

# Musculoskeletal Disorders

## GETTING BASELINE INFO

- Focused review of body systems
- Pain
- ADLs issues
- Diet and lifestyle
- **Musculoskeletal specific questions**
  - Posture
  - Gait
  - Strength
- Others

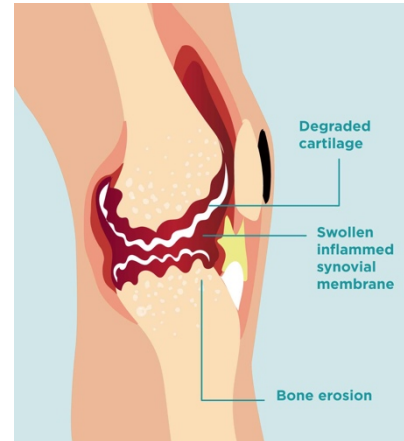
## OSTEOPOROSIS

- Most prevalent bone disease in the world
- Types:
  - Type 1 – due to normal aging
  - Type 2 – due to disease or drugs that affect bone metabolism
    - Diseases: **Celiac disease, hypogonadism**
    - Drugs: **anticonvulsants, antiestrogens, androgen inhibitors, proton pump inhibitors**
    - Men are more likely due to use of **corticosteroids** (excess of 5mg of prednisone daily for more than 3 months) and excessive **alcohol intake**

## Diagnosis and Treatment

- Diagnosis is done by **dual-energy x-ray absorptiometry (DEXA)**
  - Mostly used for **spine and hip**
  - Can also predict future bone issues
- Patient education
  - Diet: high vit D
    - Seeds, cheese, salmon, beans, dark leafy greens, rhubarb, etc.
  - Meds: **Fosamax** and **Boniva** to help reduce bone loss and **NSAIDS** for pain
  - Sun exposure for vit D
  - Regular **weight bearing exercises**
  - Women who are **postmenopausal** and **meq older than 50** should reduce alcohol consumption
  - Stop smoking

## RHEUMATOID ARTHRITIS



- Autoimmune disorder that develops **over time**
  - Body recognize its own tissue as a antigen → destruction of tissue via **inflammatory process**
- Chronic inflammation in **joints** and surrounding tissues; can affect other organs
- Risk factors
  - Sex (being woman)
  - Age
  - Genes
  - Others
- Clinical manifestations
  - Joint pain, edema, heat, immobility, etc.
    - Pain is worse in the morning
  - Can have **contractures** and **soft tissue deformity** (spongy or boggy tissue)
  - Can cause **ulcers, neuropathy, dryness in mouth, fever, weight loss, fatigue, anemia, lymph node edema, etc.**
  - Rare but can case **Reynaud's phenomenon** (can treat with ACE-I and vasodilators)
- Complications
  - Increased risk of developing:
    - Osteoporosis
    - Rheumatoid nodules
    - Dry eyes and mouth (**Sjogren's syndrome**)
    - **Infections** (since your immune system is decreased due to chronic inflammation)
    - Abnormal body composition
    - **Lymphoma**

- **Carpel tunnel syndrome** (numbness and tingling in hand)
- **Heart issues**
- **Lung disease**

suppression and GI and skin ulcerations

- Very expensive
- Supplementary treatments are **NSAIDS, surgery, PT/OT, and pt support**

## Diagnosis and Treatment

- **Diagnostic labs**
  - **Erythrocytes-decrease**
  - **High erythrocytes sedimentation rate (ESR)** due to inflammatory activity
    - Hematocrit decrease (due to use of NSAIDS → GI bleed)
  - **Rheumatoid Factor positive titer > 1:80**
    - Determines the presence of abnormal antibodies seen in CT disorders
  - **Antinuclear Antibody test**
    - If positive = possibility of **RA, Raynaud's disease, and Sjogren's disease**
  - The American College of Rheumatology and the European League Against Rheumatism made a point system test
    - If higher than **6 = RA**

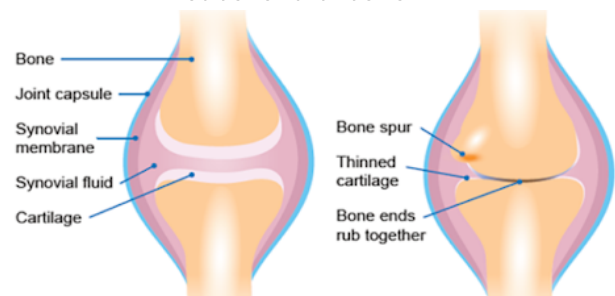
- **Treatment:**
  - **Main drugs are either biologic or non-biologic DMARD (disease-modifying-antirheumatic drugs)**
    - Decreases pain over a **period of weeks to months**; you need to encourage pts to adhere
    - **Mechanism:** targets TNF-alpha protein (which increases inflammation if excess in blood)
    - **Biological therapies** are usually given with a conventional DMARD like **methotrexate**
    - Examples: **ciclosporin, hydroxychloroquine, leflunomide, methotrexate, infliximab**
      - ✓ Hydroxychloroquine can cause **retinal degeneration**
      - ✓ **Methotrexate and cyclophosphamide** can cause bone marrow

