Joint & Soft Tissue Injuries and Disorders

2024

Traumas

Strain vs. Sprain

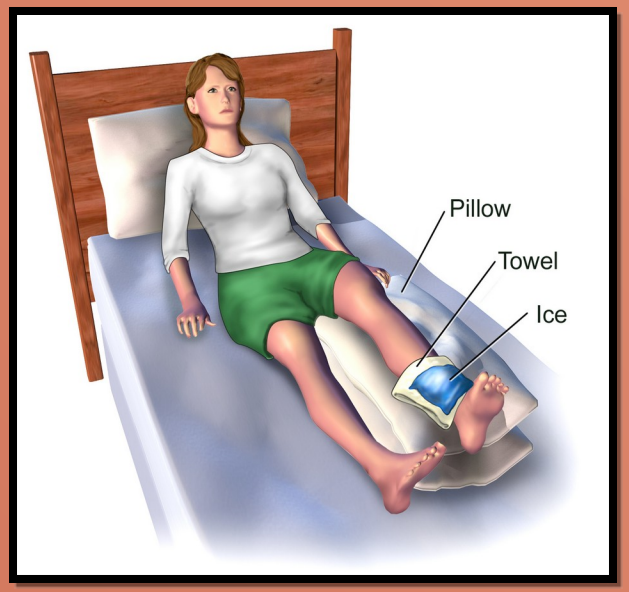
- S**t**rains
  - Muscle or **t**endon
- Spr**a**ins
  - Lig**a**ment or joint

- **Strains**
  - Can be muscle and/or tendon
  - Results from using muscles beyond their intended or functional ability
  - Stretching of a muscle & its fascia
  - One-time or can be cumulative

- **Sprains**
  - Can involve a ligament or joint
  - Tearing of the capsule or ligaments surrounding a joint
- **Classified by:**
  - # of ligament fibers torn
  - the severity of the tear
    - 1st, 2nd, & 3rd degree

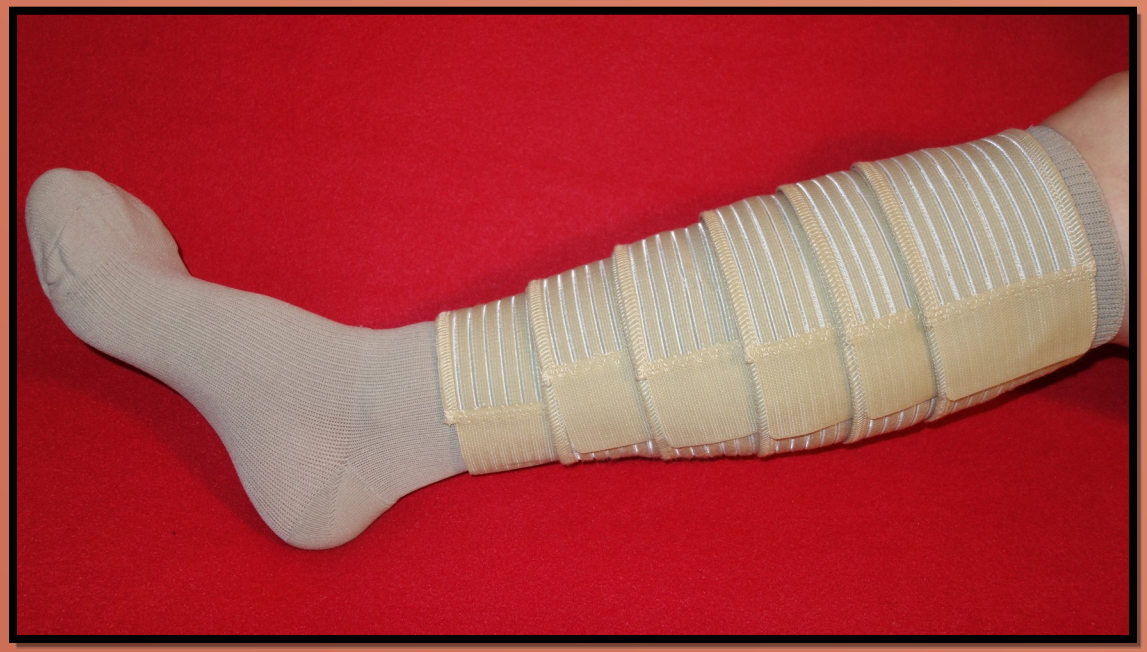
- **Strains & Sprains**
  - Signs & Symptoms
    - Pain
    - ↓ ROM
    - Tender
    - Edema
    - Ecchymosis
  - Need an X-Ray to rule out a fracture

