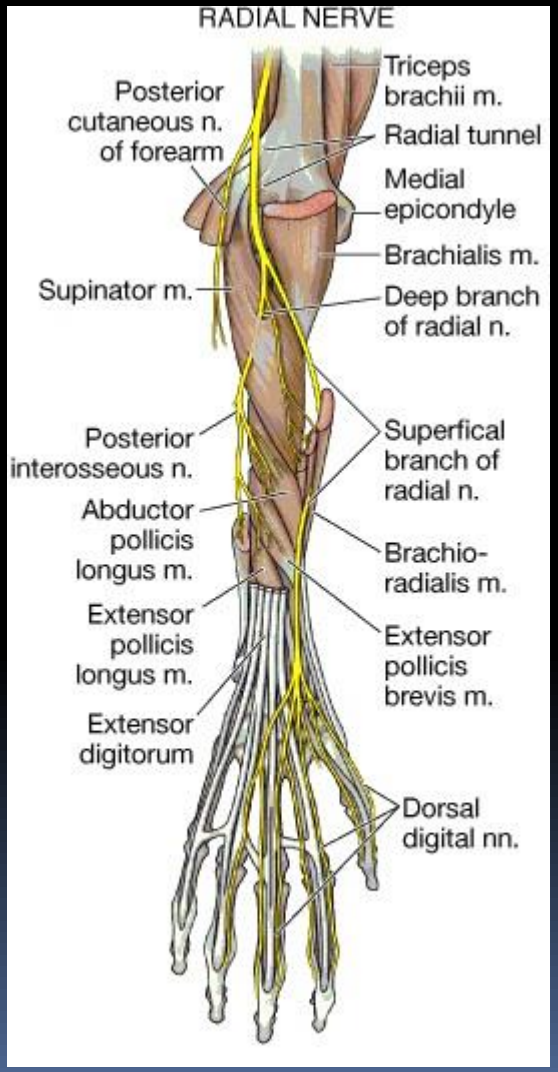
Hand Therapy Training Programme 2015
YanShan LU

COMPRESSION NEUROPATHIES OF THE RADIAL NERVE

Site of Compression

- Proximal Radial Nerve
- Around the elbow
  * Radial Tunnel Syndrome
  * Posterior Interosseous Nerve Syndrome
- Distal Forearm
  * Superficial Radial Nerve (Wartenberg's Syndrome)

