

JOINT & SOFT TISSUE INJURIES AND DISORDERS

2021

STRAIN VS. SPRAIN

- **Strains**
 - Muscle or tendon
- **Sprains**
 - Ligament or joint

TRAUMA

- **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

TRAUMA

- **Sprains**

- Can involve a ligament or joint
- Tearing of the capsule or ligaments surrounding a joint
→ result of twisting injury
- Classified by:
 - number of ligament fibers torn
 - the severity of the tear

TRAUMA

- **Strains & Sprains**

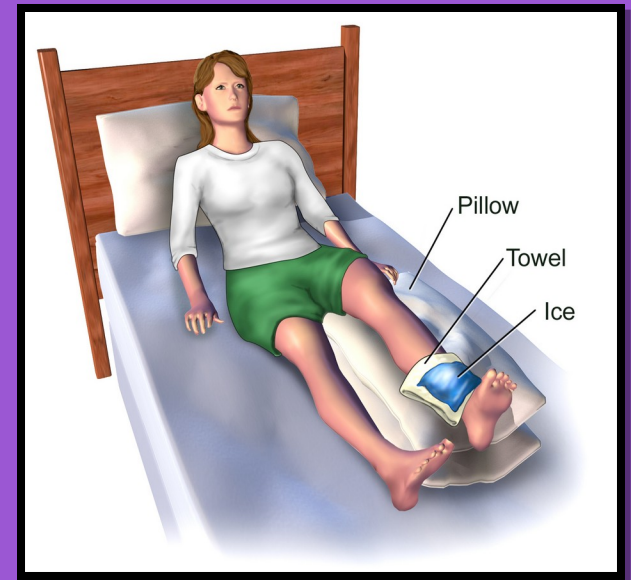
- Signs & Symptoms
 - Pain
 - ↓ ROM
 - Tender
 - Edema
 - Ecchymosis
- Need an X-Ray to rule out a fracture

TRAUMA

• Strains & Sprains

• Treatment: R-E-C-I-P-E ***

- Rest
- Elevation
- Compression
- Ice
- Proper
- Exercise
 - NSAID's



TRAUMA

- **Dislocation & Subluxation**

- **Dislocation**

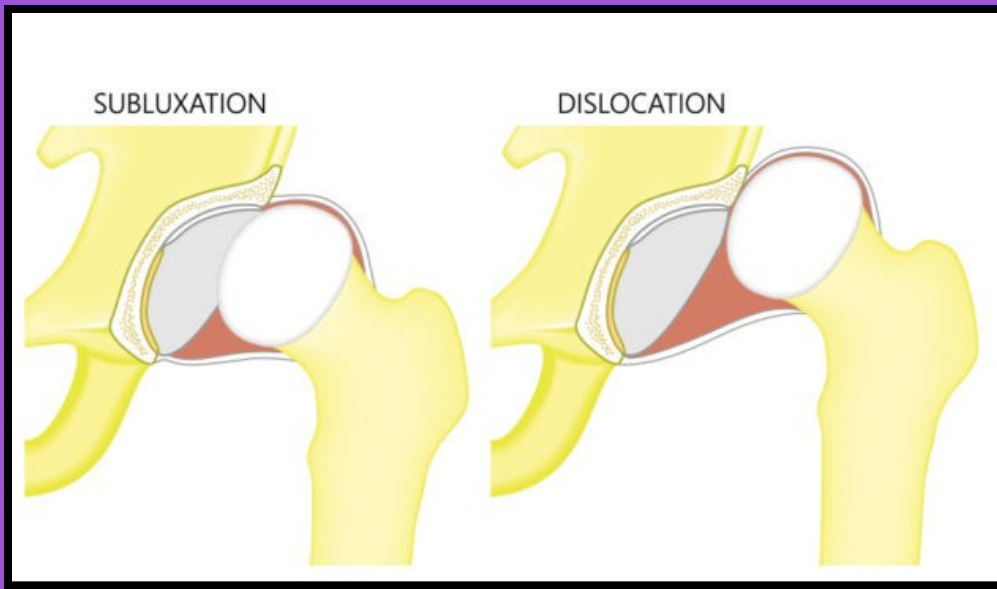
- Displacement of a part, usually above , from its normal anatomic position within a joint

