



Guilan university of medical sciences

# Non- operative & Physiotherapy in Elbow Injuries

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# Management Objectives

1. Resolution of the chronic inflammatory process
2. Maturation of the scar (healed area of the tendon).
3. Restoration of strength and extensibility to the muscle tendon complex

# Management

## Acute cases

- a. Ice to the site several times a day, HVPC



# Management

- ▶ Swelling and/or pain also may limit the range of elbow motion.
- ▶ The flexion arc of motion decreased  $2.1^{\circ}$  for every millimeter of injected fluid.

# Management

## Chronic cases

- a. Advise the patient explicitly as to the appropriate level and type of activity that may be performed.
- b. Strong, repetitive, grasping activities: must be restricted until there is little pain on resisted isometric wrist extension and little or no pain when the tendon is passively stretched (wrist flexion, forearm pronation, and elbow extension).

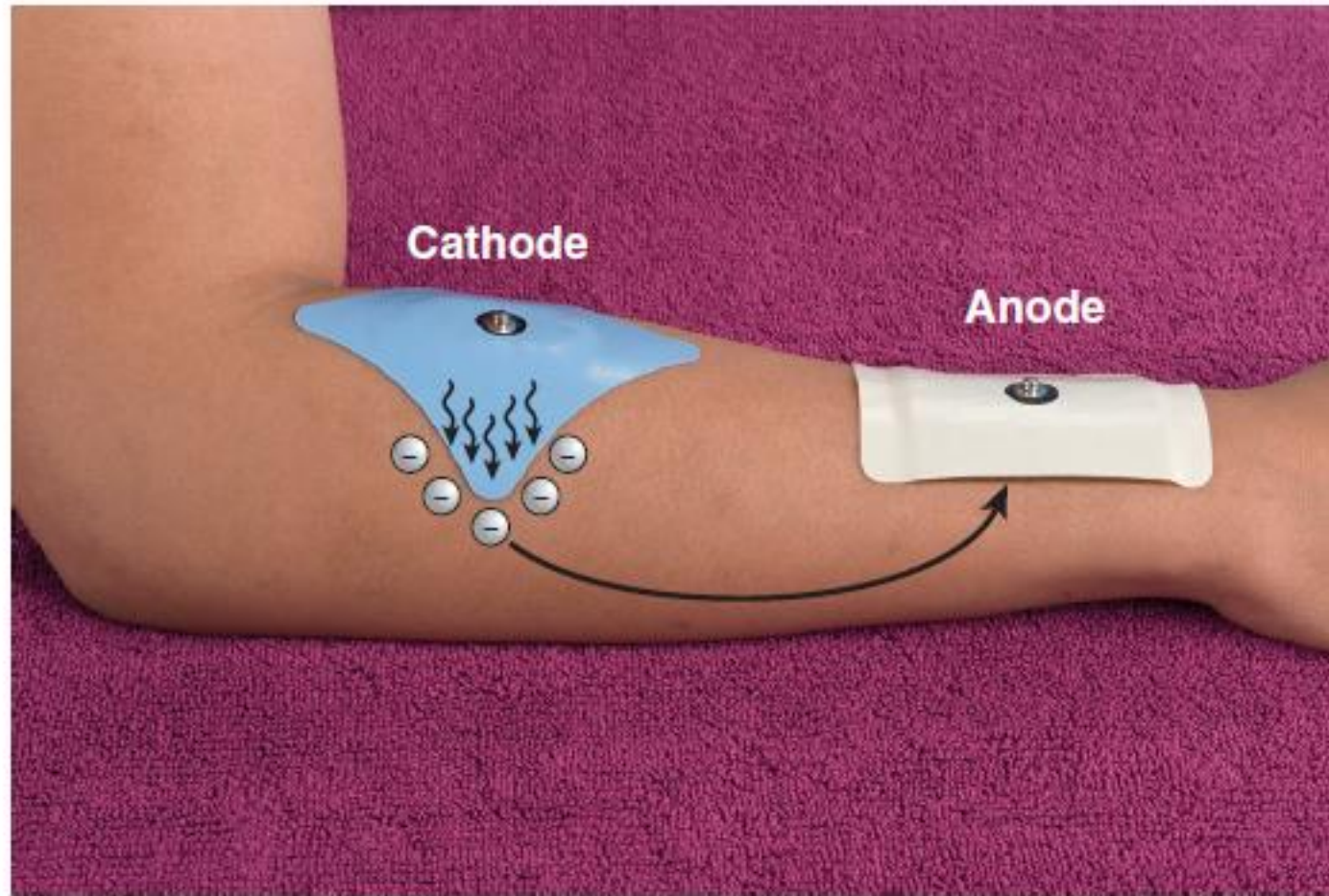
# Management

## Two rehabilitation approaches

The first approach: Modalities: rest and restriction of activities, using therapeutic modalities such as cryotherapy, electrotherapy, iontophoresis, and ultrasound, and using nonsteroidal anti-inflammatory drugs