- **Strains & Sprains**
  - Treatment: **R-E-C-I-P-E**
    - Rest
    - Elevation
    - Compression
    - Ice
    - Proper
    - Exercise
      - NSAID's



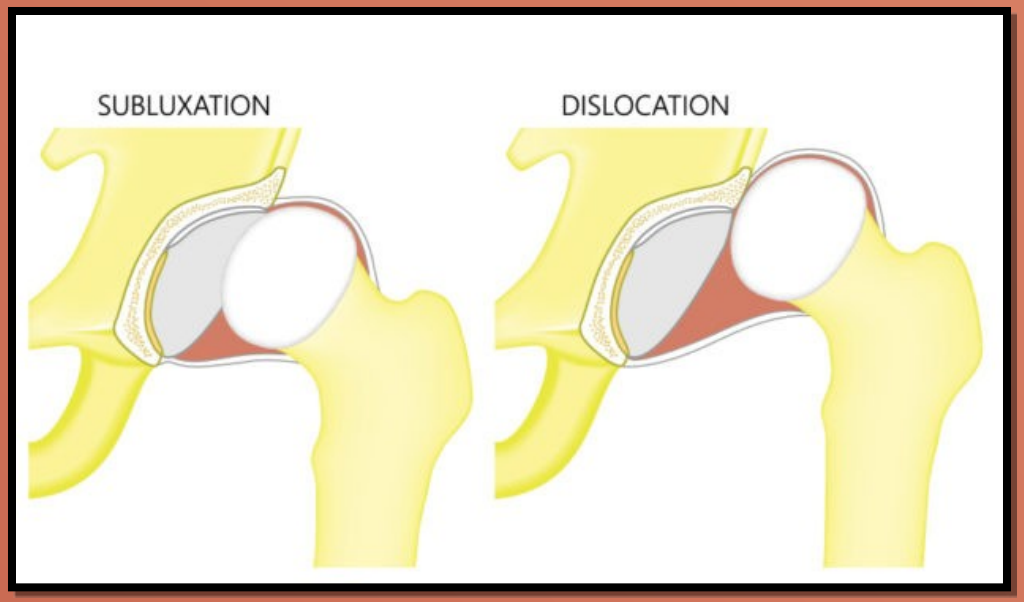
How to apply an Ace Wrap

- https://www.youtube.com/watch?v=gpHUo8rdBcc

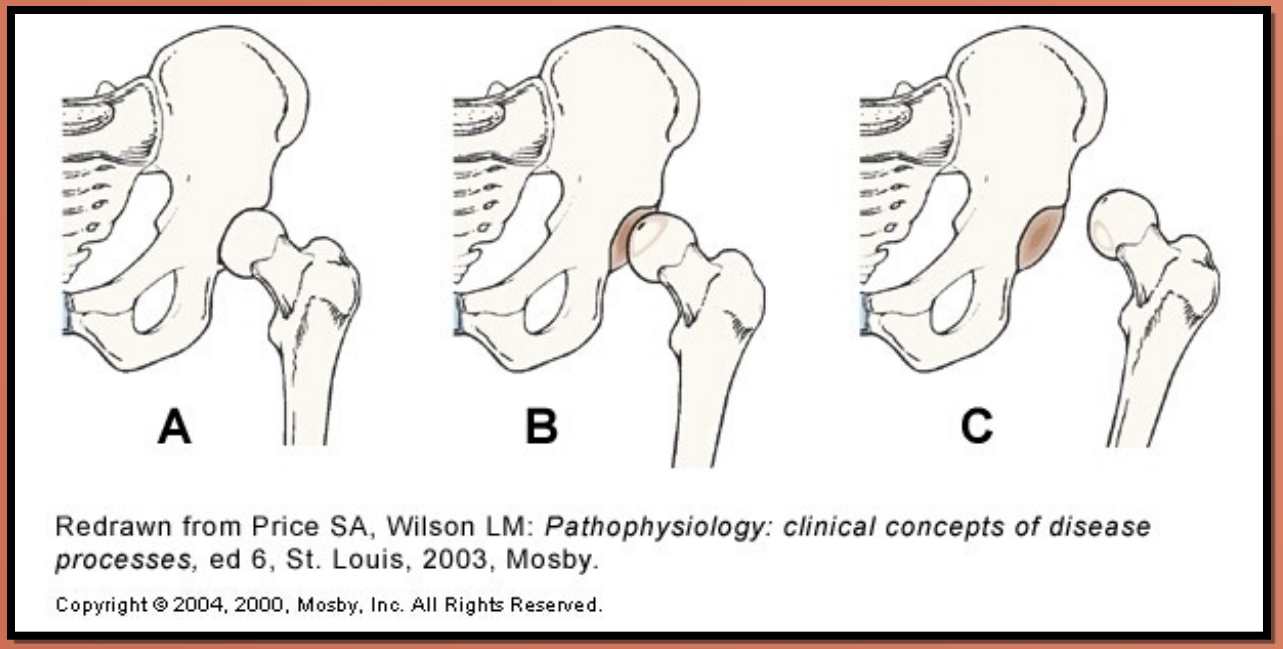


- **Dislocation**
  - Complete displacement or separation of the articular surfaces of the joint
- **Subluxation**
  - Partial or incomplete displacement of the joint surface