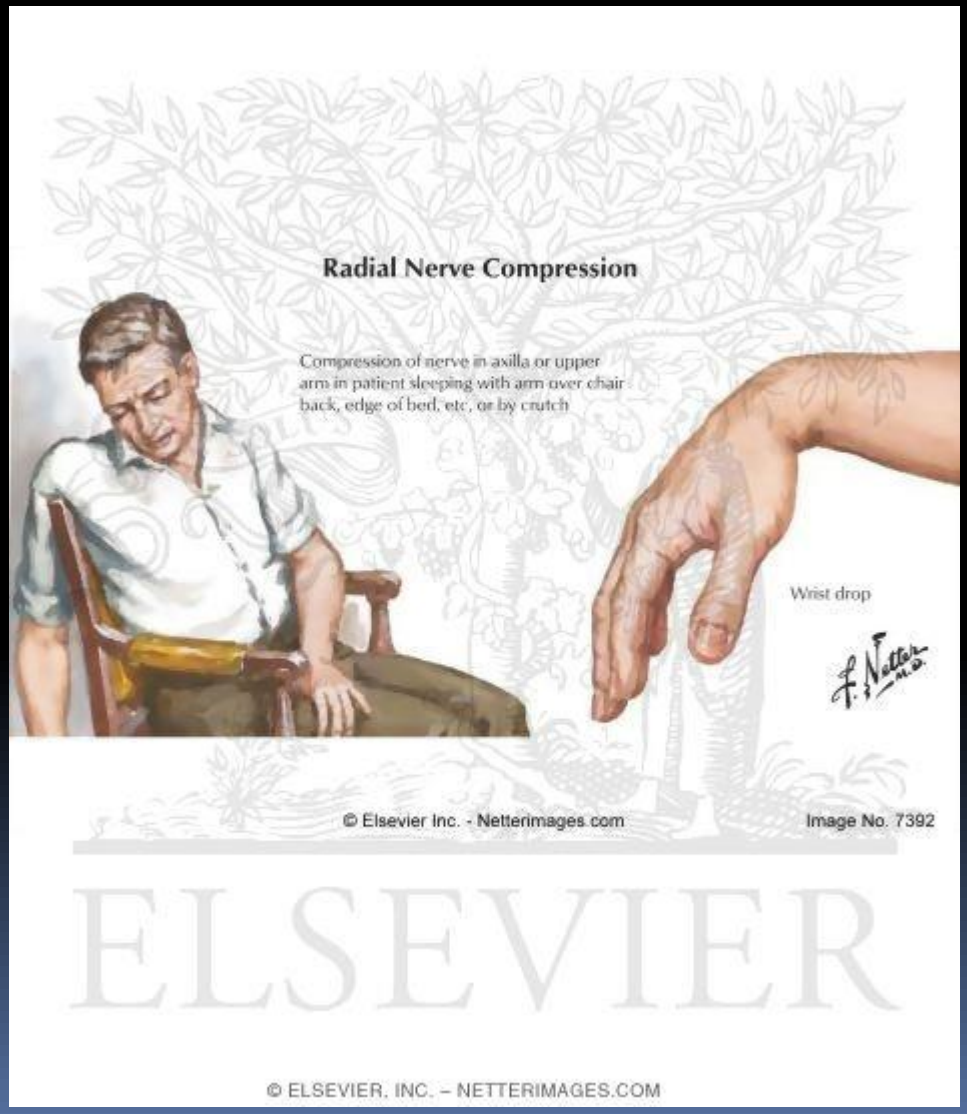
Radial Nerve



Aetiology

- Humeral fracture
- Local pressure
- After strenuous activity
- Postural

Saturday night palsy



Clinical Features

- Dependent on the level of injury
- Weakness

  * Manual muscle testing

  * Grip strength
- Sensation

  * Sensory mapping—mono filaments

Conservative Manangement

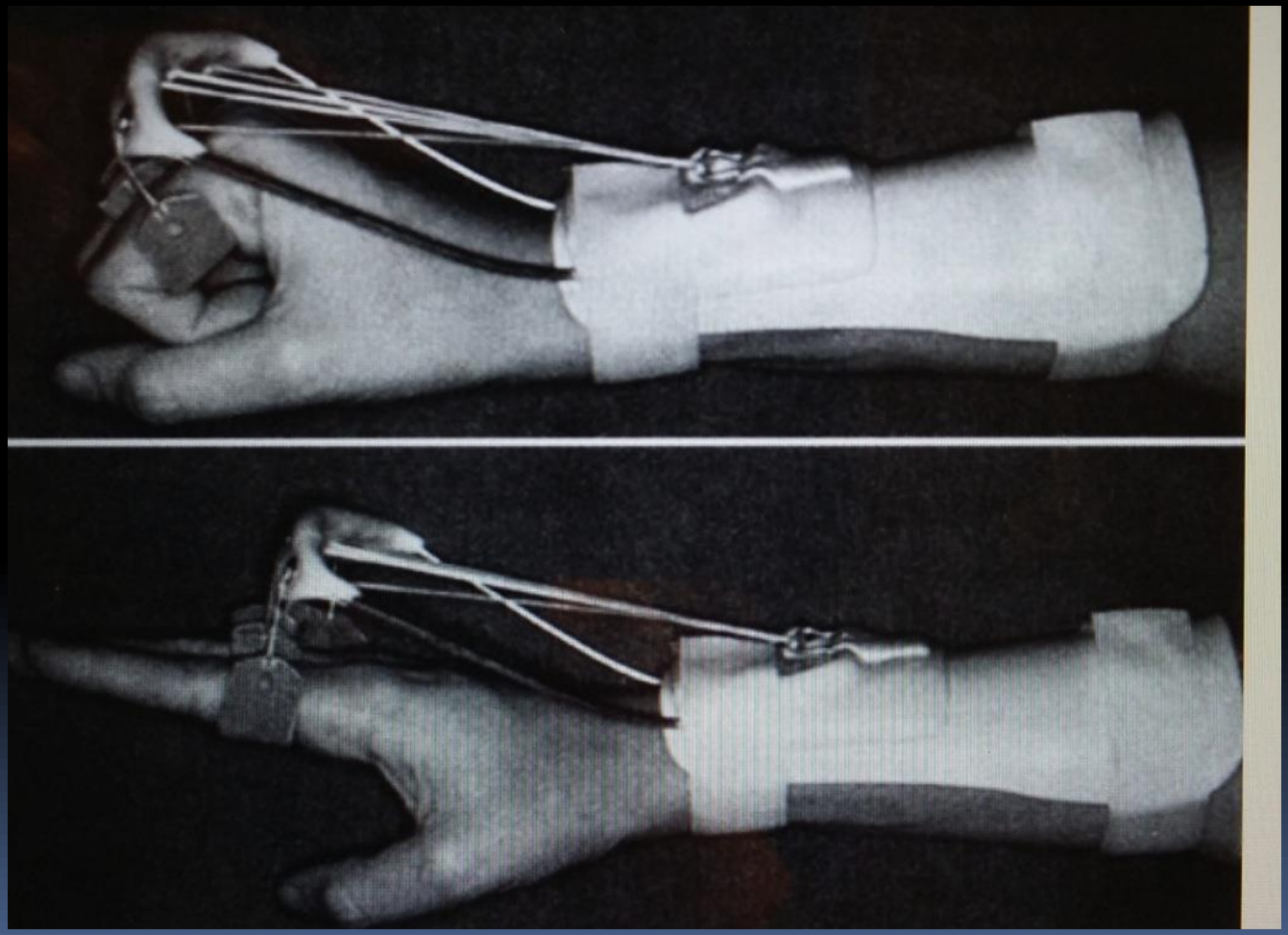
- Splinting:

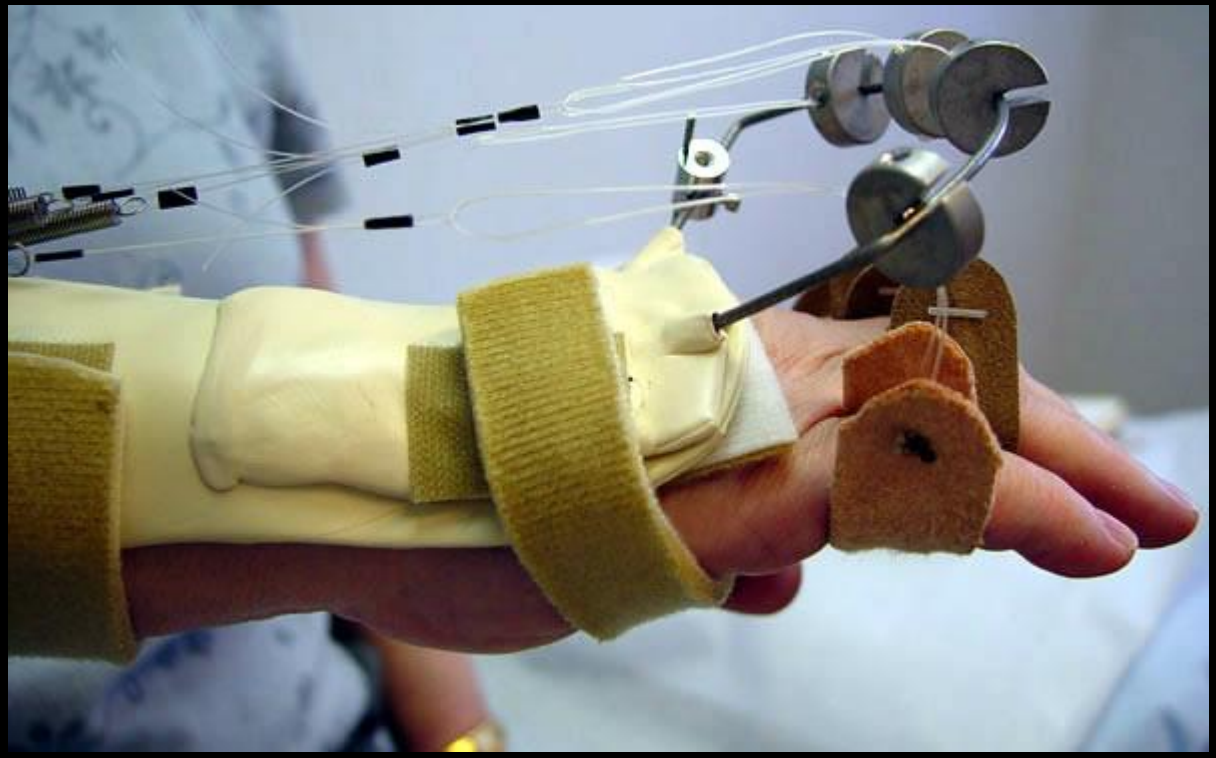
  Resting / anti deformity

  Funtional assistive

Radial Nerve Palsy

Radia Nerve Palsy Splints



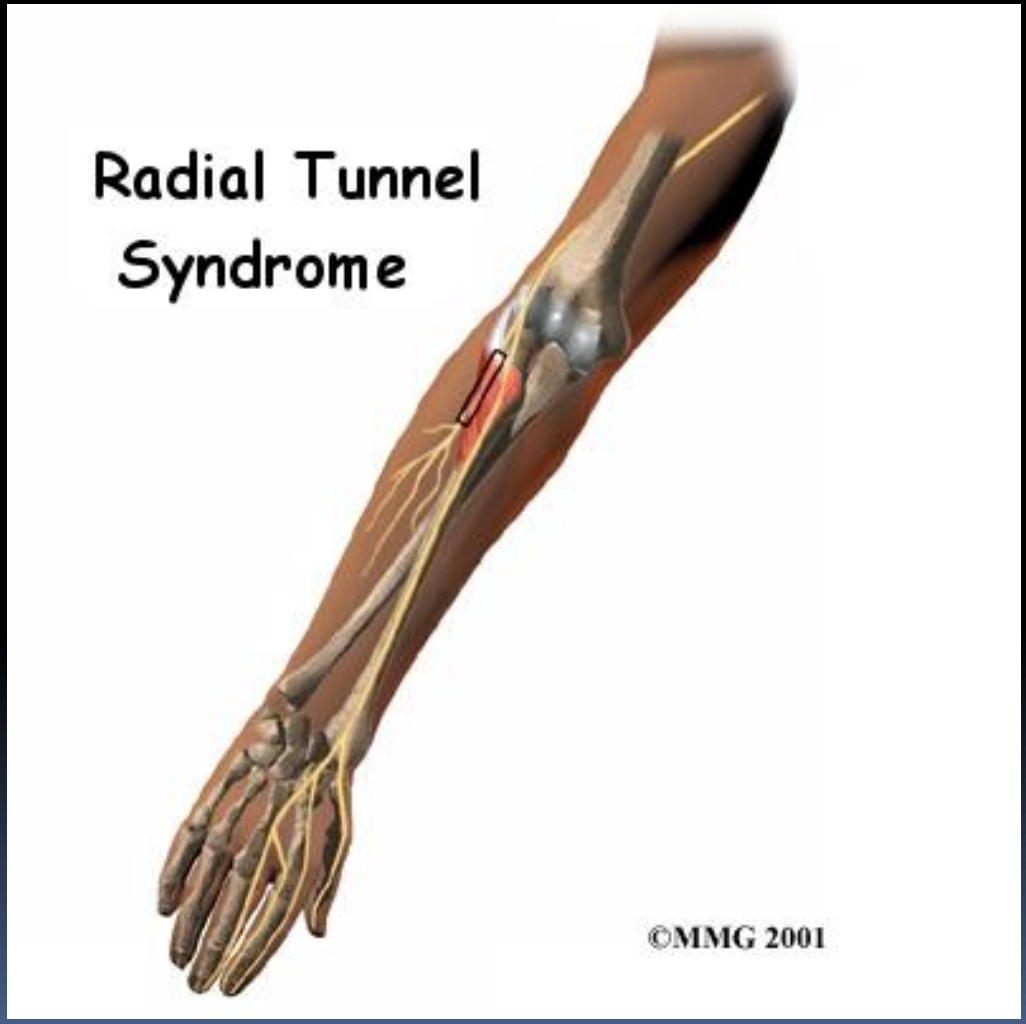


Conservative Management

- Passive stretching , joint ROM, treat underlying fracture
- Sensory education
- Monitor return

