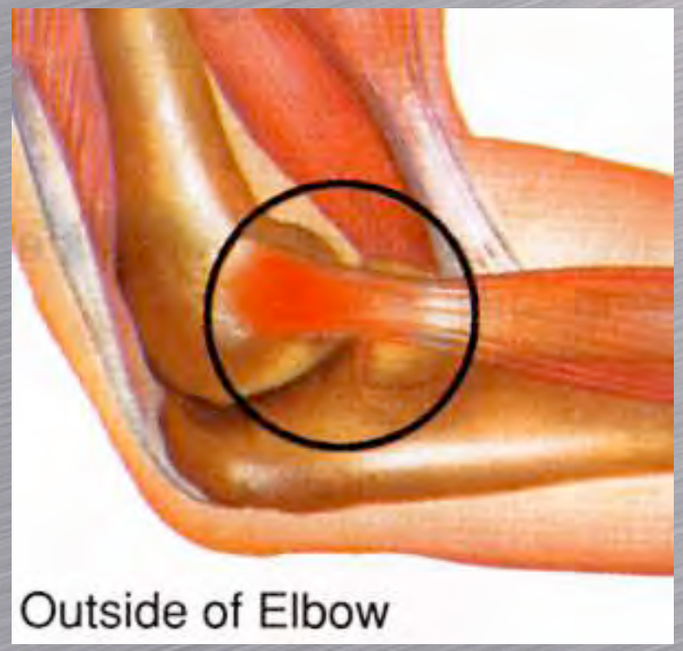


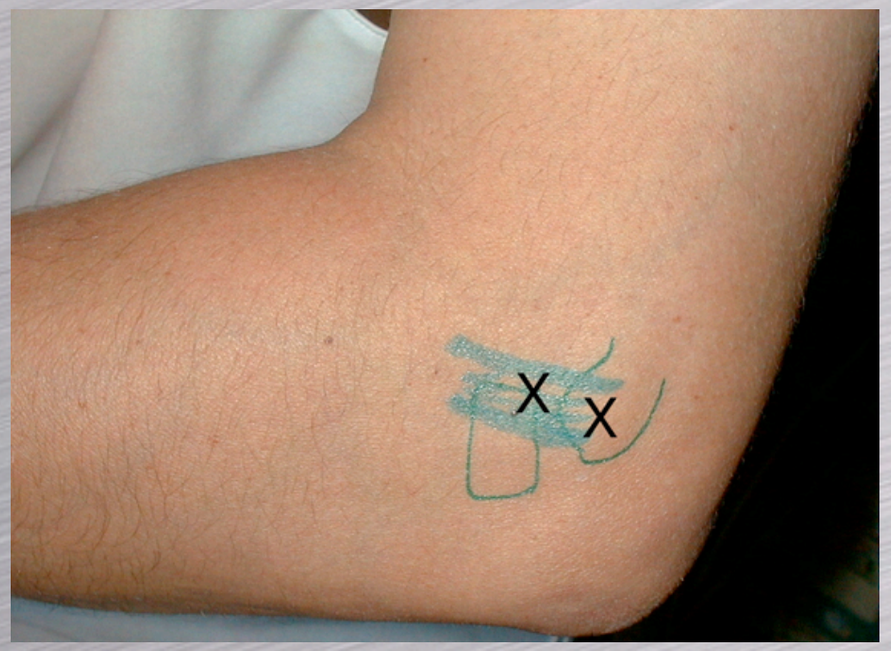




Diagnostic +

- Lateral pain, on the insertion of the conjoint tendon
- Sometimes loss of elbow extension