- **Subluxation**

- Partial or incomplete displacement of the joint surface

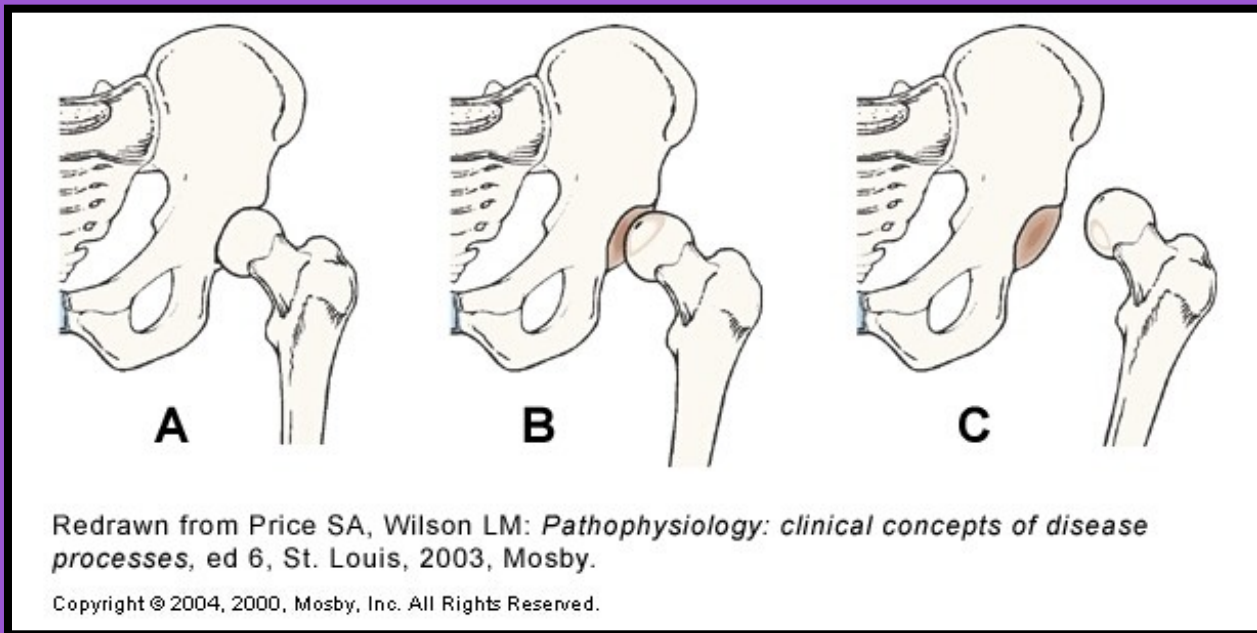
TRAUMA

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



TRAUMA

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

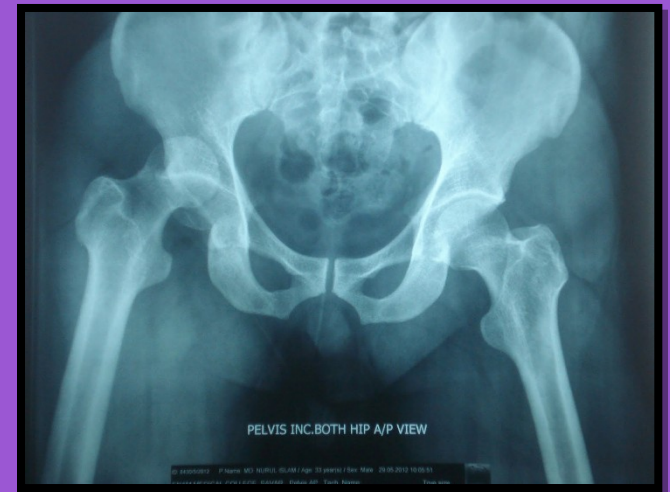


TRAUMA

• Dislocation & Subluxation

• S/S

- Asymmetry & contour – Shortened leg and externally rotated
- Pain
- ↓ ROM
- Obvious deformity
- Possible NV impairment
- Edema