- **Subluxation**
  - S/S less severe than dislocation
  - Less healing time required

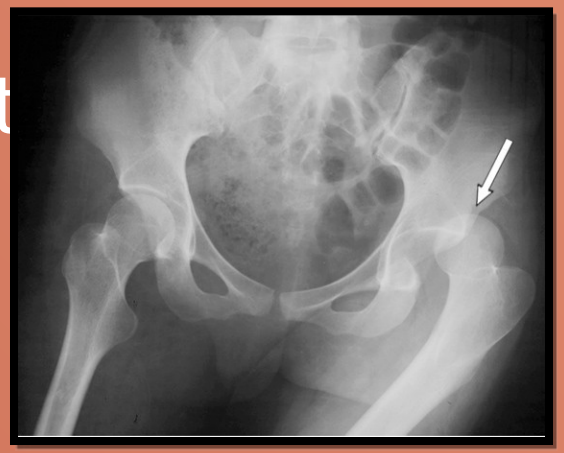


- **Dislocation & Subluxation**
  -Joints most frequently dislocated:
  - *Fingers, elbow, shoulder*
  - *hip, knee*



Redrawn from Price SA, Wilson LM: *Pathophysiology: clinical concepts of disease processes*, ed 6, St. Louis, 2003, Mosby.

- **Dislocation & Subluxation**
  - **S/S**
    - Asymmetry & contour – Shortened leg and externally rotated *
    - Pain, tenderness
    - ↓ ROM
    - *Obvious deformity*
    - Possible NV impairment
    - Edema



- **Dislocation & Subluxation**
  - **Treatment**
    - Need prompt treatment
      - Orthopedic emergency!
    - Reduction – realign to its original anatomic position
      - Closed or Open
    - Immobilization
    - Rehab

- **Peripheral Nerve Injury**
  - **Mechanism of injury:**
    - Severed
    - Contusion
    - Stretching
    - Compression
    - Med Injection

- **Peripheral Nerve Injury**
  - **S/S:**
    - Degree of deficit depends on type & extent of injury
    - Since PN’s are lower motor neurons = flaccid paralysis
    - Weak or absent deep tendon reflexes
    - Atony or hypotonic muscles

- **Peripheral Nerve Injury**
  - S/S:
    - Fibrillations
      -Transitory muscle contractions of a single muscle fiber
      -Quivering of individual muscle fibers
    - Fasciculations
      -Spontaneous contractions of several muscle fibers
      -Twitching of muscle fibers

- **Peripheral Nerve Injury**
  - S/S:
    - ↓ or complete sensory loss
    - Trophic changes to affected area
      - Warm Phase = warm, dry, flushed skin
      - Cold Phase = cold, cyanotic skin, ↓ hair, brittle nails (2-3 weeks later)

- **Peripheral Nerve Injury**
  - S/S:
    - Causalgia = severe burning pain from PN injuries
      -↑ pain with minor stimulus
      -More comfortable when left alone with a cool moist cloth wrapped around the limb
      -May need a nerve block
      -Need to protect from stimuli!

Peripheral Nerve Injury

- Nursing Management
  -Assess area for motor & sensory function
  -Maintain immobility of involved area
  -Check skin for changes!
  -Avoid exposure of the area to extremes in temperature
  -Rehab: ROM & PT

Motor vs Sensory

Motor

- these nerves regulate all the muscles under your conscious control
- weakness, cramps, and muscle twitching.

Sensory

- These nerves relay information about touch, temperature and pain—you may see a variety of s/s.
- N/T in hands/feet, trouble sensing pain, or changes in in temperature

Peripheral Nerve Injury S/S

- **Brachial Plexus**
  - S–Mixed loss (arm)
  - M– mixed weakness arm, forearm, hand
- **Median (wrist)**
  - S- carpal tunnel s/s
  - M- inability to flex thumb or wrist

S = Sensory, M = Motor

Peripheral Nerve Injury S/S

- **Radial (axilla)**
  - S- anesthesia of hand (dorsal)
  - M- wrist drop
- **Ulnar (elbow)**
  - S- anesthesia in ulnar side hand/wrist
  - M- inability to spread fingers