Diagnostic +

- ↗ resisted wrist extension

Diagnostic +

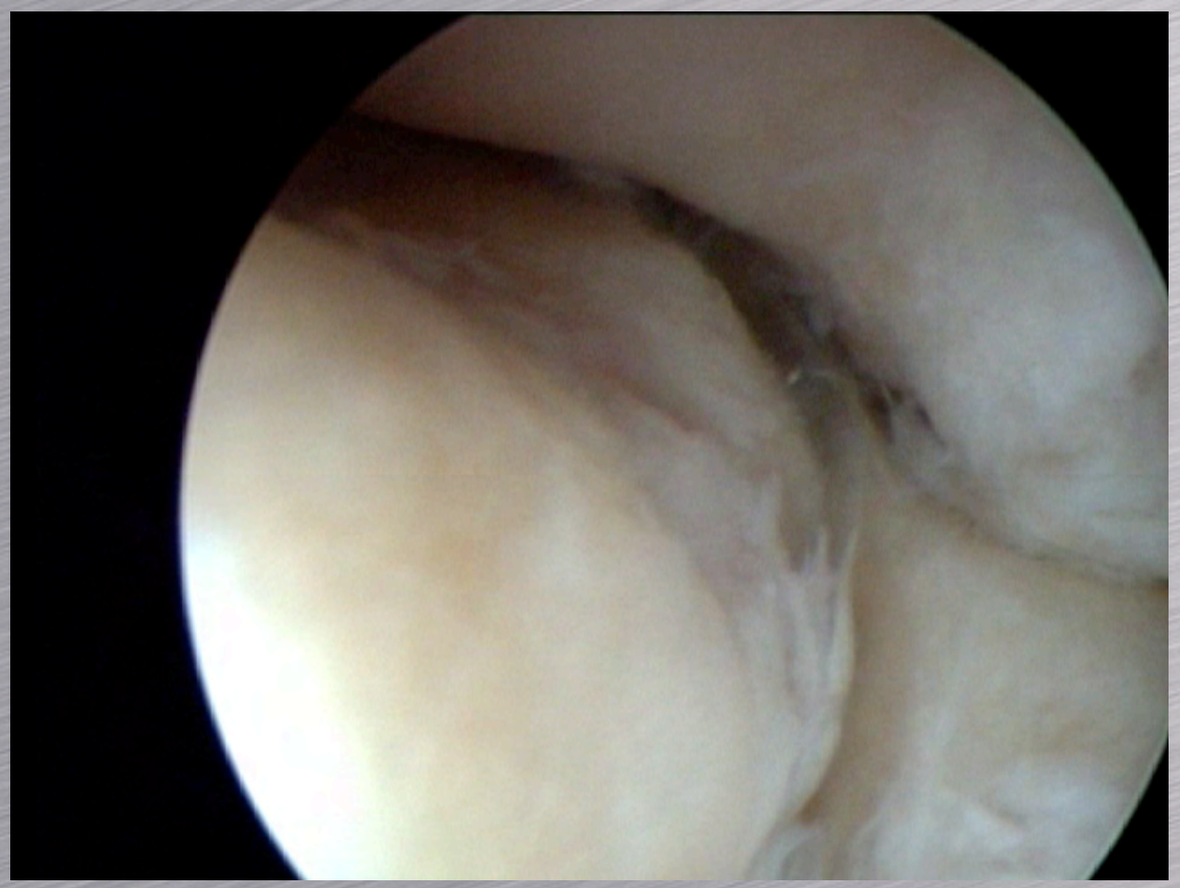
- ↗ resisted extension of the middle finger (≠ PIN entrapment)

Imaging techniques

- X-rays are mandatory
  - Normal X-Rays
  - Some calcifications, irregularities around the epicondyle
- Other imaging techniques
  - Sonography +++
  - MRI

Associated diagnostic/differential ?

- Intra-articular lesions ?
  - 11% in Nirschl's series (open)
  - 60% in Baker's series (arthroscopic)