TRAUMA

- **Dislocation & Subluxation**

- **Treatment**

- Need prompt treatment → likely to develop avascular necrosis
 - Reduction – realign to its original anatomic position
 - Immobilization for a specified period of time
 - Cast, splint, brace, or immobilizer
 - Rehab to prevent contractures – exercises to ↑ ROM

TRAUMA

- **Peripheral Nerve Injury**

- **Mechanism of injury**

- Severed – complete or partial
 - Contusion – neuron remains intact structurally but there is undetermined axonal injury
 - Stretching – extreme movement or excessive traction
 - Compression – from a tumor, herniated disc, cast
 - Nerve entrapment (carpal tunnel)
 - Med Injection: sciatic nerve with IM's

TRAUMA

- **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

TRAUMA

- **Peripheral Nerve Injury**

- S/S:

- Fibrillations

- Transitory muscle contractions caused by spontaneous stimulation of a single muscle fiber

- Quivering of individual muscle fibers

- Fasciculations

- Spontaneous contractions of several muscle fibers innervated by a single motor nerve

- Twitching of muscle fibers

TRAUMA

- **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)

TRAUMA

- **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

TRAUMA

- **Peripheral Nerve Injury**

- Nursing Management

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

TRAUMA

PERIPHERAL NERVE INJURY

- **Brachial Plexus**

- S- spotty & mixed loss (arm)
- M- mixed weakness arm, forearm, hand

- **Median (wrist)**

- S- carpal tunnel s/s
- M- inability to flex thumb or wrist

- **Radial (axilla)**

- S- anesthesia of hand (dorsal)
- M- wrist drop

- **Ulnar (elbow)**

- S- anesthesia in ulnar side hand/wrist
- M- inability to spread fingers

TRAUMA

PERIPHERAL NERVE INJURY

- **Femoral**

- S- anesthesia in medial leg
- M- inability to extend lower leg

- **Peroneal**

- S- anesthesia in dorsum of foot
- M- foot drop

- **Tibial (ankle)**

- S- anesthesia in lateral foot
- M- loss of plantar flexion

TRAUMA

- **Muscle Spasm**

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

TRAUMA

- **Muscle Spasm**

- Treatment

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

TRAUMA

- **Contusion**

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

HOW TO APPLY AN ACE WRAP

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



INFLAMMATIONS

- **Bursitis**

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

INFLAMMATIONS

- **Bursitis**

- S/S:

- Pain
 - Swelling
 - ↓ movement

- Treatment

- Rest, anti-inflammatory meds, cold therapy, OR



INFLAMMATIONS

- **Tendonitis**

- Inflammation of a tendon, caused by overuse
- Achilles tendon commonly affected
- Epicondylitis = tennis elbow
 - Treatment = rest, splint, cold, NSAID, cortisone injection
 - IASTM

INFLAMMATIONS

- **Tendonitis**

- Tendosynovitis

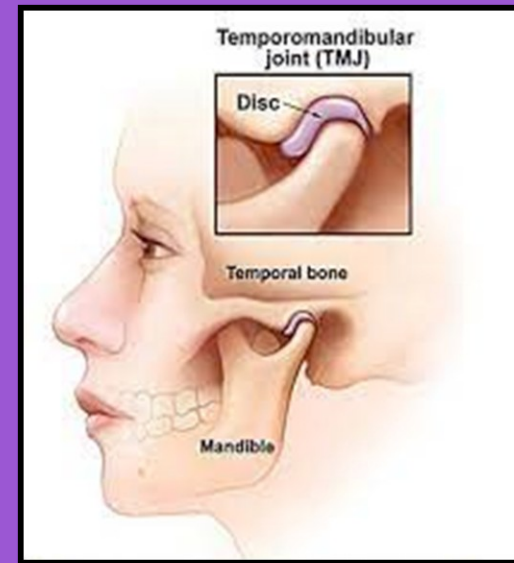
- Inflammation of a tendon sheath & synovial sac
 - Same S/S & treatment