S = Sensory, M = Motor

Peripheral Nerve Injury S/S

- **Femoral**
  - S- anesthesia in medial leg
  - M- inability to extend lower leg
- Peroneal
  - S- anesthesia in dorsum of foot (top of foot)
  - M- foot drop
- **Tibial (ankle)**
  - S- anesthesia in lateral foot
  - M- loss of plantar flexion

S = Sensory, M = Motor

- **Muscle Spasm**
  - Overdoing everyday activities
  - Cycle
    - Muscle injury → muscle excitation (pain) → spasm
  - S/S
    - ↑ pain
    - Palpable muscle mass in spasm
    - ↓ ROM
    - Tender

- **Muscle Spasm**
  - Treatment
    - Drugs or Physical Therapy, or both
    - PT = heat, exercise, massage, hydrotherapy, ultrasound
    - Meds = analgesics, muscle relaxants

- **Contusion**
  - Bruise without a skin break
  - S/S
    - Pain, swelling, discoloration
  - Hematoma = collection of blood
  - Ice & wrap to ↓ swelling

Inflammations

- **Bursitis**
  - Inflammation of the bursa
  - Can be acute or chronic
  - Becomes inflamed due to overuse, trauma, or strain

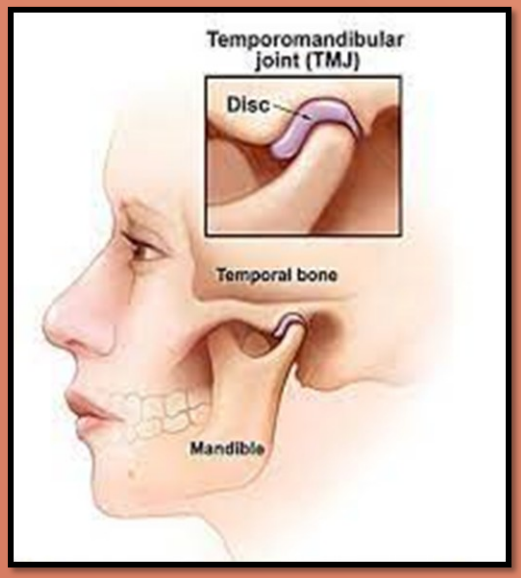
- **Bursitis**
  - S/S:
    - Pain
    - Swelling
    - ↓ movement
  - Treatment
    - Rest, NSAID’s, cold therapy, OR

- **Tendonitis**
  - Inflammation of a tendon, caused by overuse
    - S/S pain, ↓ ROM, swelling
  - Achilles tendon commonly affected
  - Epicondylitis = tennis elbow
    - Treatment = rest, splint, cold, NSAID, cortisone injection
    - IASTM

- **Tendonitis**
  - Tendosynovitis
    - Inflammation of a tendon sheath & synovial sac
    - Same S/S & treatment

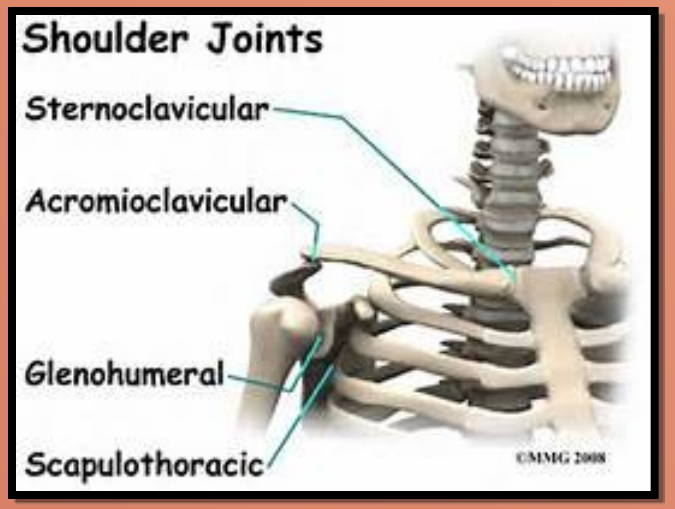
Common Disorders of Specific Body Parts

- **Jaw**
  - **TMJ Syndrome**
    - Encapsulated, double, synovial joints between the condyles of the mandible & temporal bones of the skull
    - Etiology:
      - Many causes



- **Jaw**
  - **TMJ Syndrome**
    - Diagnosis – R/O tooth decay, or sinusitis
    - S/S = facial pain usually unilateral, limited motion, clicking or crepitus with movement, ↑ pain with movement, earache or headache
    - Treatment: tx the cause

- **Shoulder**
  - 4 shoulder joints:
    - Scapulothoracic joint
    - Glenohumeral joint
    - Acromioclavicular joint
    - Sternoclavicular joint
  - Bones Involved:
    - Scapula, clavicle, humerus