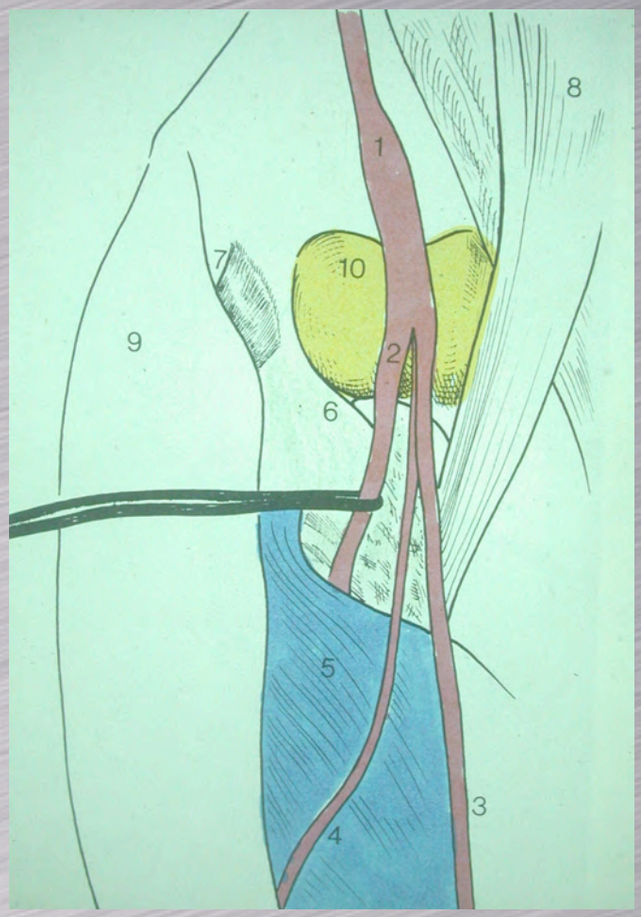


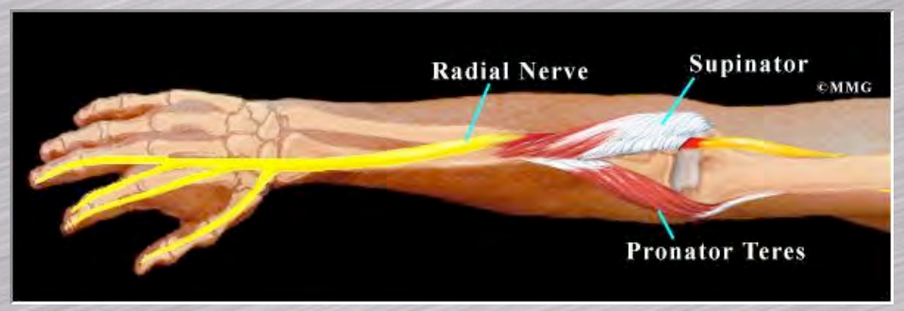
Differential diagnosis

- Neurological lesions
- Muscular
- Osteo-articular
- Vascular
- Others ...

Radial nerve entrapment

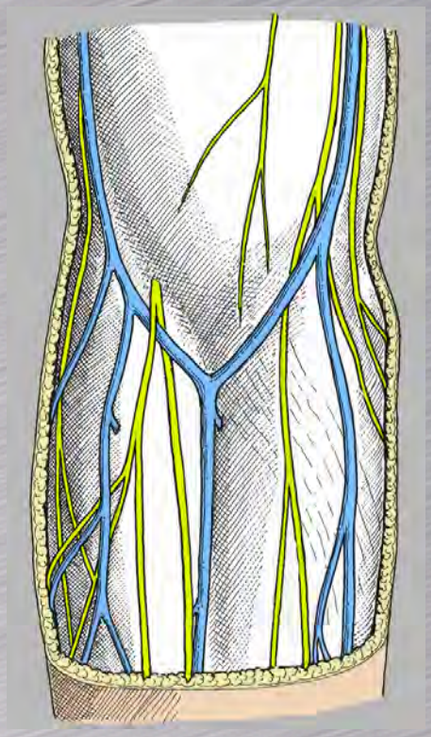
- 5% maximum of cases
- Different symptomatology: nocturnal pain, more distal pain
- Repetitive supination mvt
- EMG + (?)





Other differential diagnosis

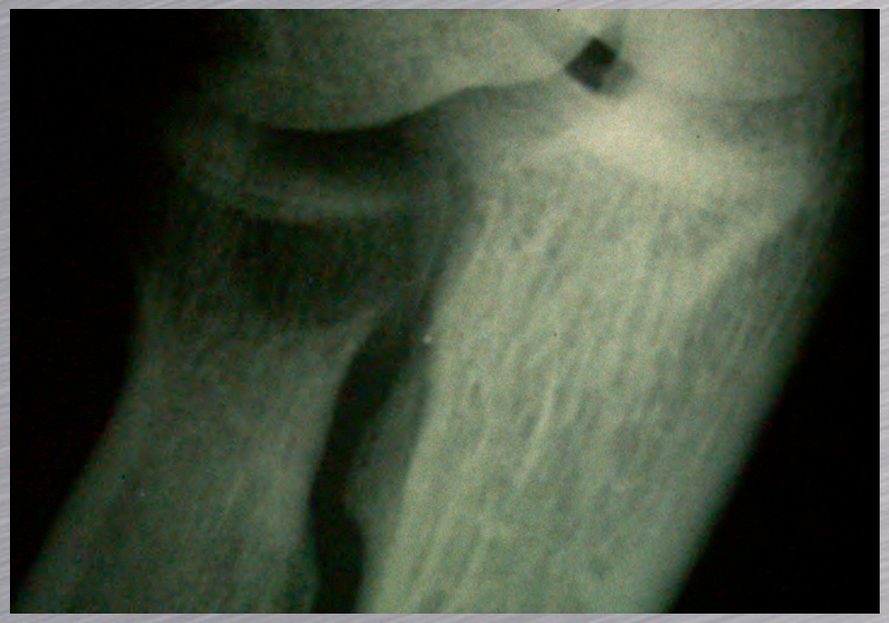
- Musculo-cutaneous nerve entrapment
  - Pain, elbow in extension, forearm in supination