The second approach: "jump start" the inflammatory process, in effect, using techniques that are likely to increase the inflammatory response and allowing healing to progress as normal to the fibroblastic and remodeling phases



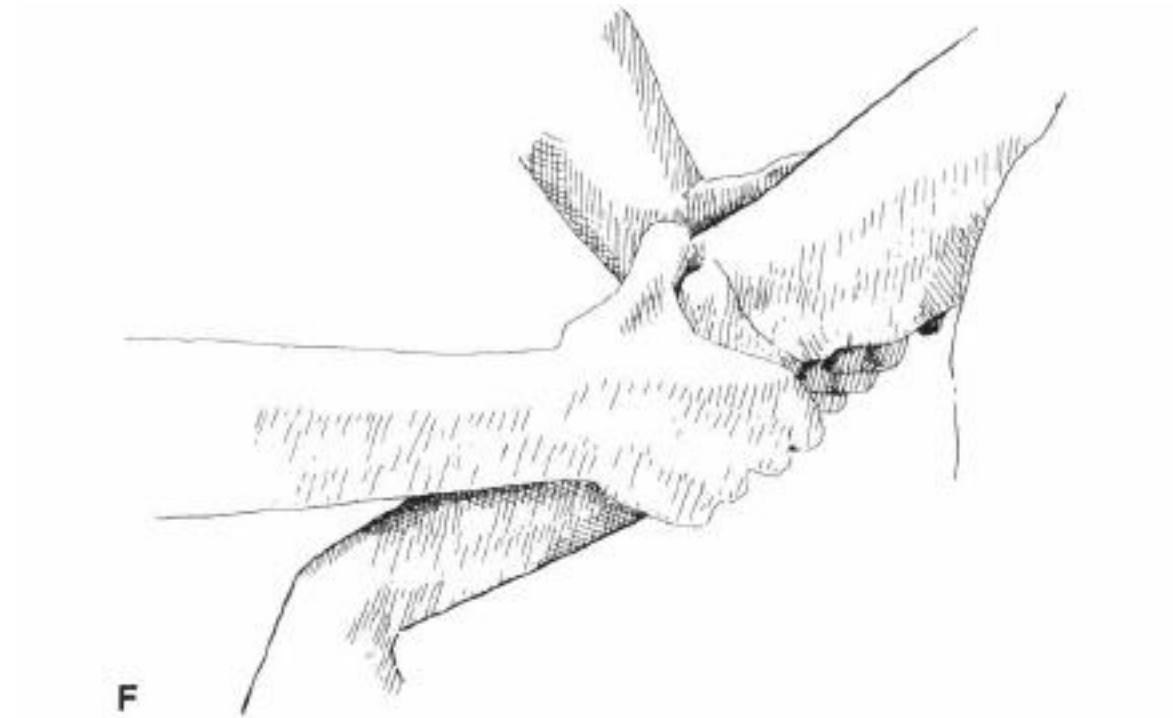


**Fig 9 ■ 10** Iontophoresis uses direct current to move ions. Negatively charged ions placed under the cathode will be “pushed” or repelled into the tissue.

# Management

## Chronic cases

Deep transverse friction massage





# Management

## Chronic cases

- ▶ DTM: hyperemia and the mechanical influence
- ▶ The mechanical effects of the deep massage may promote orientation of immature collagen along the lines of stress

# Management

## Chronic cases

- ▶ c. Strength and mobility must be restored
  - 1. Gradually.
  - 2. Excessive internal strain to the tendon can be minimized
  - 3. No vigorous activities
  - 4. Gently and slowly stretch the tissue by holding the elbow extended, the forearm pronated, and the wrist ulnarly deviated, while flexing the wrist and fingers.
  - 5. The patient should notice a stretching sensation but no pain