- **Shoulder**
  - **Recurrent Dislocation**
    - Usually anterior
    - Once damaged – weak muscles & ligaments contribute to repeated dislocations
    - Loss of symmetry of shoulders
    - If this fails, can have surgery to strengthen the anterior joint capsule

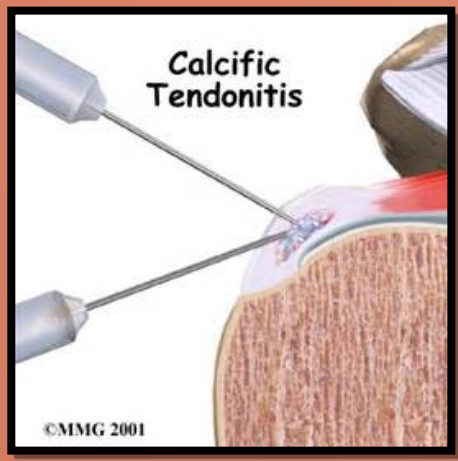
- **Shoulder**
  - **Rotator Cuff Tear**
    - Glenohumeral joint between scapula & humerus, has a fibrous capsule reinforcing the tendons of 4 muscles = the Rotator Cuff
    - S/S = abrupt pain, weakness, “clicking” sensation, cannot abduct, decreased ROM

- **Shoulder**
  - **Rotator Cuff Tear**

    -Diagnosis = US, CT, MRI, Arthrogram, -Partial Rupture, conservative Treatment:

    Rest, immobilization, anti-inflammatory & corticosteroids meds, PT, infiltration with a local anesthetic to relieve pain
  - Surgical repair for a complete rupture

- **Shoulder**
  - **Calcified Tendons**
    - Degenerative changes - often seen with calcified tendonitis or bursitis
    - S/S = aching pain which ↑ with movement
    - DX = X-ray
    - Tx: = rest, sling, anti-inflammatory meds, moist heat, or inject with anesthetics or steroids
    - May need surgery to excise / aspirate the deposit



- **Shoulder**
  - **Frozen Shoulder-**
    - Condition characterized by stiffness, pain, and limited rom
- Capsule adheres to the humeral head
  - Capsule **thickens** & forms **adhesions**
  - Some reasons why a patient may limit shoulder movement: Angina, post-mastectomy, trauma, immobility

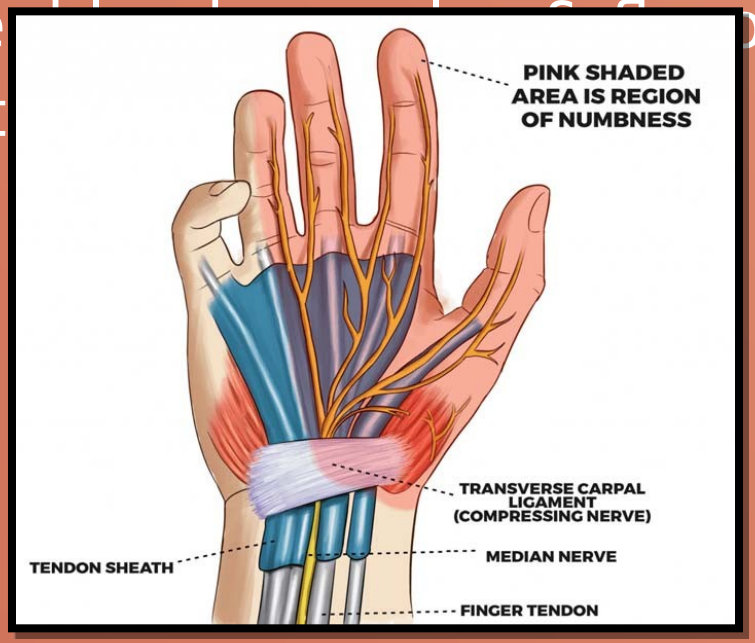
- **Shoulder**
  - **Frozen Shoulder**
    - Treatment:
      - Anti-inflammatory meds
      - Rest
      - Rehab is usually self-limiting
      - Surgery may be needed
      - Prevention is key!