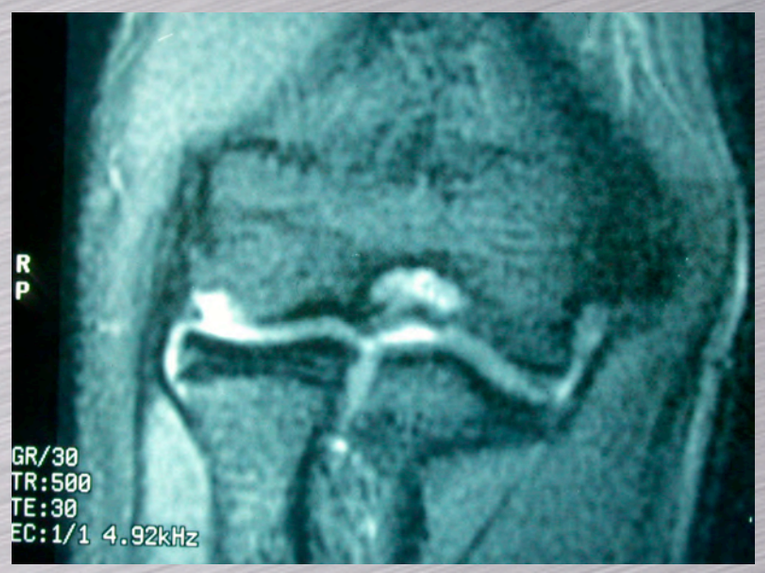


- Osteo-articular lesions
  - Muscular isometric testing is negative - X-Rays are mandatory

Other differential diagnosis

- Rare lesions may require advanced imaging techniques





Treatment

- "facts, myths and vaudoo"
- "is there any science out here ?"
- Lateral epicondylitis may be a self-limiting disease which requires no treatment
- Less than 10% of patients who resist medical treatment will require surgery

Treatment

- Changes in sport technique (grip, racket weight, tension,...)
- Limitation of physical activities
- Orthosis
- Rehabilitation
- Steroid injections
- Acupuncture, osteopathy
- Schock-wawes
- Botulic toxin...

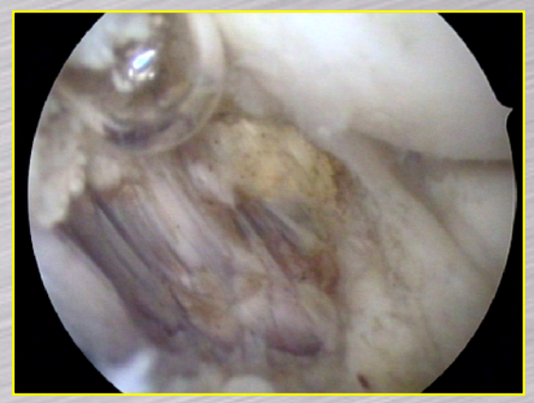
Must be tried
many months

What about tennis players ?

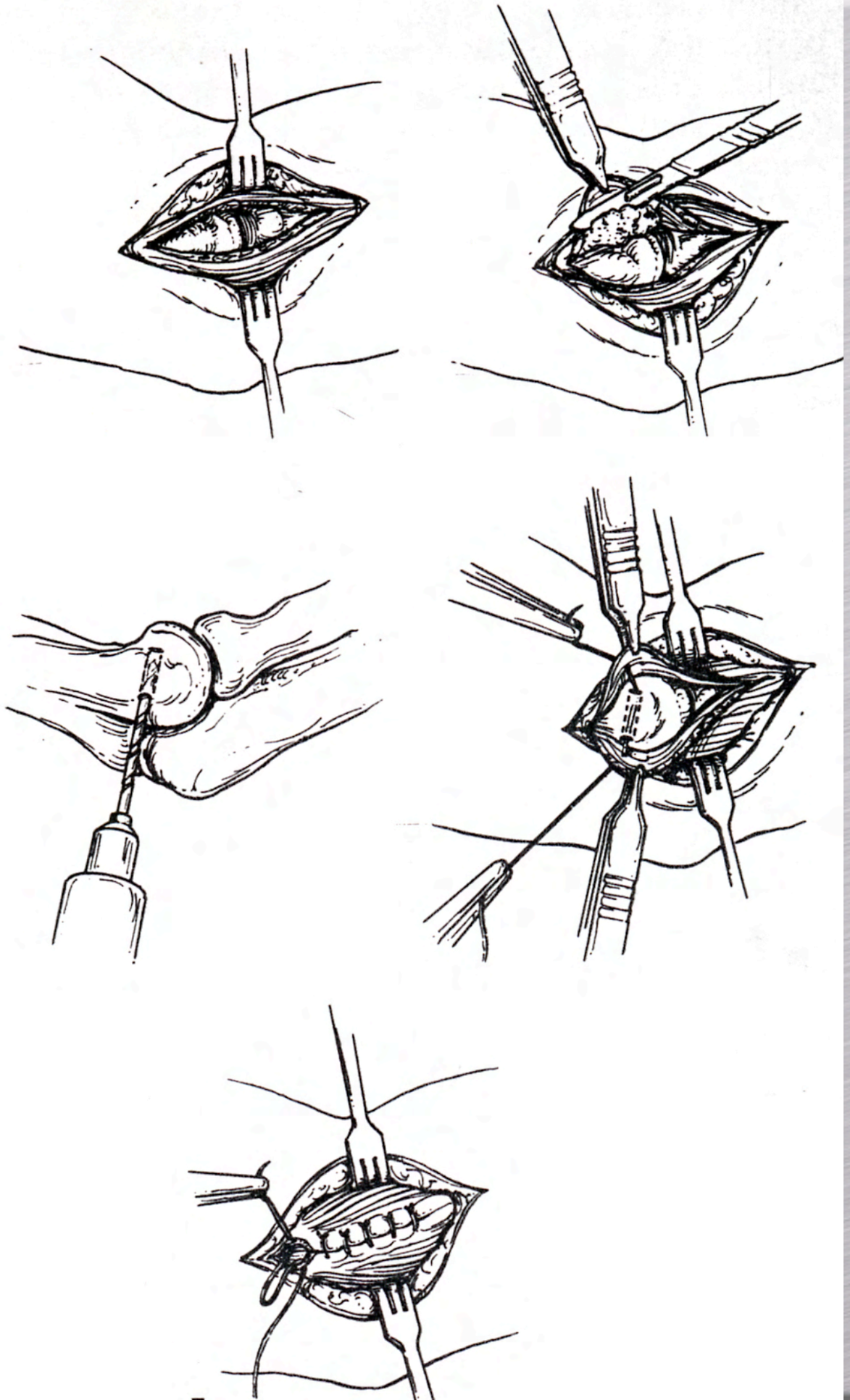
- 56% of tennis players can play by 6 months
- 77% by 1 year,
- 90% at 4 years can play tennis