# LLLT & HPLT



# Shockwave Therapy

- ▶ 5 sessions
- ▶ 2000 shock waves with 1.6 bar intensity and 16 Hz frequency



# Shockwave Therapy

- ▶ Some side effects:
  - ▶ Hematoma,
  - ▶ Reddening,
  - ▶ Petechiae,
  - ▶ Local soft tissue swelling,
    - ▶ Transient pain
    - ▶ And Osteonecrosis

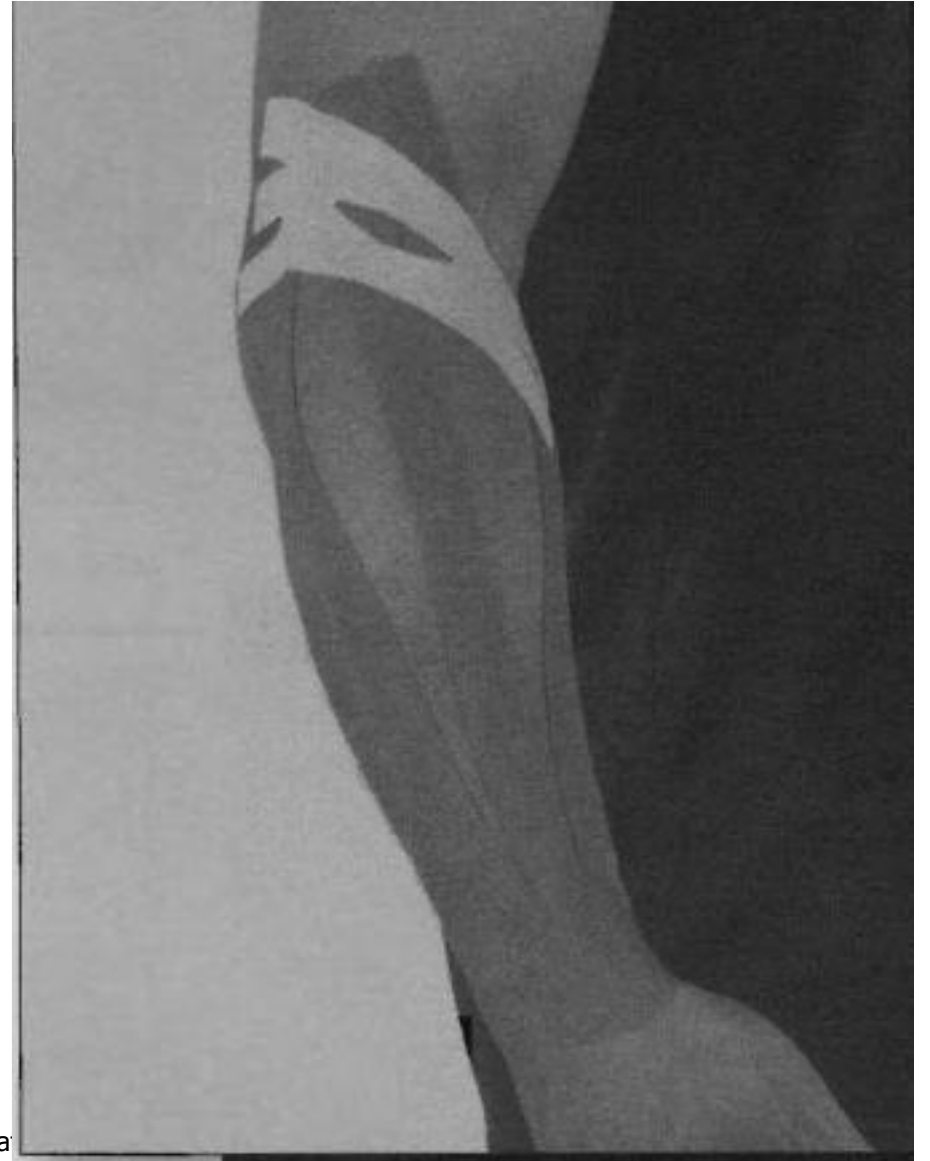
# Shockwave Therapy

## Box 16 ■ 4 Extracorporeal Shock Wave Therapy: Contraindications

- Bleeding conditions
- Pacemakers
- Medications that prolong blood clotting
- Children
- Pregnancy
- Acute injuries