  * if no recovery after 4 months operative management indicated

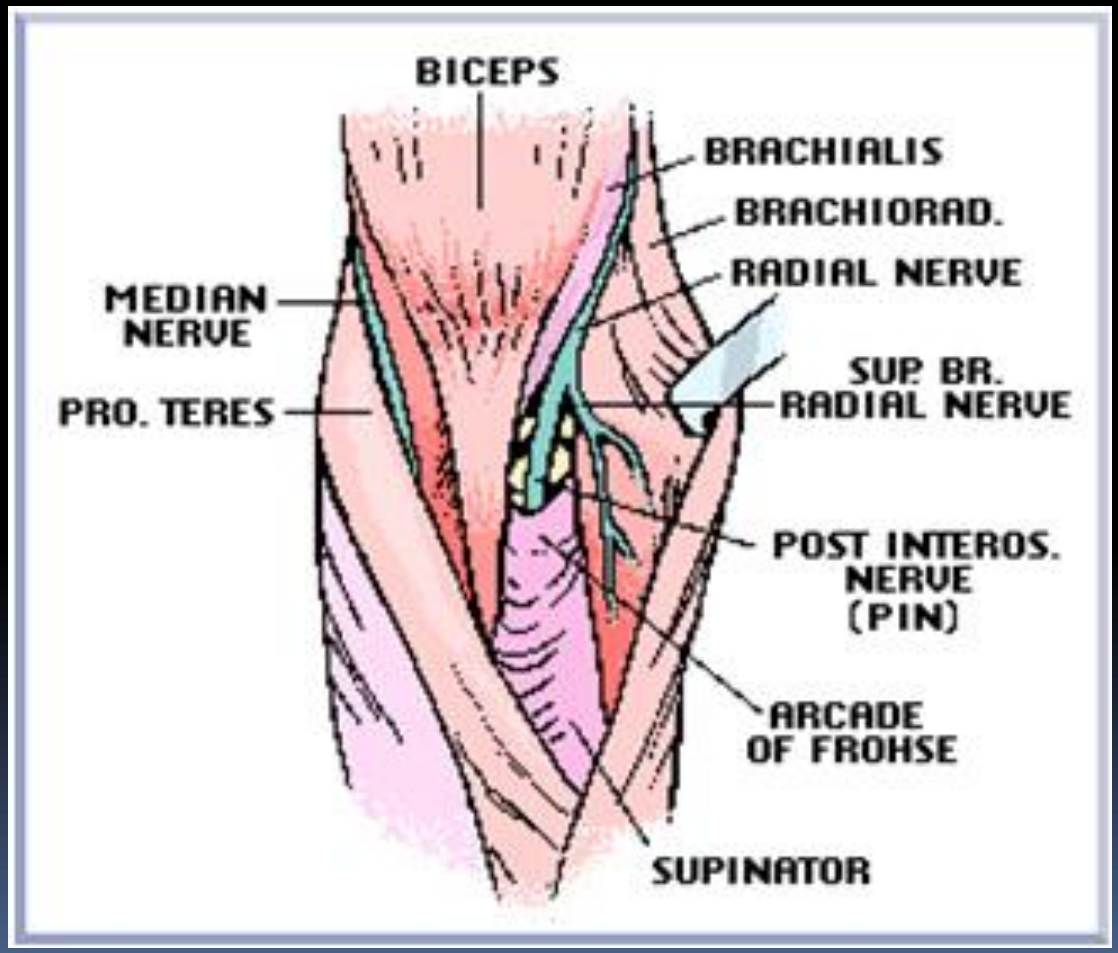
Radial Tunnel Syndrome



Sites of compression

- Thickened fascial tissue
- Radial recurrent vessels
  "leash of Henry"
- Fibrous edge of ECRB
- Proximal edge of Supinator
  "arcade of Frohse"
- Distal edge of Supinator

Radial Tunnel Syndrome



Clinical Features

- Mechanism of injury

  ! Subjective history very important
- PAIN is chief complaint
- Weakness -- rare

PAIN

- Deep dull extensor muscle ache
- Night or after exercise
- +/- Dorsal wrist ache
- +/- Web space paresthesias
- In depth of Mobile wad
- Or between brachioradialis and wrist extensors
- +/- lateral epicondyle

PAIN

Pain provoked by

- Resisted supination with elbow extended
- Passive pronation
- Middle finger test
- Repetitive forearm pronation or wrist flexion

Clinical Examination

- Observation, ROM, joint articulation, neuralogical cervical screen
- Palpation for site of tenderness
- Middle finger extension test
- Resisted supination
- Passive pronation

M Finger extension test

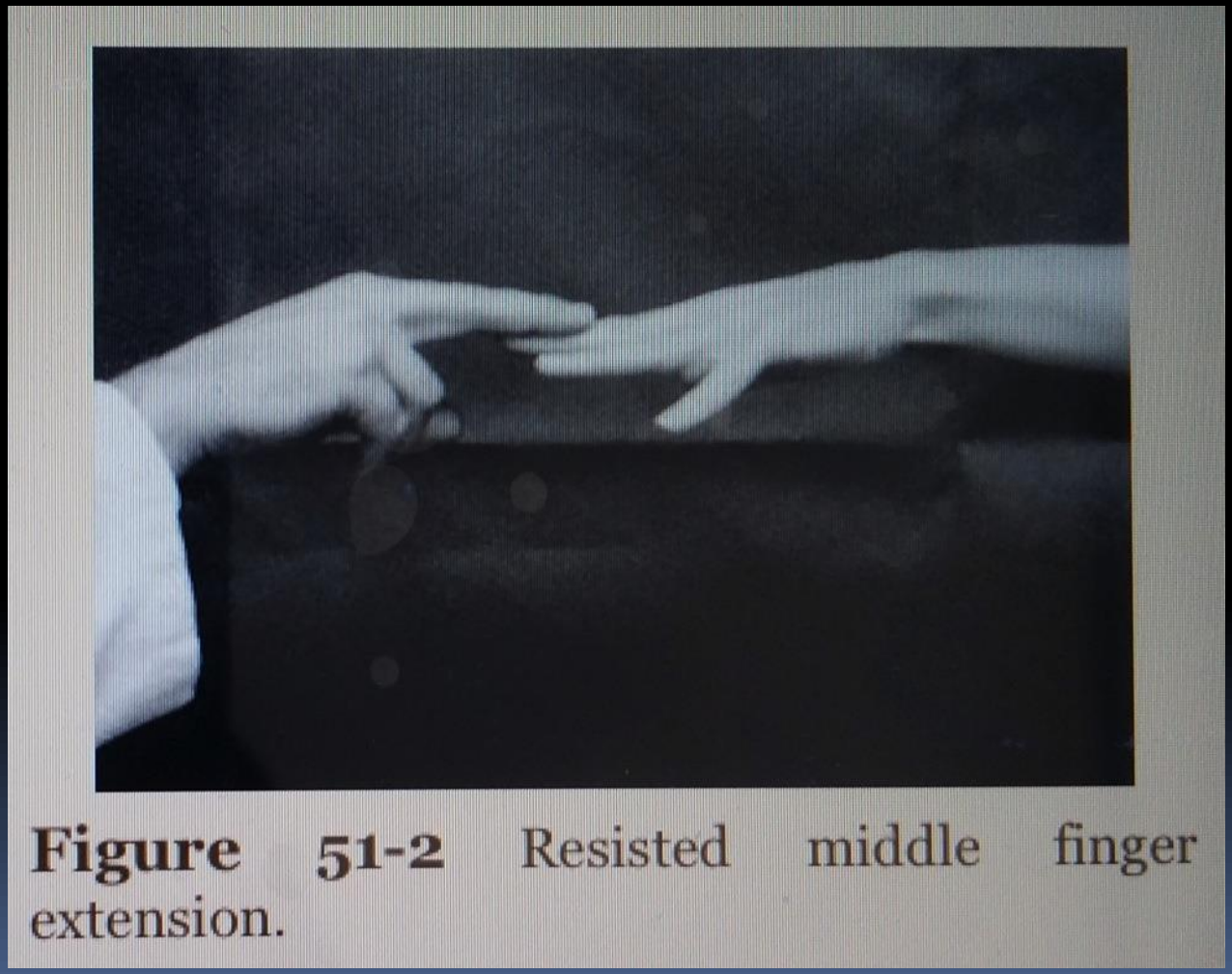


Figure 51-2 Resisted middle finger extension.