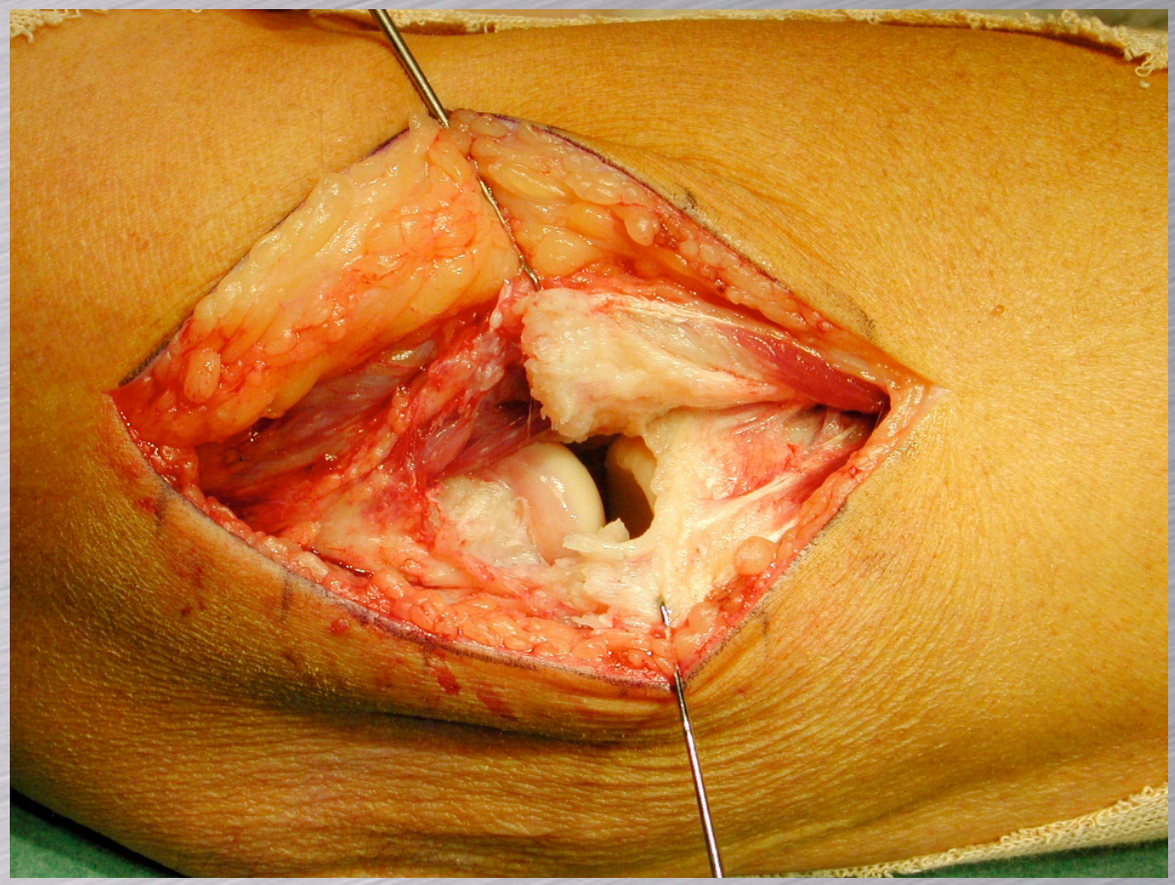
Surgical treatment(s)

