

Joint & Soft Tissue Injuries and Disorders

2025

Traumas



Strain vs. Sprain

- ◇ **S**trains
 - ◇ Muscle or **t**endon
- ◇ **S**pr**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

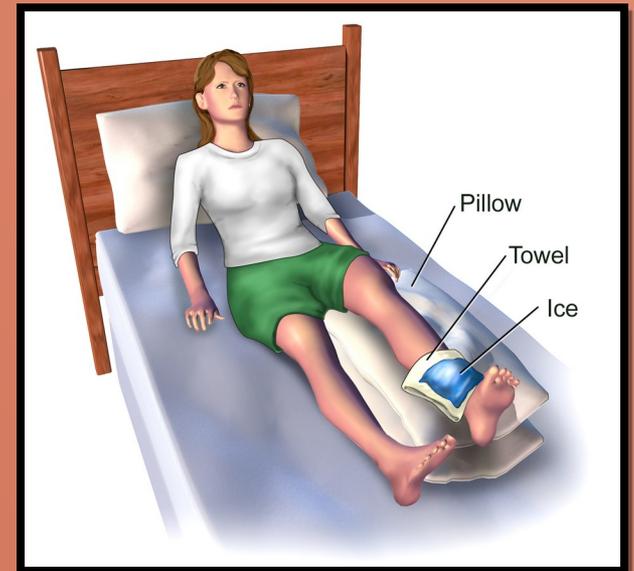
◇ Ecchymosis

◇ 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**

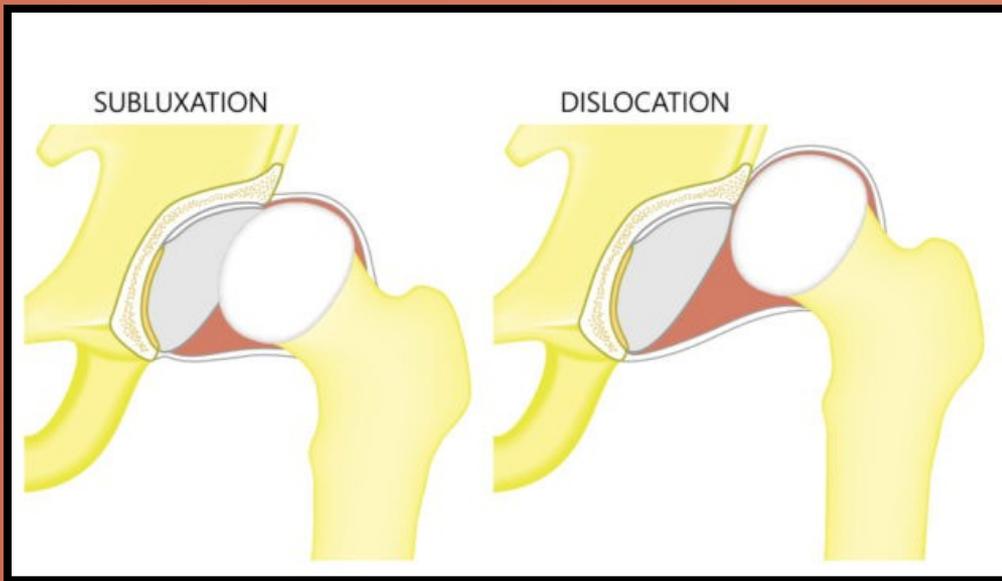
- ◇ Complete displacement or separation of the articular surfaces of the joint