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



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Jaw**

- **TMJ Syndrome**

- Treatment = bite splints to prevent teeth from meeting
 - PT = heat, ice, US, electrical muscle stimulation, massage, exercise
 - Meds = analgesics, NSAIDS, muscle relaxants, intra-articular injections
 - Soft diet

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Jaw**

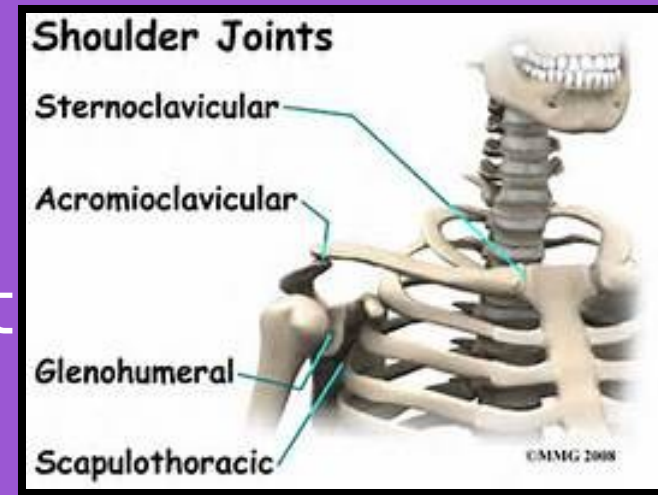
- **TMJ Syndrome**

- Complications from Surgery:
- Post-Op care:
 - HOB $\uparrow$ 30°, ✓ S/S infection, anti-emetics, antibiotics, steroids, analgesics, jaw exercises 1-2 wks after OR, bite splints, avoid straining
 - Parasthesias around site

COMMON DISORDERS OF SPECIFIC BODY PARTS

• Shoulder

- 4 shoulder joints:
 - Thoracoscapular joint
 - Glenohumeral joint
 - Acromioclavicular joint
 - Sternoclavicular joint
- Bones Involved:
 - Scapula, clavicle, humerus



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Shoulder**

- **Recurrent Dislocation**

- Usually anterior
- Once damaged – weak muscles & ligaments contribute to repeated dislocations
- If this fails, can have surgery to strengthen the anterior joint capsule

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Shoulder**

- **Rotator Cuff Tear**

- Diagnosis = US, CT, MRI, Arthrogram, Arthroscopy
 - Surgical repair for a complete rupture
 - Conservative Treatment if there is a partial rupture
 - Rest, immobilization, anti-inflammatory meds, increasing PT, infiltration with a local anesthetic to relieve pain

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Shoulder**

- **Calcified Tendons**

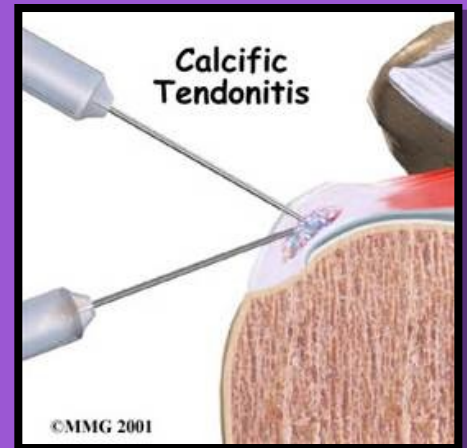
- Degenerative changes - often seen with calcified tendonitis or bursitis
 - Degeneration of tendon causes fraying, allowing calcium deposits to adhere
 - S/S = aching pain which ↑ with movement
 - DX = X-ray

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Shoulder**

- **Calcified Tendons**

- Treatment = rest, sling, anti-inflammatory meds, moist heat, or inject with anesthetics or steroids
- May need surgery to excise / aspirate the deposit



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Shoulder**

- **Frozen Shoulder**

- Some reasons why a patient may limit shoulder movement
- Angina, post-mastectomy, trauma, immobility
- Capsule adheres to the humeral head
- Capsule thickens & forms adhesions



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Shoulder**

- **Frozen Shoulder**

- Treatment:

- Anti-inflammatory meds
 - Rest
 - Rehab is usually self-limiting
 - Surgery may be needed
 - Prevention is key!