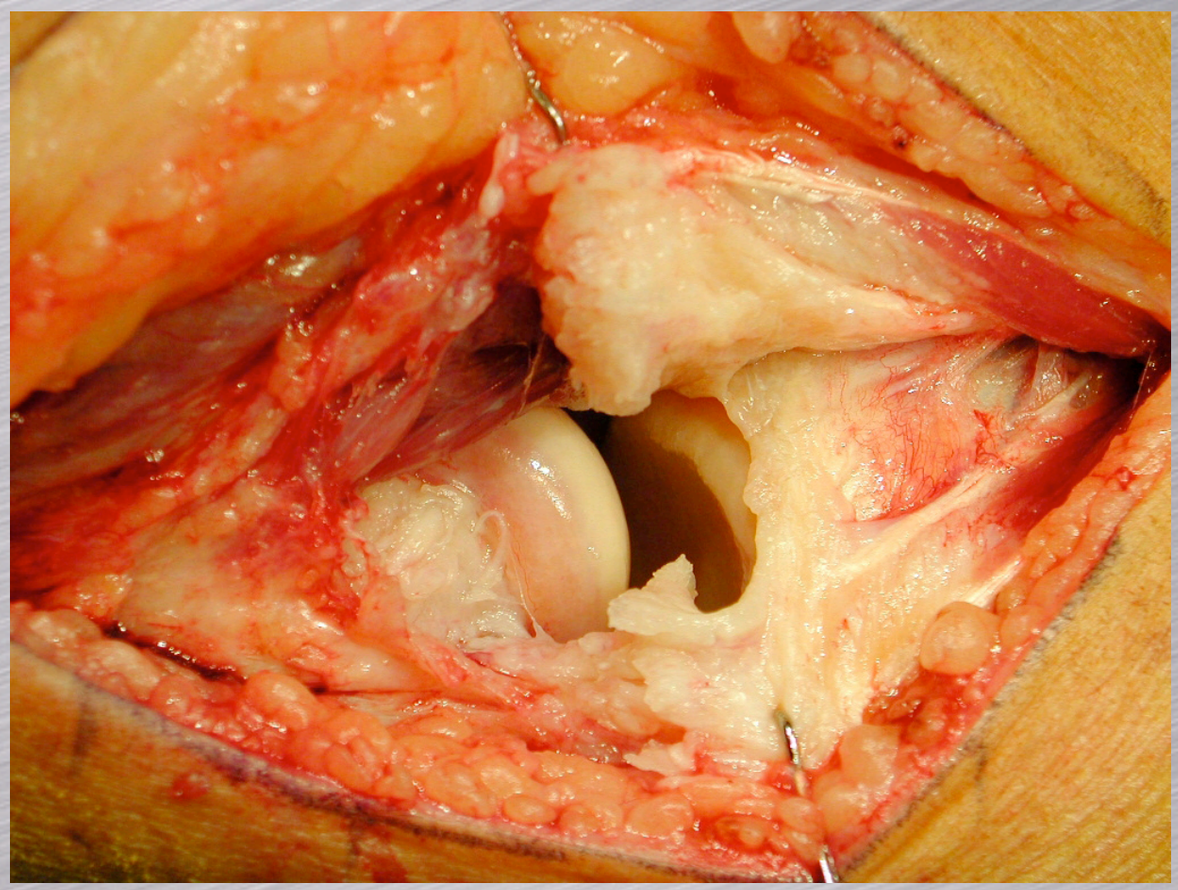
- Section/disinsertion of conjoint tendon
  - Per-cutaneous
  - Open surgery
  - Arthroscopy



- Multiple variations and associated treatment (radial nerve neurolysis, articular inspection, denervation of the epicondyle, muscular plasty,...)