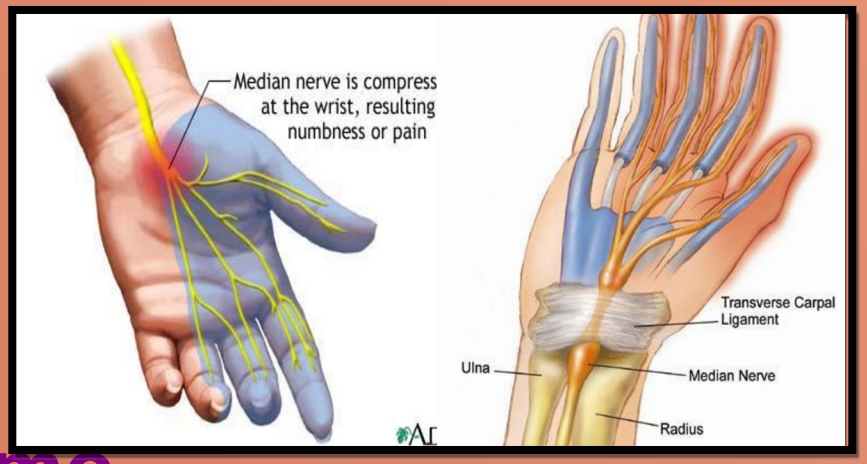
- **Shoulder**
  - **Post-Op care:**
    - NV assessments
    - Ice, ✓ dressing
    - Immobilizer – usually 1 month
      - ✓ position of arm – may fall back while lying in bed and cause↑ pain
      - Do not remove axilla pad unless okay with MD
      - Pendulum exercises, No ROM shoulder, avoid lifting above shoulder

- **Elbow**
  - **Tennis elbow** (epicondylitis)
    - Pain over lateral epicondyle of humerus radiating to outer side of arm & forearm
    - Pain aggravated by dorsiflexion & supination of the wrist
    - Usually caused by strain – playing tennis, pitching, golfing

- **Elbow**
  - **Tennis elbow**
    - Treatment = immobilization via splint → rest, heat, analgesics
    - May inject with steroid or anesthetic
    - Exercises after 1 week
    - May need surgery in continuous cases

- **Wrist & Hand**
  - **Carpal Tunnel Syndrome (CTS)**
    - An entrapment syndrome
    - Caused by compression of the median nerve within the carpal tunnel of the wrist
    - Carpal tunnel – formed by carpal bones & ligaments
      - Median nerve [illegible] or tendon pass t

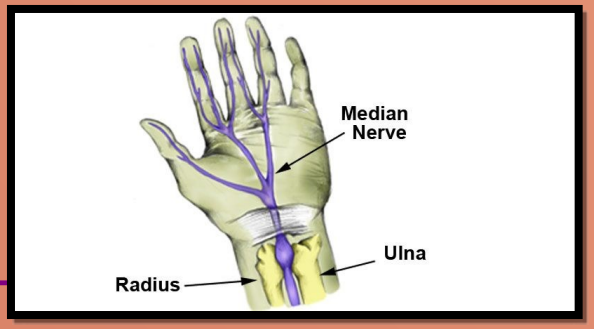




- **Wrist & Hand**
- **Carpal Tunnel Syndrome**
  - Causes:
    - ↑ volume in CT = edema
    - Inflammation of tendon or carpal joints, fx, congenital abnormalities, tumors.
    - History of strenuous repetitive use of hands (RSI)
    - After a wrist injury
    - Systemic diseases (RA)
    - Fluid retention - pregnancy

- **Wrist & Hand**
  - **Carpal Tunnel Syndrome**
    - S/S:
      - Weakness, pain, burning, N/T in one or both hands, ↓ sensation in thumb, forefinger, middle and 4th fingers
      - Unable to clench fist, clumsy, nails may be atrophic, skin dry and shiny
      - S/S often worse at night & in the AM
      - Pain may spread to forearm & shoulder with relief by shaking, dangling, or massaging the hands

- **Wrist & Hand**
  - **Carpal Tunnel Syndrom**
    - Diagnosis:
      - H & P
      - + Tinels Sign = occurs when S/S reappear by tapping the median nerve at the wrist
      - + Phalen's = flex the wrist for one minute, N/T should occur over the median nerve area
      - Can see S/S when BP cuff is inflated
      - EMG, NCV, x-ray to rule out fx's



- **Wrist & Hand**
  - **Carpal Tunnel Syndrome**
    - Treatment:
      - REST!
      - Splinting the wrist in a neutral position
      - NSAIDS, steroids, diuretics
      - May need to change jobs
      - Surgery – release the transverse carpal ligament, which decompresses the median nerve

- **Wrist & Hand**
  - **Carpal Tunnel Syndrome**
    - Treatment:
      - Post –Op

        -SDS ≈ 45 min to 1° procedure

        -Elevate the arm!