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Shoulder**

- **Post-Op care:**

- Avoid jarring when OOB and with ADL's
 - ROM of other joints
 - Pendulum exercises first (days to months)
 - Follow restrictions at home → avoid lifting above shoulder level

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

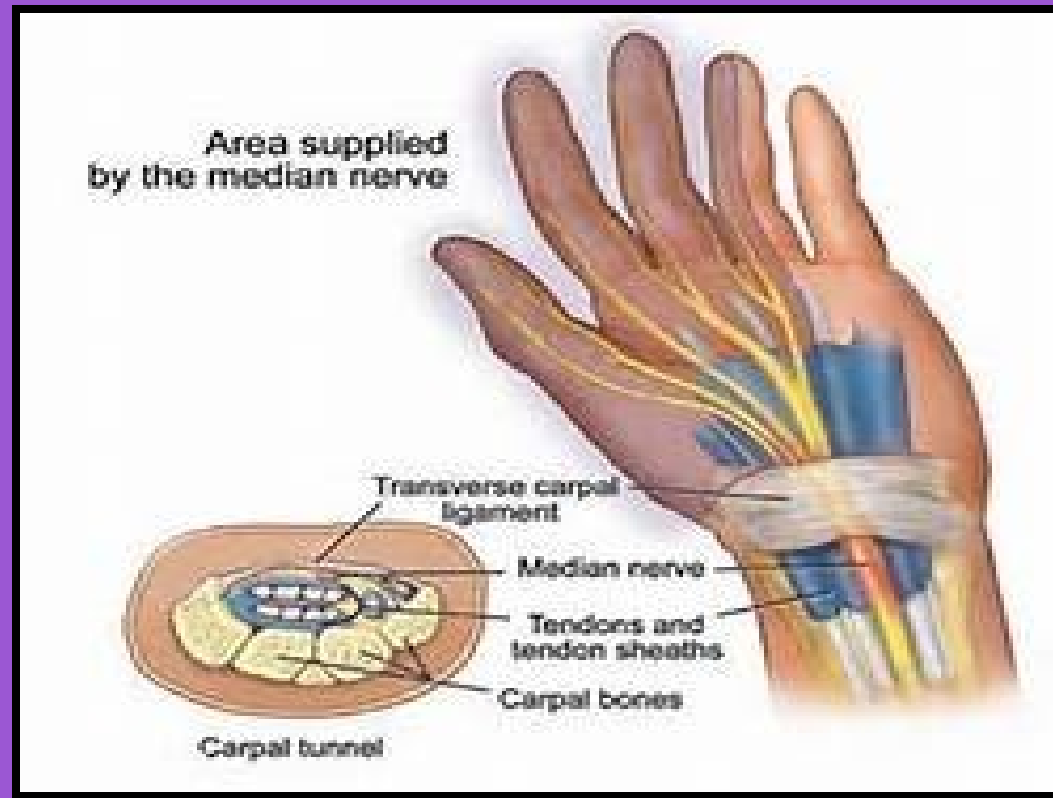
COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Wrist & Hand**

- **Carpal Tunnel Syndrome**

- An entrapment syndrome
- Caused by compression of the median nerve within the carpal tunnel of the wrist
- Carpal tunnel – formed by carpal bones & transverse carpal ligament
 - Median nerve, blood vessels , & flexor tendon pass through

CARPAL TUNNEL SYNDROME



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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
- After a wrist injury
- Systemic diseases (RA)
- Fluid retention - pregnancy

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Wrist & Hand**

- **Carpal Tunnel Syndrome**

- 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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- 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
 - May be open or endoscopic
 - May remove thickened synovial tissue – if r/t RA

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Wrist & Hand**

- Carpal Tunnel Syndrome

- Treatment:

- Post -Op

- SDS $\approx$ 45 min to 1^o 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.