- ◇ **Subluxation**

- ◇ Partial or incomplete displacement of the joint surface

◇ **Subluxation**

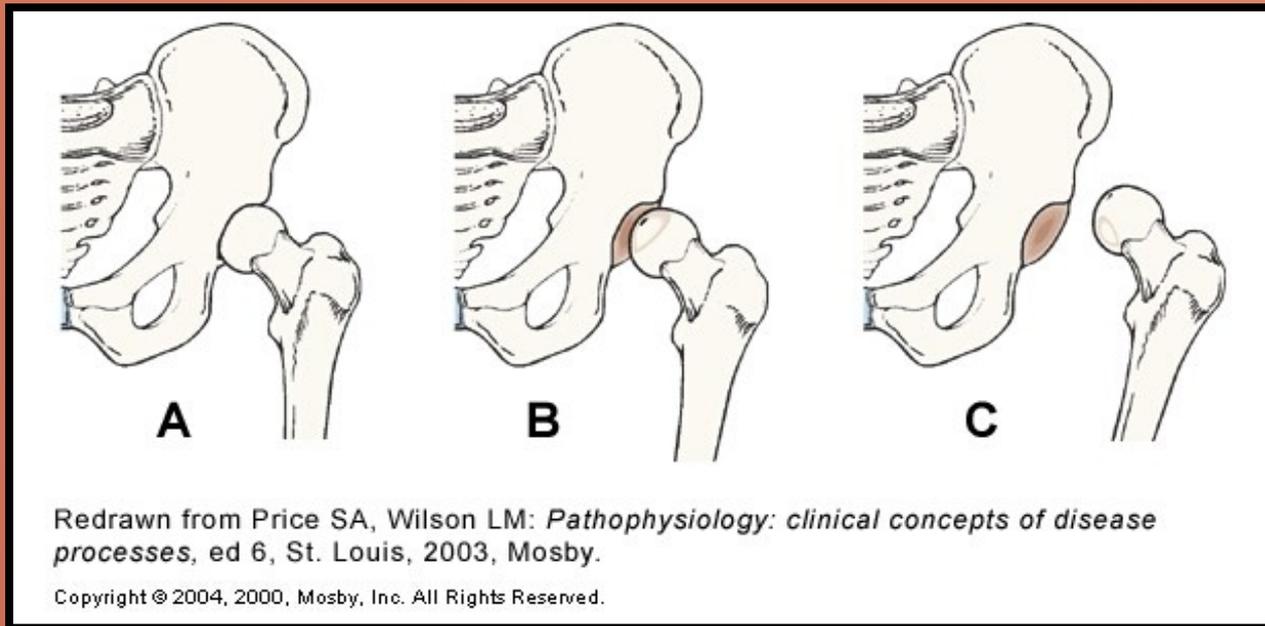
- ◇ S/S less severe than dislocation
- ◇ Less healing time required



◇ Dislocation & Subluxation

-Joints most frequently dislocated:

- ◇ *Fingers, elbow, shoulder*
- ◇ *hip, knee*



◇ 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 (Inner part of thigh/leg)**
 - ◇ S- anesthesia in medial leg
 - ◇ M- inability to extend lower leg
- ◇ **Peroneal (Lateral aspect of leg)**
 - ◇ S- anesthesia in dorsum of foot (top of foot)
 - ◇ M- foot drop
- ◇ **Tibial (ankle) (outside of foot)**
 - ◇ S- anesthesia in lateral foot
 - ◇ M- loss of plantar flexion

◇ **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

Inflammatio ns

◇ **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

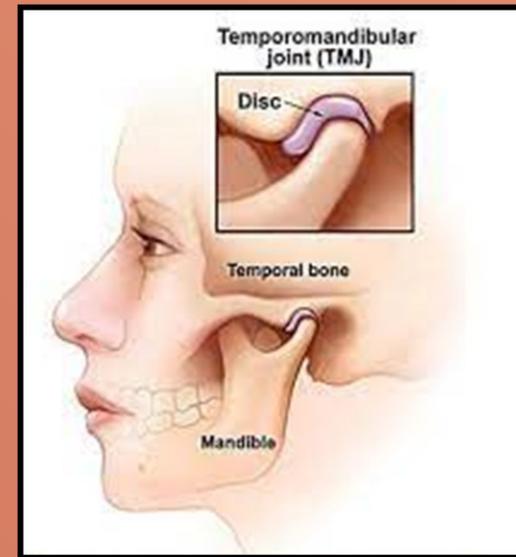
- ◇ Same S/S & treatment

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



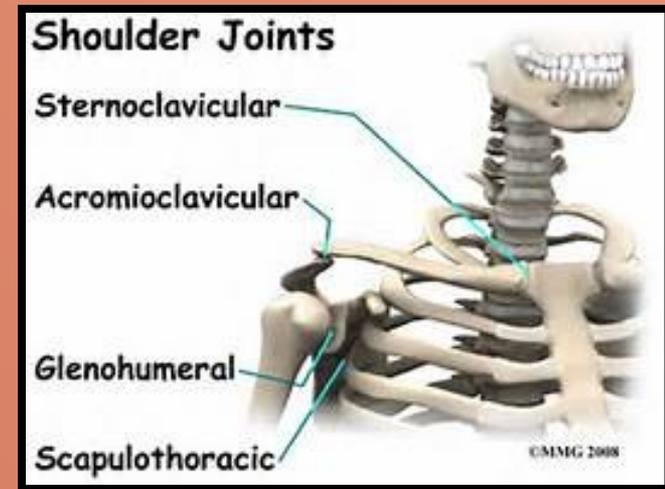
- ◇ **Jaw**

- ◇ **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, infiltration
with a local anesthetic to relieve pain