# Kinesiotaping



# Dry Needling



**Figure 8.8 • Dry needling of the extensor carpi radialis brevis muscle**

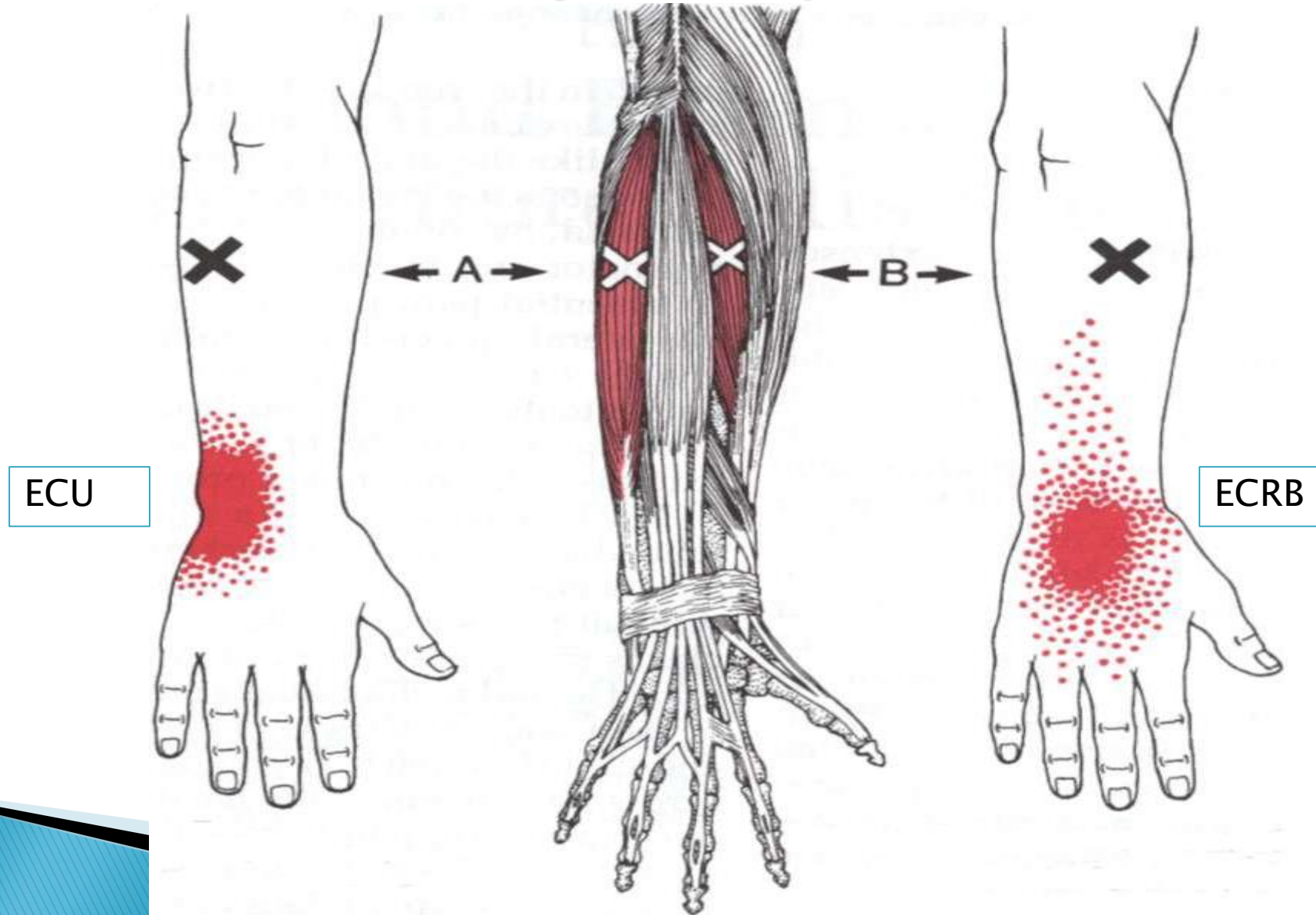


**Figure 8.10 • Dry needling of the extensor carpi ulnaris muscle**



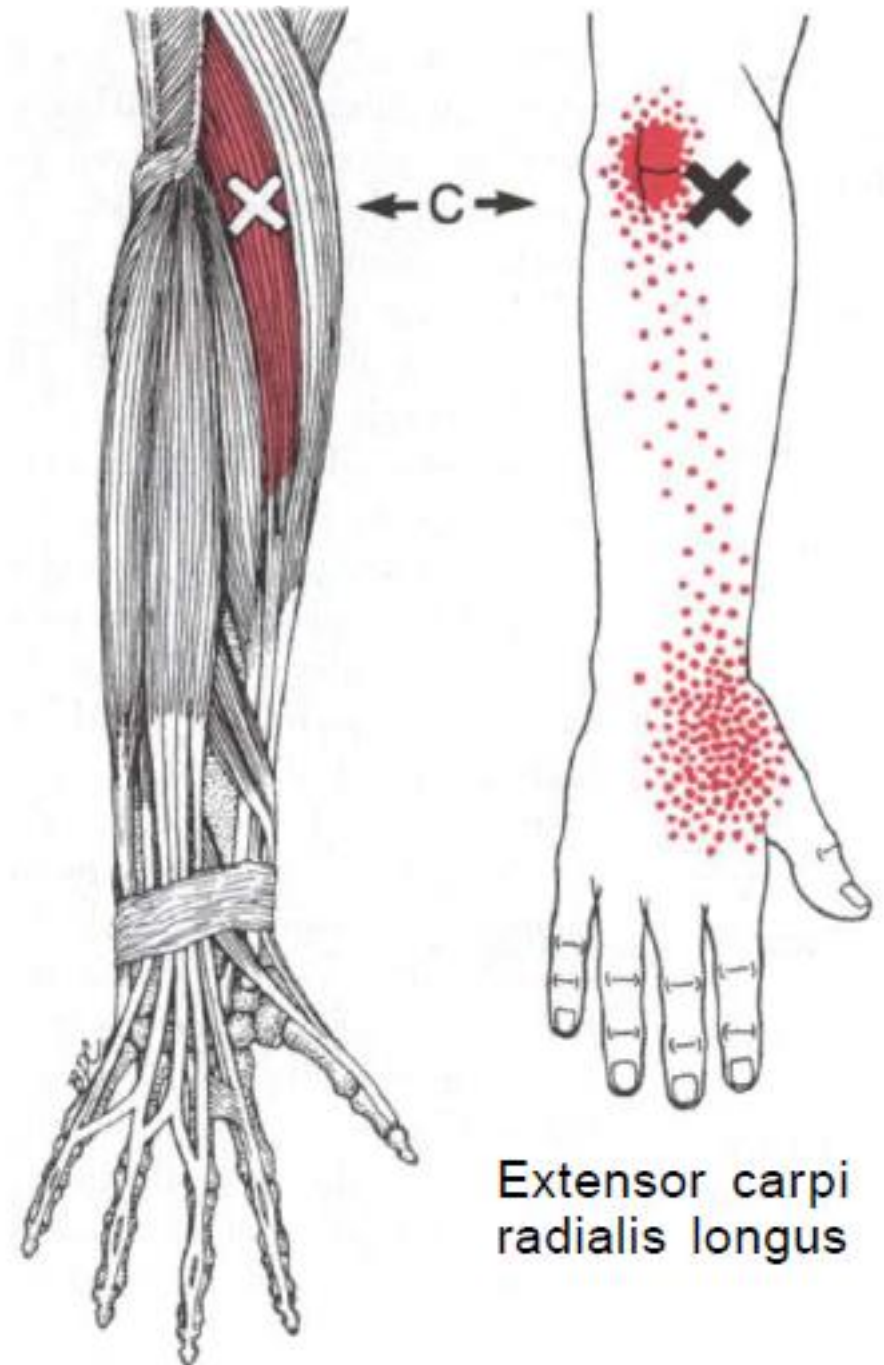
**Figure 8.9 • Dry needling of the extensor digitorum muscle**

# *Referred pain*





The *extensor digitorum communis* refers pain downward to the forearm, reaching the same digit that the fibers activate



# Management

## Chronic cases

- ▶ c. Strength and mobility must be restored
  - 1. Maximum strengthening of the muscles must necessarily include eccentric exercise." Plyometric exercises and functional training activities
  - 2. In those individuals who have persistent pain that does not resolve after 1 year of conservative treatment, surgery should be considered.