COMMON DISORDERS OF SPECIFIC BODY PARTS

- 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



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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 contracture – flexion deformity
 - Often occurs bilaterally in men past middle age
 - Inherited; associated with gout & arthritis
 - Treatment = enzyme injection, or surgery to remove the palmar fascia

DUPUYTREN'S CONTRACTURE



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Wrist & Hand**

- **Dupuytren's Contracture**

- Post-Op Care:
 - Elevate
 - Ice
 - As much ROM as possible
 - Check NV status
 - Check drsg
 - Immobilizing device as ordered
 - Teach ADL's

Which discharge instruction will the emergency department nurse include for a patient with a sprained ankle?

- A. Keep the ankle loosely wrapped with gauze.
- B. Apply a heating pad to reduce muscle spasms.
- C. Use pillows to elevate the ankle above the heart
- D. Gently move the ankle through the range of motion.

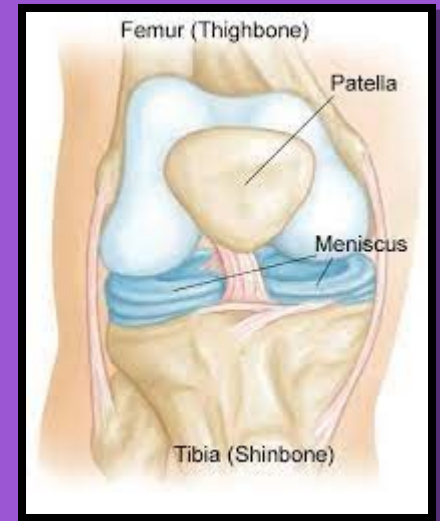


COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Knee**

- Meniscus Injuries

- **Surgery:**

- Meniscal repair/suture

- Meniscectomy via arthroscope → may remove all or part of the meniscus

- Post-Op = use partial wt. Bearing

- Elevate & Ice

- NV assessments, drsg changes, assess pain

- Knee immobilizer

- Progressive ROM several days after surgery

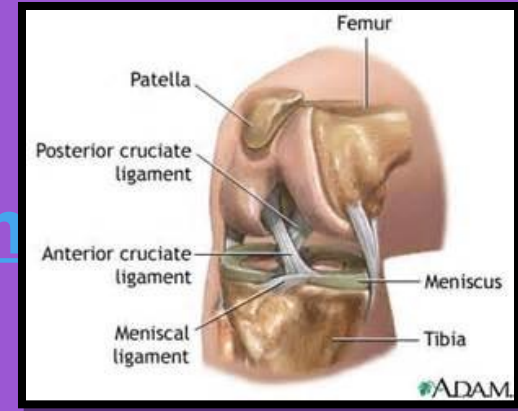
- FWB may be restricted for several weeks

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Knee**

- Anterior Cruciate Ligament Rupture

- Ligament between tibia & femur
- Rotates and bends the knee
- S/S: swelling, knee instability, pain
- Dx: H & P, x-rays, MRI, arthroscope (best)



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Knee**

- **Anterior Cruciate Ligament Rupture**

- Treatment:
 - RECIPE
 - Older pt – immobilize via a cast for 6 weeks & then progress to a brace
 - Younger pt– surgical repair, may use artificial ligament implant
 - Usually done through arthroscope
 - Post-Op = Rehab! Limited ROM exercises
 - May take 6-9 months to heal

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Knee**

- **Recurrent Patella Dislocation**

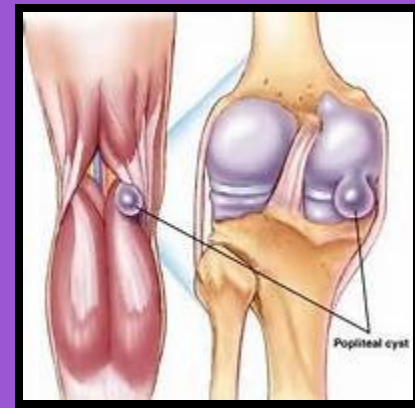
- Eventually results in joint damage
- S/S: after dislocation – sharp pain & may fall
- Treatment: surgery recommended since it's recurrent
 - Can do a tendon transfer

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Knee**

- **Popliteal Cyst (Baker's Cyst)**

- Cyst containing synovial fluid communicating with synovial fluid of a joint
- Distension of the popliteal bursa 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