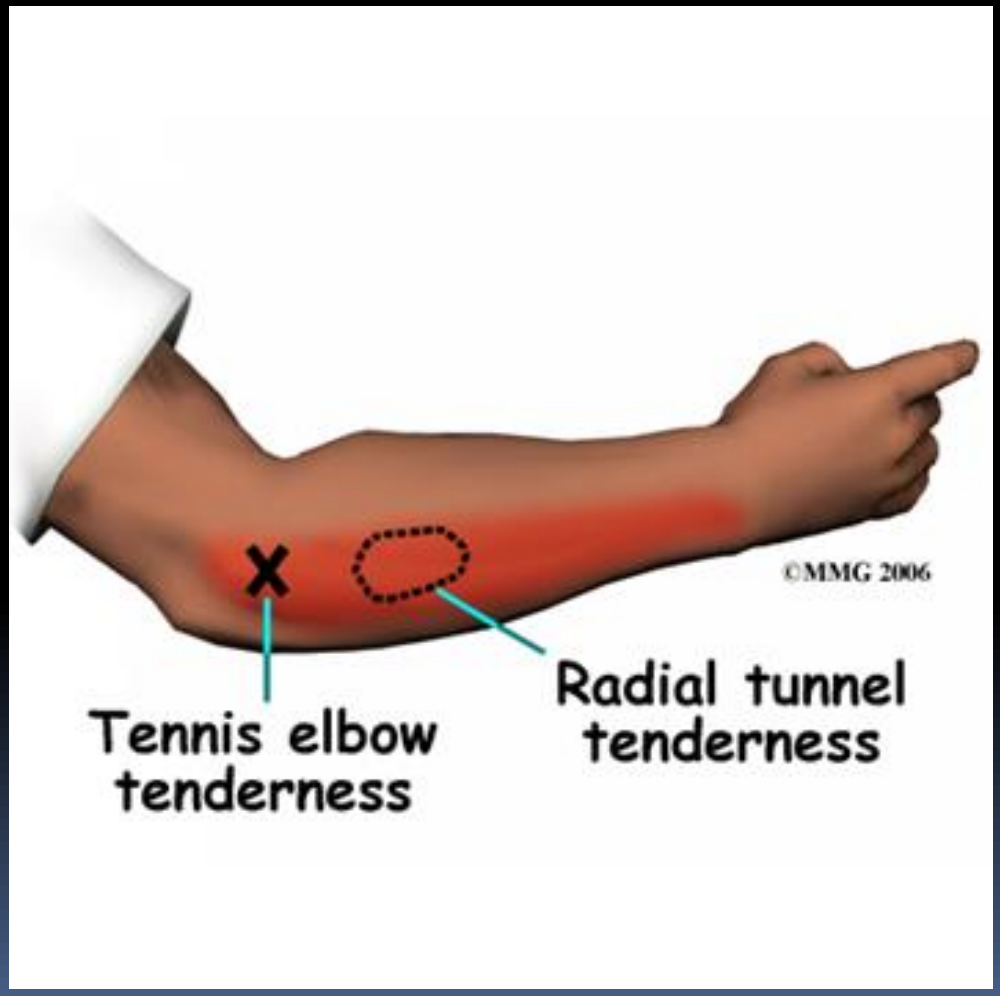
Resisted Supination

Figure 52-14 Radial tunnel testing
Resisted forearm supination.

Differential Diagnosis

- Lateral Epicondylitis
- PIN Syndrome/Palsy
- Radiocapitellar Articular Pathology
- Chronic anconeus
- Extensor Compartment Syndrome
- Referred Pain from Cervical Spine

RTS vs TE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Tennis elbow tenderness
Radial tunnel tenderness

Symptoms	RTS	TE
1.Pain in lateral elbow	+	+
2.Pain in extensor muscles	+	+
3. History of overuse	+	+
4. Character of pain	+	+
Objective tests		
1.Decreased wrist flexion	-	+
2.Resisted wrist extension	-	+
3.Tenderness lateral epicondyle	-	+
4. Tenderness Radial Tunnel	+	-
5.Middle finger test	+	+/-
6. **Resisted supination**	+	-
7. **Passive pronation(with elbow flexed)**	+	-
8. History of repetitive pronation/supination	+	+
9. History of repetitive wrist extension	-	+