# Management

- ▶ Total arm-strengthening approach
- ▶ Proximal strengthening of the rotator cuff and scapular musculature

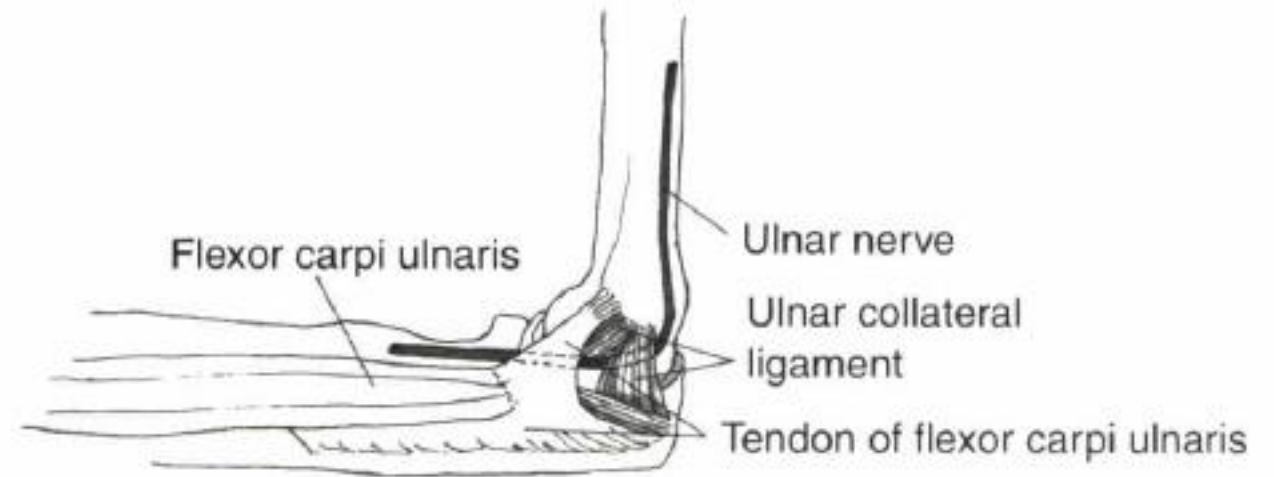
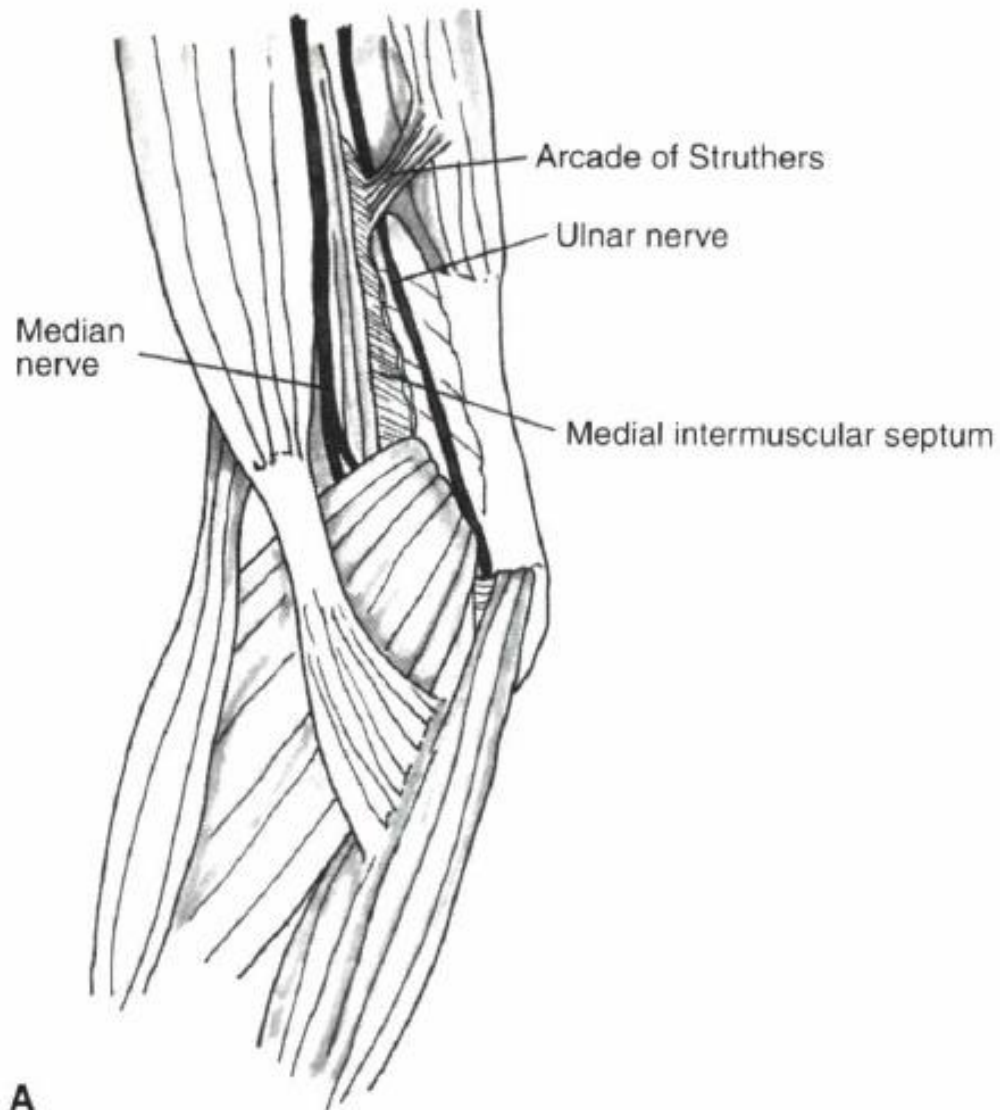
# COMMON LESIONS