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

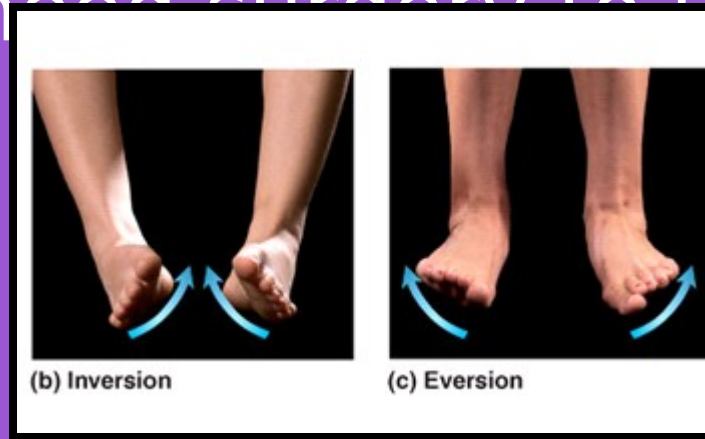


COMMON DISORDERS OF SPECIFIC BODY PARTS

- Ankle

- Chronic Lateral Ligament Instability

- Usually secondary to a series of ankle sprains
 - May need surgery to treat



COMMON DISORDERS OF SPECIFIC BODY PARTS

- Feet

- Hammer Toe

- Usually a deformity of the 2nd toe
 - Often associated with a bunion
 - Dorsiflexion of the metatarsophalangeal joint (MTP), plantar flexion of the proximal interphalangeal joint (PIP), with a callous on the dorsum of the PIP joint & end of the involved toe



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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
 - Crutches until FWB in 3-4 wks



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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.



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Feet**

- **Plantar Fasciitis**

- Injury of the plantar fascia – the ligament connecting the heel bone to the toes
 - Repeated stress 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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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



COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **Feet**

- Hallux Valgus (Bunion)

- Treatment:

- Bunionectomy = remove the bursal sac & realign the toe
- Assess pain – pt may have intense, throbbing pain
- Check NV status of toes, dressing
- Elevate & ice
- Activity depends on surgery performed:
 - Check wt. bearing status – may be weeks!
 - Wires and pins may extend thru the toe, so be careful not to jar (left in for weeks!)
 - Toe flexion & extension exercises
 - Wear shoes that aren't tight (bunions can re-form)

COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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