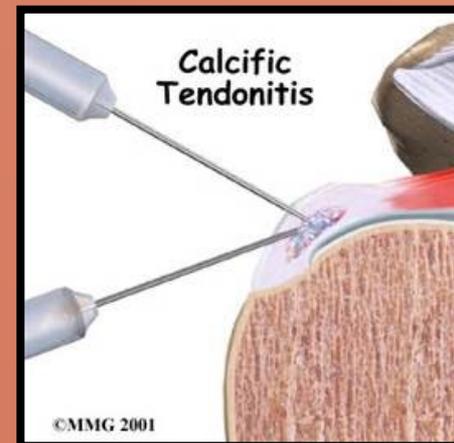
-Must work with Physical Therapy to
prevent frozen shoulder

◇ 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

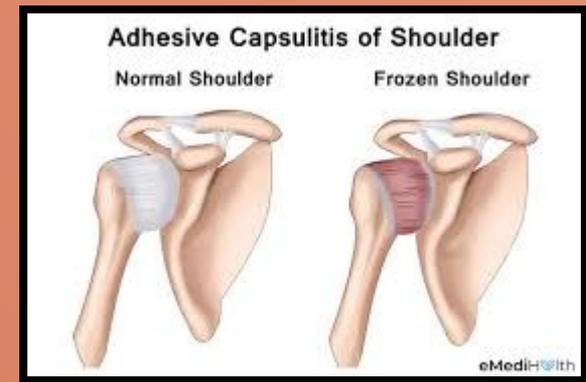


◇ Shoulder

◇ Frozen Shoulder-

◇ AKA Adhesive Capsulitis

- ◇ 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**

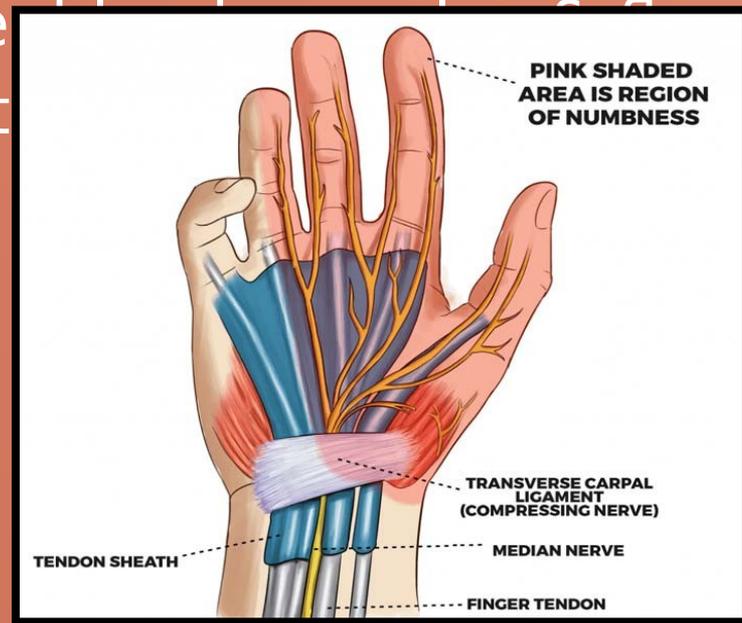
◇ **Tennis elbow**

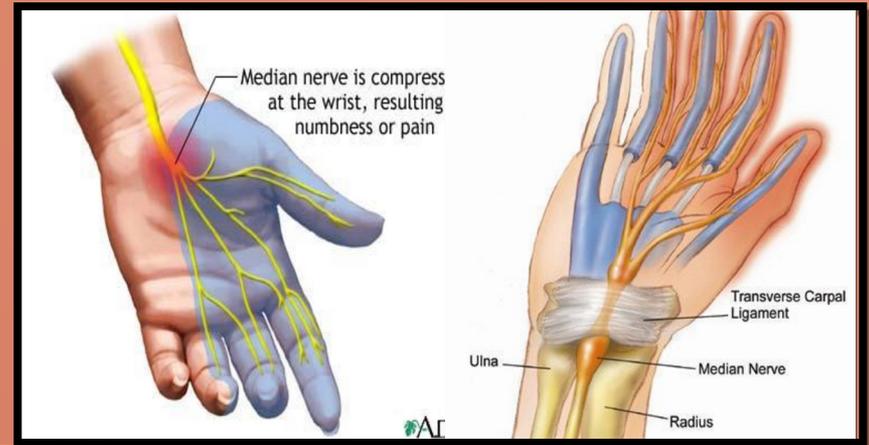
- ◇ Treatment = immobilization via splint → rest, heat, analgesics
- ◇ May inject with steroid or anesthetic
- ◇ Exercises after 1 week
- ◇ May need surgery in continuous cases

◇ 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 travels through the carpal tunnel for tendon pass to