## Nerve Entrapments

- ▶ ULNAR NERVE ENTRAPMENT
- ▶ MEDIAN NERVE ENTRAPMENT
- ▶ RADIAL NERVE ENTRAPMENT

# COMMON LESIONS

## ULNAR NERVE ENTRAPMENT



■ **FIG. 12-13.** Ulnar nerve. Anatomic distribution of the ulnar nerve crossing the intermuscular septum, passing under the arcade of Struthers (A) and the cubital tunnel at the elbow (B).

# COMMON LESIONS

## ULNAR NERVE ENTRAPMENT

### Physical Examination

#### ► Symptoms:

1. Mainly sensory, with pain or paresthesias in the sensory distribution of the nerve to the medial one and a half fingers
2. Clumsiness of the hand as a result of weakness, hyperesthesia, or numbness, and complaints of muscle cramping.
3. Dull ache after activity or at rest.
4. Pain may radiate up the forearm to the elbow and as far as the shoulder.
5. Aggravated by activity and relieved by rest.

# COMMON LESIONS

## ULNAR NERVE ENTRAPMENT

### Physical Examination

- ▶ A. On examination:
  1. **Weakness and wasting of the hypothenar eminence** and of the adductor muscles of the thumb (clawing of the ring or little finger and grade III paresis)."
  2. The lack of the ability to adduct the little finger
- ▶ B. **Positive elbow flexion test.** Three minutes of elbow hyperflexion and full wrist extension produces symptoms of the ulnar nerve

# COMMON LESIONS

## ULNAR NERVE ENTRAPMENT

### Management

▶ A. Conservative treatment:

1. Soft elbow pads
2. Exercises to increase flexibility of the forearm muscles and functional activities
3. Appropriate neck and shoulder girdle postures
4. Nerve gliding : elbow extension, forearm supination, and wrist extension.
5. Soft tissue manipulations: flexor muscles of the forearm



# COMMON LESIONS

## ULNAR NERVE ENTRAPMENT

### Management

#### 6. Training modification: Avoidance of hyperflexion and valgus stress.

- ▶ Dynamic stability drills: Elbow stabilizers, specifically pronator teres and wrist flexor muscles.
- ▶ Rhythmic stabilization drills:

#### 7. Once symptoms are resolved, a comprehensive rehabilitation program should be started with gradual return to athletic or work activities.

- ▶ Nonsurgical treatment: successful in approximately 90% of patients in the general population"