COMMON DISORDERS OF SPECIFIC BODY PARTS

- Feet

- Callus

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



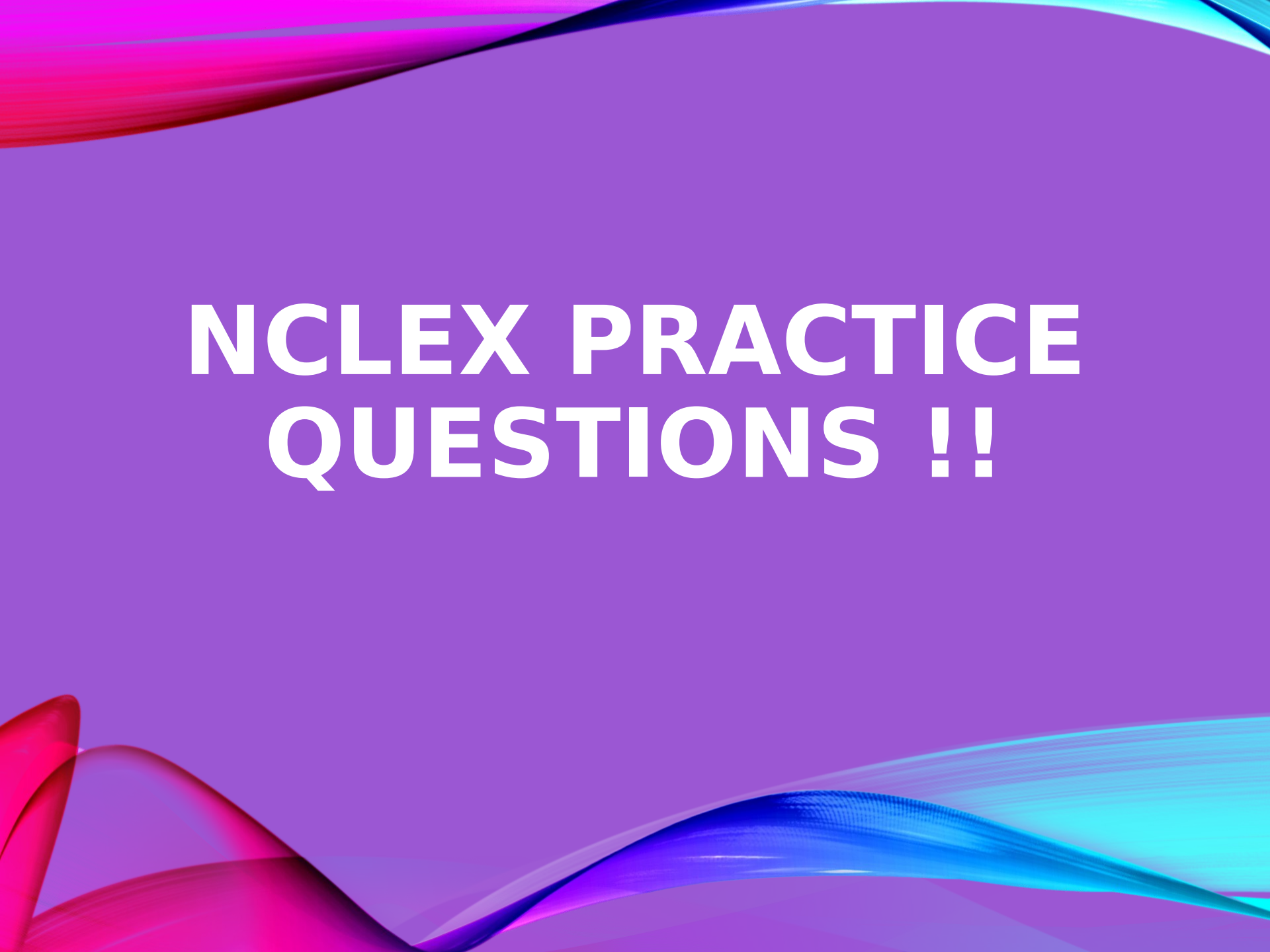
COMMON DISORDERS OF SPECIFIC BODY PARTS

- **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





NCLEX PRACTICE QUESTIONS !!

QUESTION 1:

A nurse is caring for a client who is 3 days postoperative following a right total hip **arthroplasty**. While transferring to a chair, the client cries out in pain. The nurse should assess the client for which of the following manifestations of dislocation of the hip prosthesis?

A
B
C
D

- ☐ Bulging in the area over the surgical incision
- ☐ Shortening of the right leg
- ☐ Sensation of warmth over the surgical incision
- ☐ Pallor following elevation of the right leg

QUESTION 2:

A nurse is caring for a client immediately following application of a plaster cast. The nurse should monitor for and report which of the following findings as an indication of compartment syndrome?



A

☐ Sensation of heat on the surface of the cast

B

☐ Paresthesias of the extremity

C

☐ Pruritus of the extremity

D

☐ Musty odor noted from cast materials

QUESTION 3:

A nurse is caring for a client who is in skeletal traction following a femur fracture. The nurse finds the client has slid down toward the foot of the bed and the traction weight is resting on the floor. Which of the following actions should the nurse take?



- A ☐ Remove the weight temporarily to reposition the client to the correct alignment in bed.
- B ☐ Have the client use a trapeze to pull himself up while ensuring the weight hangs freely.
- C ☐ Lift the rope off the pulley while the client rocks back and forth to reposition.
- D ☐ Lift the weight manually while another staff member moves the client up in bed.

QUESTION 4:

A nurse is caring for a client who has a pelvic fracture. The client reports sudden shortness of breath, stabbing chest pain, and feelings of doom. The nurse should identify that the client is experiencing which of the following complications?

A
B
C
D

- ☐ Pneumonia
- ☐ Pulmonary embolus
- ☐ Tension pneumothorax
- ☐ Tuberculosis