◇ 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

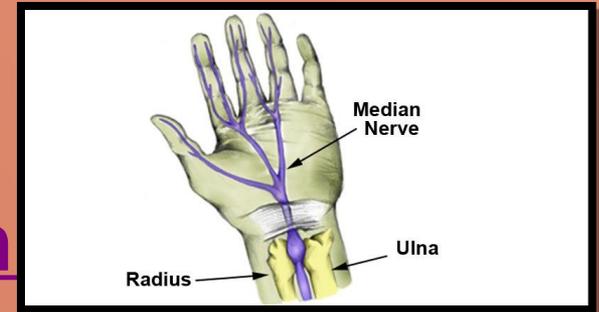
◇ Carpal Tunnel Syndrome

◇ 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
- ◇ + Tinel's 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 (Immobilization)!!

- ◇ 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 \approx 45 min to 1° procedure

-Elevate the arm!

-Assess drsg & splints

-NV checks

-Slowly \uparrow 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

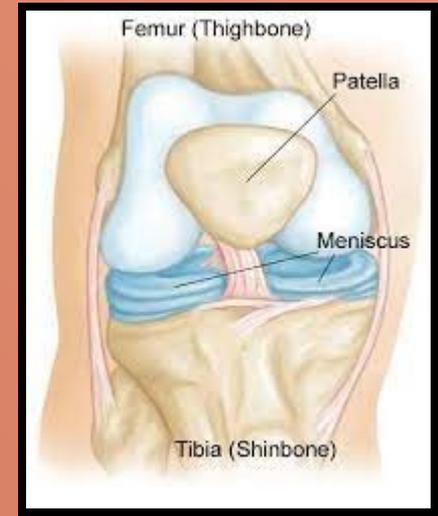
Dupuytren's Contracture



◇ 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 = quadriceps 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

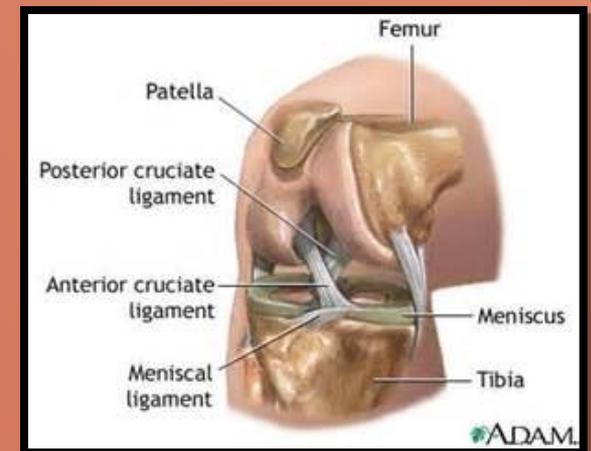
◇ Progressive ROM several days after surgery