        -Assess drsg & splints

        -NV checks

        -Slowly ↑ activity after 2-3 days post-op

        -Hand movements, including heavy lifting may be restricted 4-6 weeks

- **Wrist & Hand**
  - **Ganglion**

    -Cystic structure adjacent to a joint or tendon

    -Etiology: unknown

    -S/S: Painless, non-inflammatory, may be painful after use

      - Carpal Tunnel S/S if the median nerve is compressed

    -Treatment: aspirate, but commonly reoccurs

- **Wrist & Hand**
  - **Dupuytren's Contracture**

    -Contracture of palmar fascia causing the ring & little finger to bend into the palm so that they cannot be extended

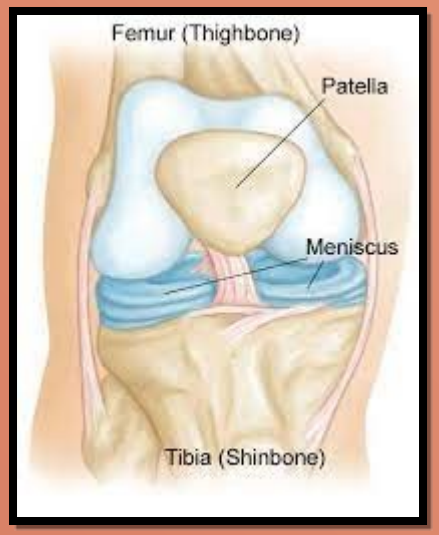
    -Slowly progressive, inherited contracture

    -Often occurs bilat in men > middle age

    -Treatment = enzyme injection, or surgery to remove the palmar fascia

Dupuytren’s Contracture

- **Knee**
  - **Meniscus Injuries**
    - Intra-articular cartilage pads attached on the sides and on top of the tibia
    - Act as a shock absorber to facilitate articulation between the tibia & femur
    - Can tear with trauma → rotation & twisting movement when the knee is flexed & the foot is firmly planted in the ground



- **Knee**
  - **Meniscus Injuries**

    -Diagnosis: MRI, arthrogram, and arthroscopy

    -Treatment:
    - Initially = ice, immobilize, ↓ use, protected wt. bearing
    - Need exercises to strengthen the stability of the knee
    - Long term Complications = quadricep atrophy & DJD

- **Knee**
  - **Meniscus Injuries**
    - S/S: Pain, mild effusion, tenderness

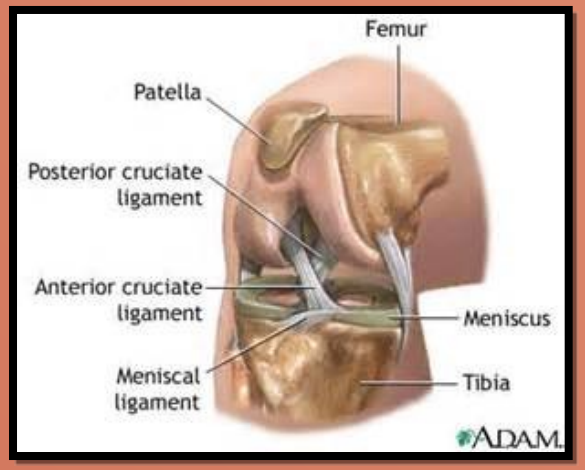
    -Pain with abduction or adduction of the leg at the knee

    -Snapping, clicking, or jerking of the knee

    -“Locked knee” – if torn cartilage becomes displaced it may get jammed between the femur & tibia
      - Prevents extension

- **Knee**
  - **Meniscus Injuries**
  - Surgery:
    -Meniscal repair/suture
    -Meniscectomy via arthroscope
    -Post-Op:
    - **Elevate & Ice!**
    - Usually PWB
    - NV assessments, drsg changes, assess pain
    - Knee immobilizer
    - Progressive ROM several days after surgery
    - FWB may be restricted for several weeks

- **Knee**
  - **Anterior Cruciate Ligament Rupture (ACL)**
    - Ligament between tibia & femur
    - Rotates and bends the knee
    - Can be complete tear, partial
    - S/S: swelling, knee instability, pain
    - Dx: H & P, x-rays, MRI, arthroscope (best)



- **Knee**
  - **Anterior Cruciate Ligament Rupture**
    - Treatment:
      - RECIPE (not the kind you cook with)
      - Older pt – immobilize via a cast for 6 wks→ progress to a brace
      - Younger pts/athletes– surgical repair, may use artificial ligament implant
        - Usually done through arthroscope
        - Post-Op = Rehab! Limited ROM exercises

RECIPE!!