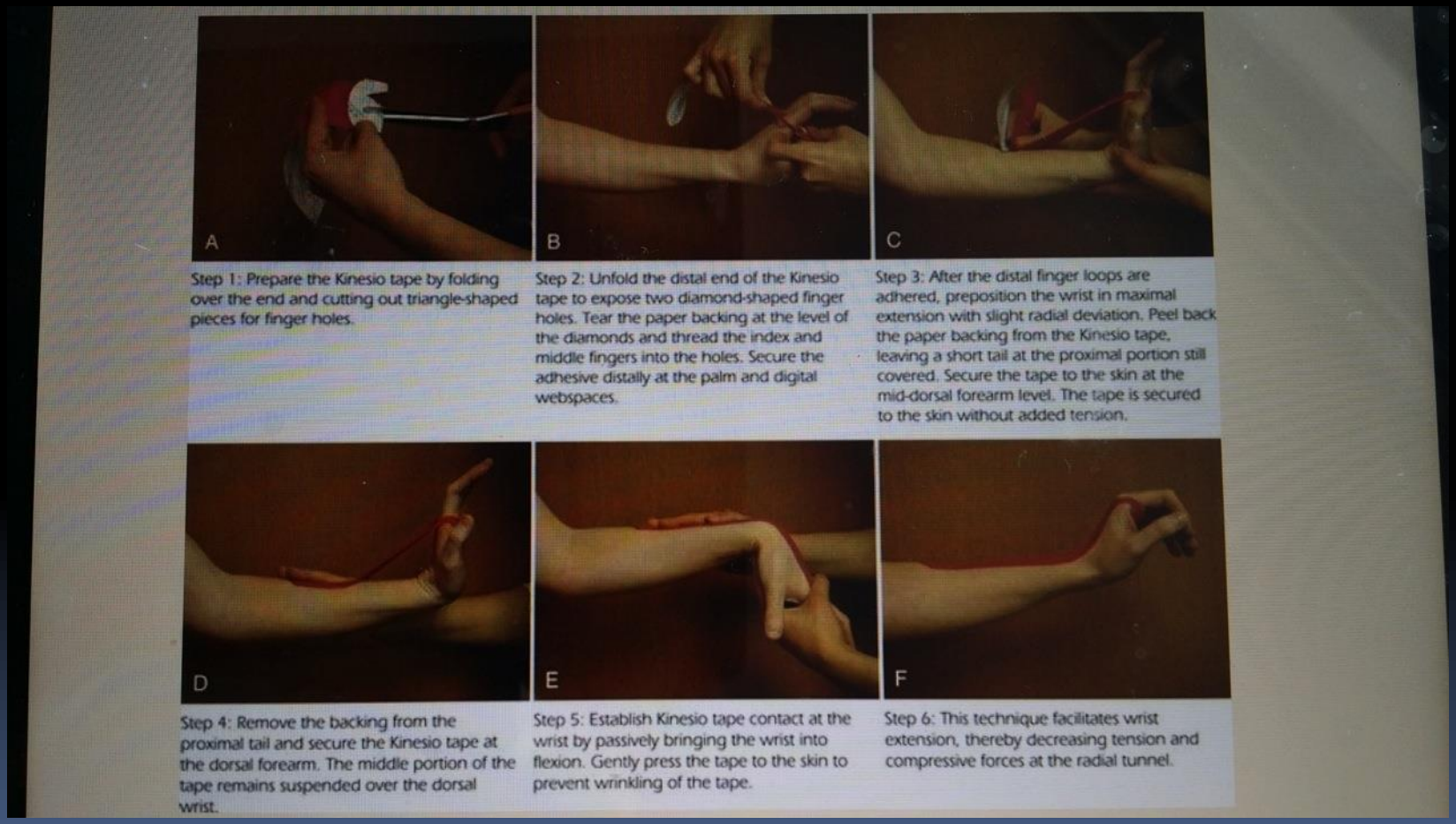
Conservative Management

- Local anti inflammatory modalities
- Behaviour modification
- Neural mobilisation
- Splint
- Kinesio Taping (Ktape)

Splint Position RTS

- Elbow in flexion 90
- Forearm neutral
- Wrist extension 30
- Finger free

K taping



Step 1: Prepare the Kinesio tape by folding over the end and cutting out triangle-shaped pieces for finger holes.

Step 2: Unfold the distal end of the Kinesio tape to expose two diamond-shaped finger holes. Tear the paper backing at the level of the diamonds and thread the index and middle fingers into the holes. Secure the adhesive distally at the palm and digital webspaces.

Step 3: After the distal finger loops are adhered, preposition the wrist in maximal extension with slight radial deviation. Peel back the paper backing from the Kinesio tape, leaving a short tail at the proximal portion still covered. Secure the tape to the skin at the mid-dorsal forearm level. The tape is secured to the skin without added tension.

Step 4: Remove the backing from the proximal tail and secure the Kinesio tape at the dorsal forearm. The middle portion of the tape remains suspended over the dorsal wrist.

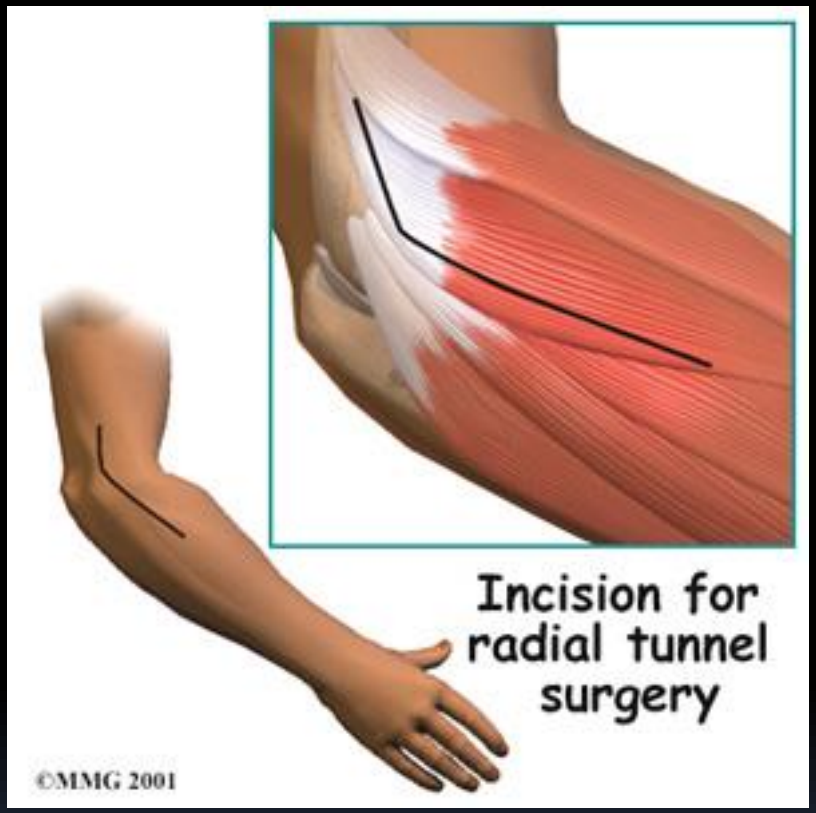
Step 5: Establish Kinesio tape contact at the wrist by passively bringing the wrist into flexion. Gently press the tape to the skin to prevent wrinkling of the tape.