◇ 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**

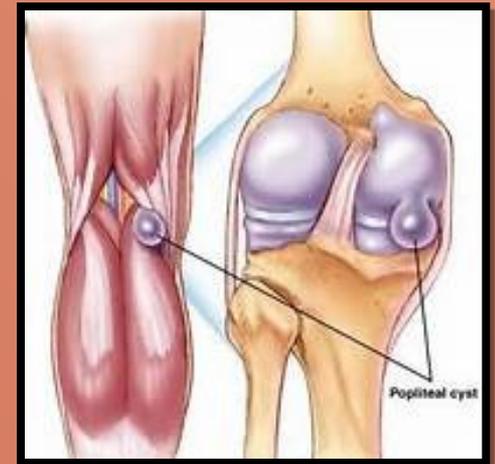
- ◇ **Tendon Rupture**

- ◇ 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**

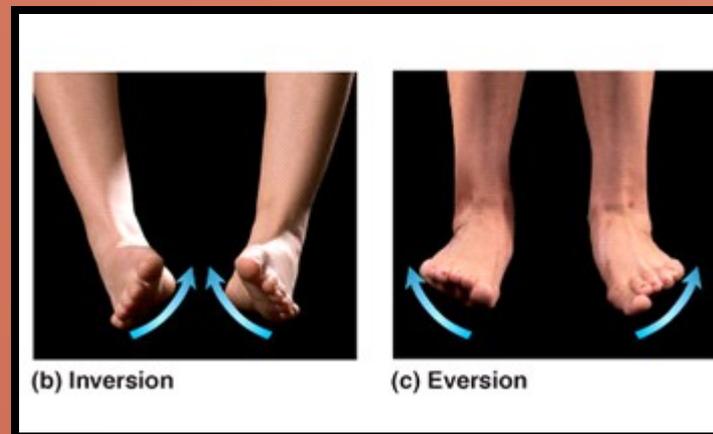
- ◇ Usually occurs after tendonitis but can also occur with trauma
 - ◇ S/S: sudden knife-like pain, bulge in calf, gait disturbances, unable to plantar flex ankle
 - ◇ Dx: squeeze the calf, and the foot will move = gastroc/soleus muscle pinch test
 - ◇ Treatment: Splint, compress, ice, elevate
 - ◇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

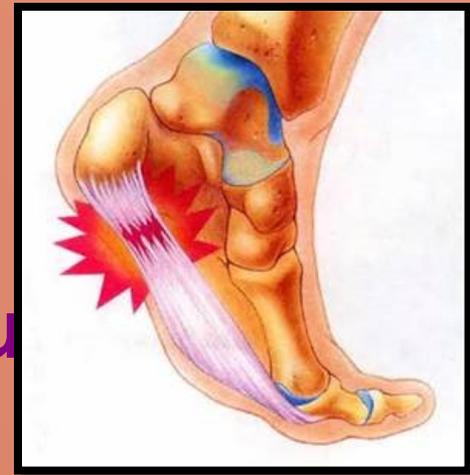
- ◇ Conservative = passive stretching of PIP joint & metatarsal arch support
- ◇ Surgery = osteotomy via Kirschner wires for straight positioning



- ◇ **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 (continued)**

- Other risk factors:

- ◇ High arches/flat feet, overweight, long periods standing, running on hard surfaces, ill-fitting shoes

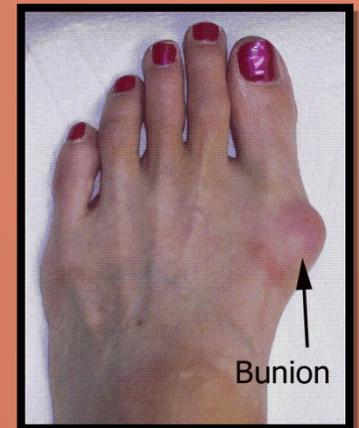
- Treatment

- ◇ 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**

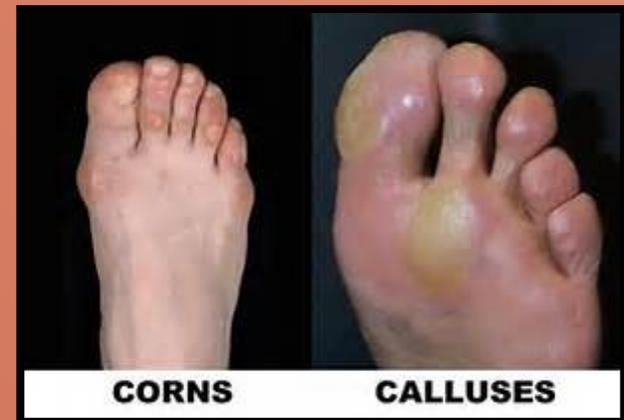
- ◇ Localized thickening of the skin caused by continual pressure
 - ◇ Overgrowth of the epidermis from ↑ pressure
 - ◇ Usually over bony prominences
 - ◇ Treatment: soften with water & trim with scalpel or razor



- ◇ **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 Breakdown

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**