# COMMON LESIONS

## ULNAR NERVE ENTRAPMENT

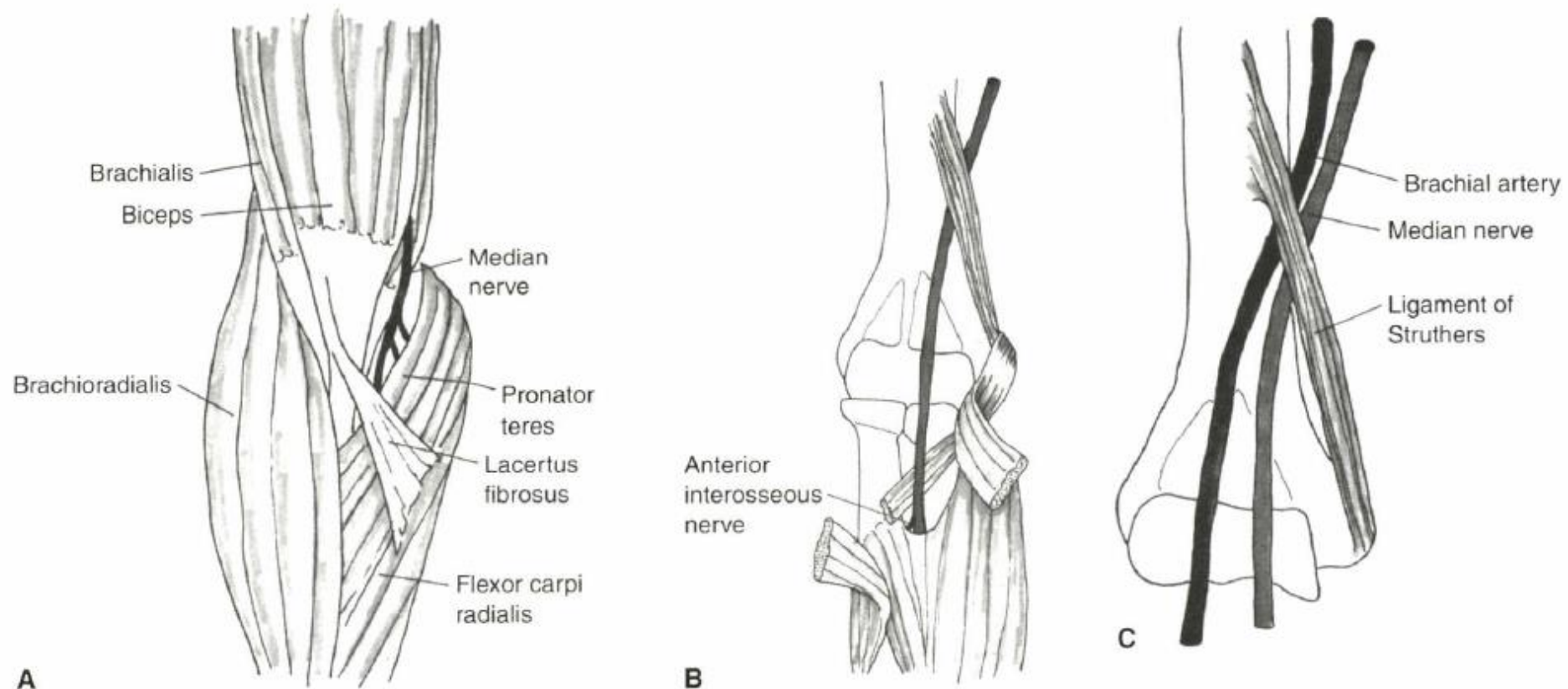
### Management

- ▶ **B. Surgical management:**
- ▶ In the past surgical management: translocation of the ulnar nerve, combined with excision of the medial epicondyle.
- ▶ Currently division of the tendinous origin of the FCU from the humerus is the procedure of choice in most cases

# COMMON LESIONS

## MEDIAN NERVE ENTRAPMENT (PRONATOR SYNDROME)

### ► Less common



■ **FIG. 12-15.** Median nerve, proximal to the lacertus fibrosus (A), the lacertus fibrosus released exposing the anterior interosseous nerve (B), and the ligament of Struthers, an anomalous structure (C).

# COMMON LESIONS

## MEDIAN NERVE ENTRAPMENT (PRONATOR SYNDROME)

- ▶ II. Treatment.
- ▶ Unlike the treatment CTS, steroid injections have little effects.
- ▶ A. Initial treatment in the acute setting: relative rest, elevation, nonsteroidal anti-inflammatory drugs, and immobilization Splint fashioned with the elbow in flexion, the forearm in slight pronation, and the wrist in slight flexion.
- ▶
- ▶ B. Soft tissue manipulations, stretching to pronator and supinator muscles, and nerve gliding exercises

# RADIAL NERVE ENTRAPMENT

## II. Treatment

A. Initial treatment: avoidance of muscular activities that aggravate the symptoms: forceful repeated wrist and finger extension with supination.

An extensor tenodesis splint or splinting with the wrist extended, the forearm supinated, and the elbow flexed may be effective.

B. Stretching: intrinsic wrist extensors, and tendon excursion

C. Radial nerve gliding techniques to encourage adequate gliding

D, Soft tissue mobilization to improve extensibility

E. Activity modification to prevent reoccurrence and progressive therapy



# THANKS