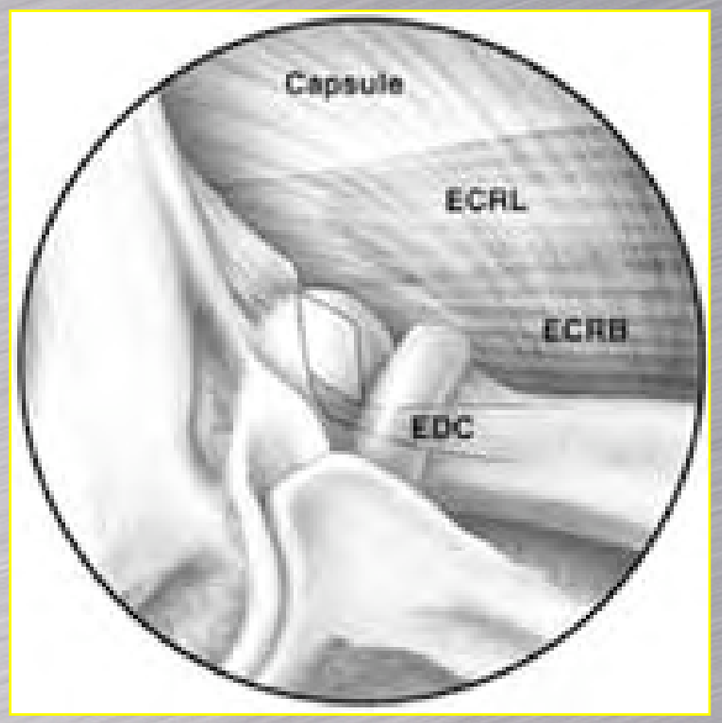




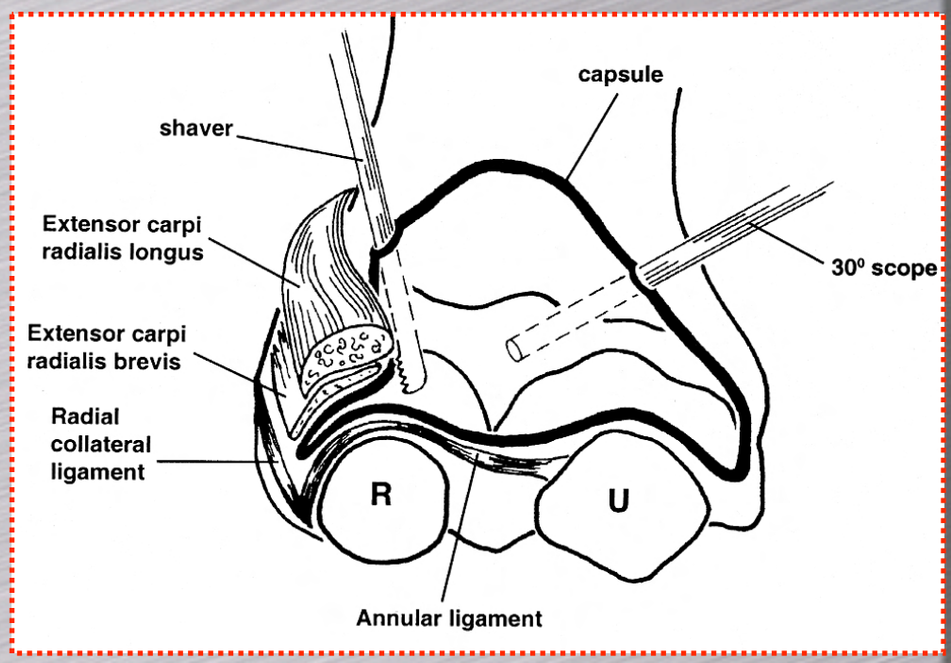


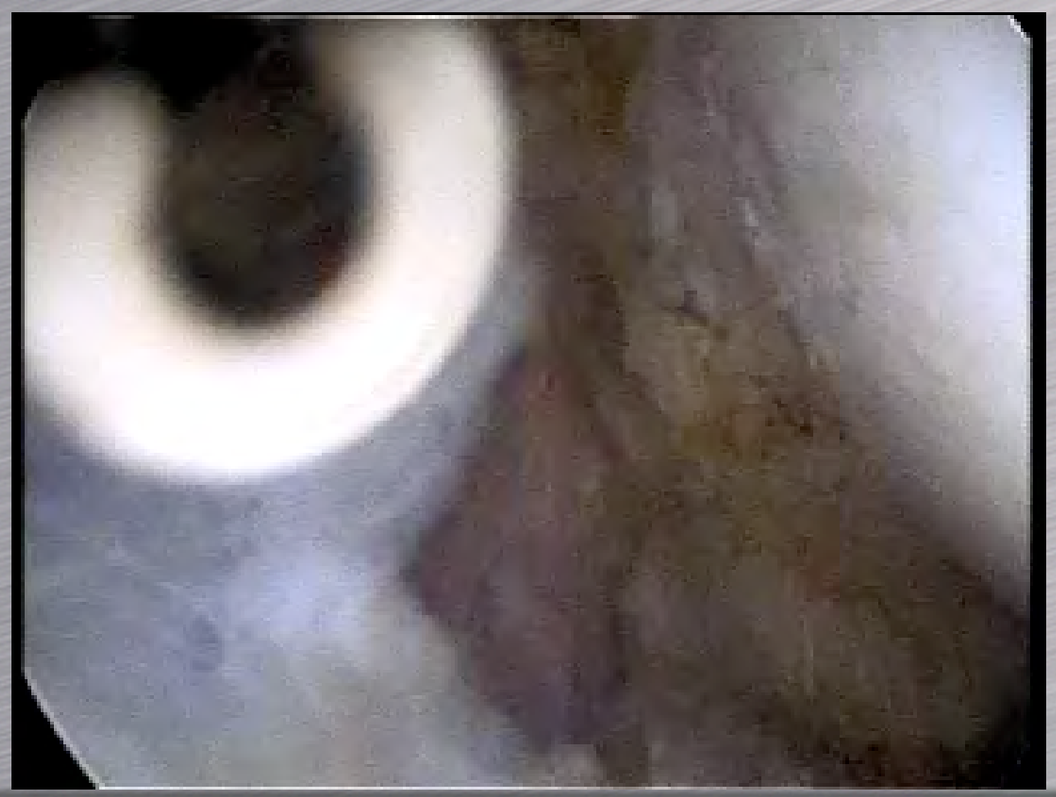
Arthroscopic treatment

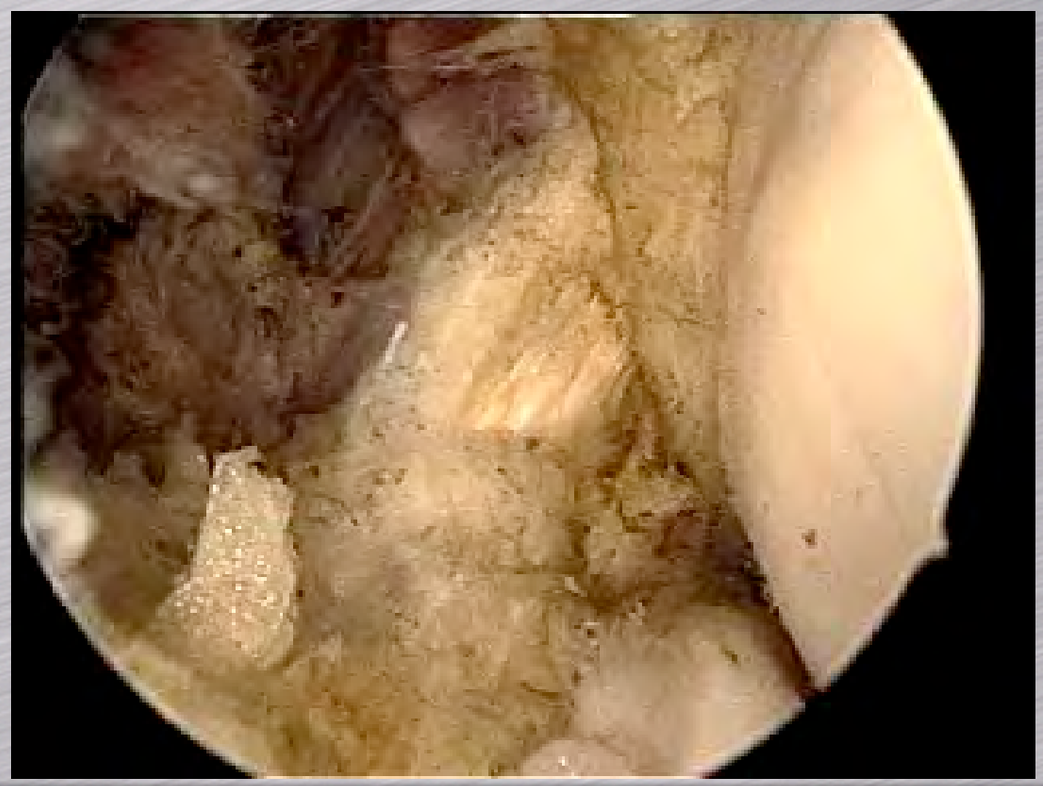
- Started in 1998 with anatomical works and first series



- Through the capsule, insertion of the conjoint tendon is visible and can be divided







Conclusion

- Tendons are prone to injury in many sports
- Treatment of triceps and biceps tendon lesion is (quite) straightforward
- We know little about medial and lateral epicondylitis which are very frequent and sometimes very disabling
- Do not harm !