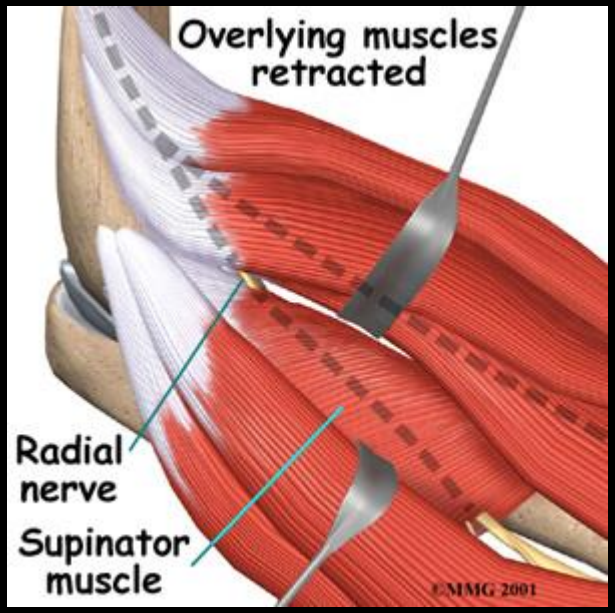
Step 6: This technique facilitates wrist extension, thereby decreasing tension and compressive forces at the radial tunnel.

N Mobilisation for RTS

Figure 52-15 Neural mobilization for radial tunnel syndrome. **A,** *Highly irritable stage.* Step 1: Maintaining the index and middle finger metacarpophalangeal joints in extension and the forearm in pronation, the patient performs ipsilateral scapular elevation and cervical sidebending combined with midrange wrist flexion. **B,** *Highly irritable stage.* Step 2: The wrist is brought back into extension as the scapula and cervical spine return to neutral. This is performed in a slow, rhythmic fashion. **C,** *Mildly irritable stage.* With the nerve on slack proximally, midrange

Radial Tunnel Surgery





Operative Management

- Timing after 3-6 months of conservative management
- Decompression of radial nerve within tunnel- all sites
- Complications

  *reoccurrence, pathological scarring, CRPS infection, reduced elbow ROM
- Post op recovery 6-8 weeks of therapy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Posterior Interosseus Nerve Syndrome

PIN Syndrome Aetiology

- Space occupying lesion
- Trauma
- Repetitive supination/pronation activities
- Rheumatoid synovitis
- Supinator muscle

Clinical Features

- Weakness
  * All muscles innervated distal to ECRB/ECRL
- Minimal Pain
- No sensory disturbance

Conservative Management

- Dependent on aetiology of compression
- Behaviour modification
- Splinting
- Monitor progression

- Referral on for surgical opinion

Splint for PINS Palsy


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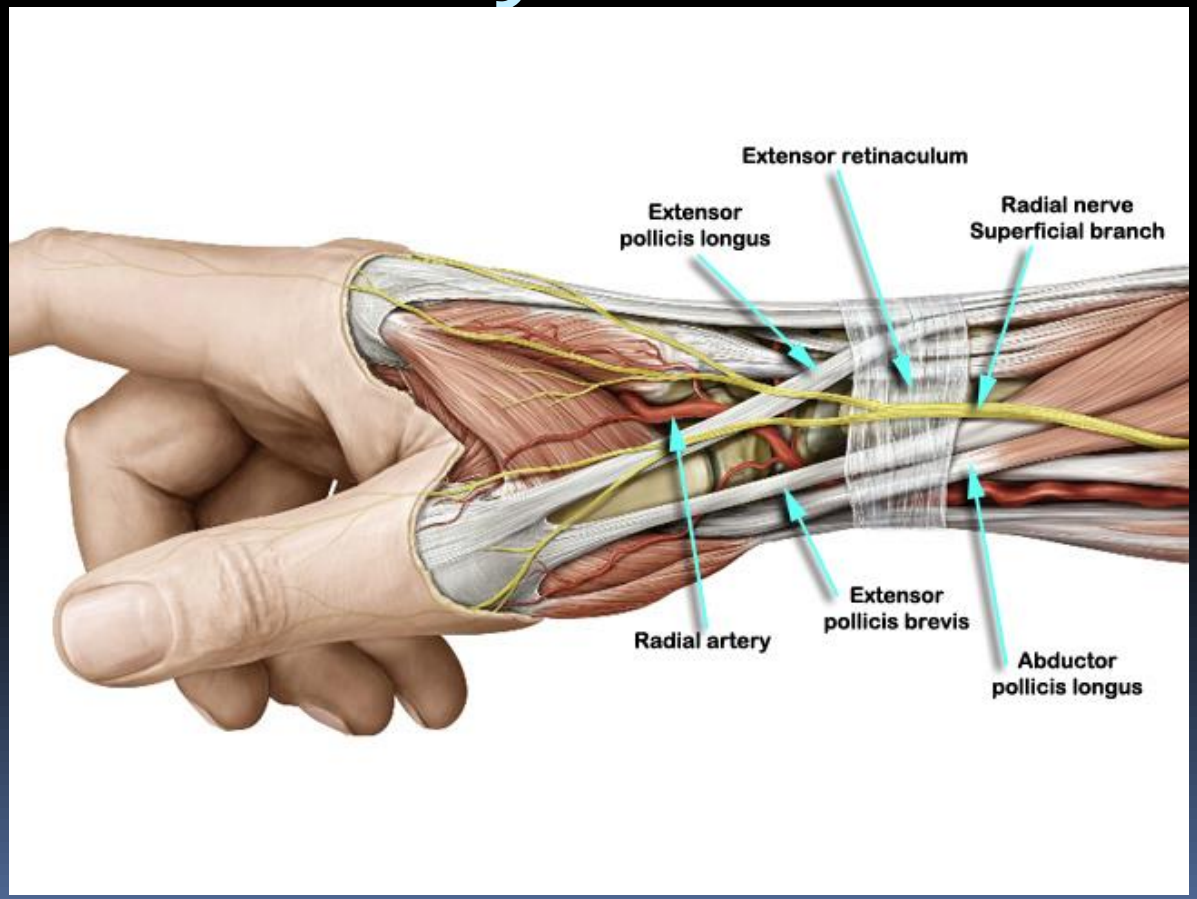
Superficial Radial Nerve Syndrome="Wartenberg's Syndrome=SDRN Syndrome