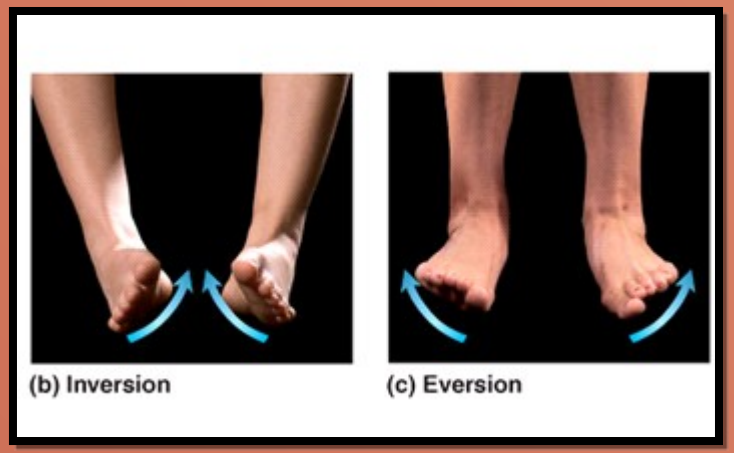
- Rest
- Elevate
- Compression
- Ice
- Proper
- Exercise

- **Knee**
  - **Tendon Rupture**
    - May occur due to chronic inflammation or trauma
    - Patellar tendon & quadriceps tendon
    - S/S: Unable to extend knee, lump, pain, swelling
    - Treatment: surgical repair then immobilized for 6-18 weeks
      - Rehab and PT

- **Knee**
  - **Popliteal Cyst (Baker's Cyst)**
    - Fluid-filled cyst containing synovial fluid communicating with synovial fluid of a joint
    - Caused by recurrent effusions or trauma secondary to friction
    - S/S: ↓ ROM, pain
    - Diagnosis: US, arthrogram
    - Treatment: treat what's causing the effusion; may need to excise the cyst

- **Ankle**
  - **Achilles Tendon Rupture**
    - Usually occurs after tendonitis but can also occur with trauma
    - S/S: sudden knife-like pain, bulge in calf, gait disturbances, unable to plantar flex ankle
    - Dx: squeeze the calf, and the foot will move = gastroc/soleus muscle pinch test
    - Treatment: Splint, compress, ice, elevate
      - Surgery →cast

- **Ankle**
  - **Chronic Lateral Ligament Instability**
    - Usually secondary to a series of ankle sprains
    - May need surgery to treat



- **Feet**
  - **-Hammer Toe**
    - A deformity of the 2nd toe
      - PIP joint
    - Often associated with a bunion
    - Causes permanent bending
      - Resembling a hammer

- **Feet**
  - **Hammer Toe**

    -Cause: incorrect fitting shoes, or may be congenital

    -S/S: burning on bottom of foot, pain & difficulty walking when wearing shoes

    -Treatment:

    - Conservative = passive stretching of PIP joint & metatarsal arch support
    - Surgery = osteotomy via Kirschner wires for straight positioning

- **Feet**
  - **Plantar Fasciitis**
    - Injury of the plantar fascia
    - Causes tiny tears, leads to pain when foot placed down
      - Often worse in the morning, then better through the day, then worse again at night
    - Common in middle-aged adults, military personnel

- **Feet**
  - **Plantar fasciitis (continu**

-Other risk factors:
    - High arches/flat feet, overweight, long periods standing, running on hard surfaces, ill-fitting shoes

-Treatment
  - Conservative measures
  - Surgery usually not indicated, months of treatment first.

- **Feet**
  - **Hallux Valgus (Bunion)**
    - Painful deformity of large, great toe
    - Great toe deviates laterally toward 2nd toe
    - Bony enlargement of medial aspect of the 1st metatarsal head with a bursa or callus forming over it
    - Etiology: heredity, RA, narrow shoes, flat feet

- **Feet**
  - **Hallux Valgus (Bunion)**
    - Treatment:
      - Conservative-
        - wear shoes with a wide "forefoot" or "bunion pocket"
        - Use bunion pads to ↓ pressure on the area
      - Surgery = if S/S get worse → bunionectomy
        - Assess pain, N/V, Elevate & Ice

- **Feet**
  - **Corns**
    - Localized thickening of the skin caused by continual pressure
      - Overgrowth of the epidermis from ↑ pressure
    - Usually over bony prominences
    - Treatment: soften with water & trim with scalpel or razor

- **Feet**
  - **Callus**
    - Composed of the same material as corns
    - Thickening of skin
    - Develop on the ball or heel of the foot

- **Feet**
  - **Plantar Wart**
    - Wart occurring on the sole of the foot
    - Caused by a strain of HPV virus
    - Treatment: excision with electrocoagulation or surgical removal

Exam Study Guide

MS Exam #1

- **A&P = 12**
- **Assessment = 9**
- **Diagnostics = 5**
- **Fractures = total 57**
  - **Includes:**
    - **Types**
    - **Complications**
    - **Casts**
    - **Traction = 13 of 57**
- **Joint & Soft Tissue Injuries = 16**
- **Math = 1**