Aetiology

- Trauma/direct blow
- External compression
- Compression between fascial ext of BR, ECRB

  ----may be work related

Clinical Feature

- Pain:

  > Location/behaviour

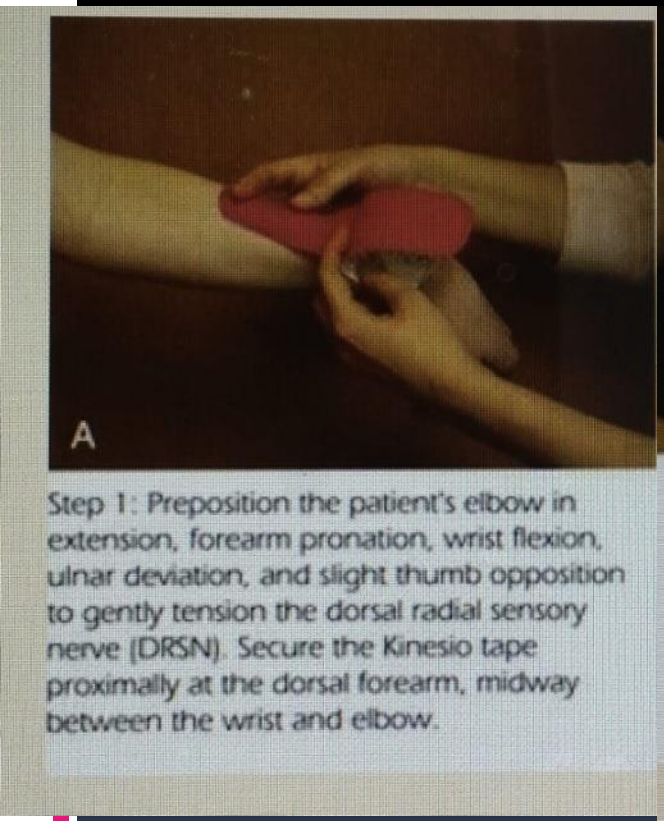
  > False +ve Finklesten's

  > Forearm hyper pronation with wrist flexion
- Tinel's sign
- Reduced Sensation
- Abnormal EMG.

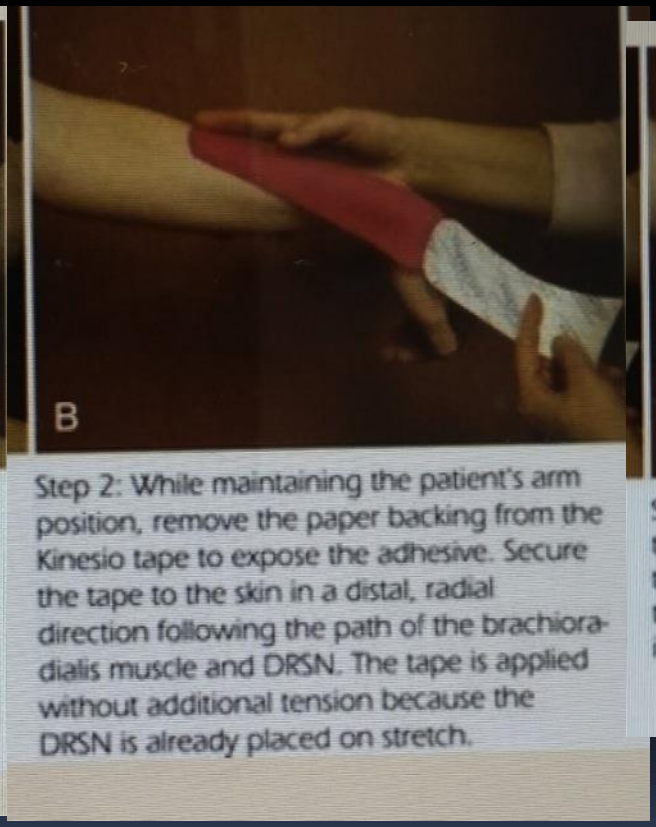
Conservative Management

- Removal of external compression source
- Behaviour modification
- Resting splint
- Neural mobilisation
- Local and systemic anti inflammatory modalities – CSI
- Desensitisation/ TENS/pain modalities
- KTape

Kinesio Taping



Step 1: Preposition the patient's elbow in extension, forearm pronation, wrist flexion, ulnar deviation, and slight thumb opposition to gently tension the dorsal radial sensory nerve (DRSN). Secure the Kinesio tape proximally at the dorsal forearm, midway between the wrist and elbow.



Step 2: While maintaining the patient's arm position, remove the paper backing from the Kinesio tape to expose the adhesive. Secure the tape to the skin in a distal, radial direction following the path of the brachioradialis muscle and DRSN. The tape is applied without additional tension because the DRSN is already placed on stretch.

Step 3: Conclude the application by securing the Kinesio tape at the dorsal, radial wrist. The tape wrinkles when tension is removed from the DRSN. This lifts the skin from the underlying fascia, thereby decreasing neural tension

Nerve Mob for SBRN

Figure 52-19 Wartenberg's syndrome. **A,** *Highly irritable stage.* Step 1: Place the forearm passively in supination with the index and middle finger metacarpophalangeal joints supported in passive extension, and perform midrange active thumb opposition. **B,** *Highly irritable stage.* Step 2: The forearm and fingers remain in position as the patient performs midrange active thumb retroposition. This is performed in a slow, rhythmic fashion. **C,** *Mildly irritable stage.* Step 1: With the nerve on slack proximally, the patient performs midrange forearm pronation with active thumb opposition. **D,** *Mildly irritable stage.* Step 2: The patient performs midrange forearm supination in concert with active thumb retroposition. This

Operation Management

- Goal of surgery is to relieve abnormal pressures on the nerve
- Post op management

  * Resting splint

  *Early oedema, wound and scar management

  * Restore normal joint ROM and nerve gliding

  * Desensitization


Waste Management
570.0900