## OSTEOARTHRITIS

- **Def:** non-inflammatory degenerative disorder of joints
- **Most common form of joint disease**
- Can be idiopathic or secondary (due to previous joint injury or inflammatory disease)
- **90% of ppl over age of 40 has this**
  - May be asymptomatic
- **Risk factors**
  - Age over 65 yrs
  - Working environment
  - Being a woman
  - Obesity
  - Ethnicity (being **Hispanic or African American**)

## Assessments

- Do not need any blood test or joint fluid test since it's not an autoimmune disease
- **X-ray is most effective**
  - Can see **narrowing of joints and dense subchondral bone**



## Treatment

- The ultimate goal is **decrease pain** and help pts do **ADLs** (need to improve joint mobility)
- **Exercising**
  - Lower extremity strength training
  - PT or OT
- **Weight loss to decrease excess load in joints**
- **Use of assistive devices**
  - **Wedge insoles**
  - **Knee braces**
  - **Walking aids**

- Others
- Wearing copper bracelet
- Meds:
  - Acetaminophen
  - NSAIDs (watch out for **GI bleeding**)
    - If pt has GI issues give **Cox-2-enzyme blockers** (but this med has risk for CV s/s)
  - Glucosamine and chondroitin
  - Topical diclofenac sodium gel
  - **Viscosupplementation** –injecting solution that can substitute viscous properties of synovial fluid to prevent loss of cartilage and repair chondral defects
- Surgery
  - Most common are osteotomy and arthroplasty
    - **Osteotomy**: alters the distribution of weight within the joint
    - **Arthroplasty**: replacement of diseased joints
  - All surgical interventions will require PT within the first **24 hrs**
  - Different types

Surgery name	Description
Meniscectomy	Removing damaged joint fibrocartilage
Amputation	Removal of body part
Bone graft	Placement of bone tissue
Tendon transfer	Insertion of tendon
Fasciotomy	Relieves muscle constriction just like in compartment syndrome
Open reduction	Correction and alignment of bone fracture (open surgery)
Internal fixation	Stabilizing of the fracture with usage of tools; not open surgery

- Favorable conditions for surgery
  - Pt's age (young)
  - Underlying orthopedic condition
  - Physical health
  - Impact of disability on ADLs

## Nursing Interventions

- Pain management
  - Make sure to administer analgesics **30 mins prior ambulating pt**
  - Discussing alternative therapies
- Make sure that pt understand that he/she will need to perform certain exercises after surgery
- Optimal functional ability
  - Encourage weight loss
  - Exercising
  - Use of assistive devices
  - Others

## Surgery Management

- Preparation
  - Educational classes
  - Home preparation
    - Get proper equipment and meds
    - Teach pt how to inject SQ med
  - Advanced directives
  - Informed consent
    - You are only witnessing, not explaining; call HCP if pt has questions
  - Marking the site
  - Administering meds to prevent clots
  - **Start post-op care plan before surgery!**
- Post-operative
  - Make sure to do **neurovascular check**
    - Check circulation
    - Check strength on bilateral sides (for **comparison**)
    - Check sensation
    - Others
  - Check for the "6Ps" –pallor, pain, poikilothermia, pulselessness, paresthesia, paralysis
  - Do not feed pt until **pt had a BM**

## JOINT REPLACEMENT (ARTHROPLACY)

- When we do it?
  - Osteoarthritis
  - RA
  - Femoral neck fracture

- Failure of previous reconstructive surgeries
- Hailed prosthesis
- Others
- Most frequently replaced joints: **hips, knees, fingers**
  - Shoulder, elbows, wrist, and ankles are not done much
- There are specific **repositioning techniques** for post-op pts to get out of bed; make sure to educate pt and ask them to “teach back”

## HIP REPLACEMENT CARE AND TREATMENT



- Pt education and info
  - Always keep knee apart (abduction)
    - Use **abduction pillow** between legs when in bed
  - Never cross legs
  - Avoid bending forward
    - Encourage use of shoe horn
  - Use a **high seated chair** and a **raised toilet seat**
  - Do not flex hip to put clothing
  - **Do not raise the bed for more than 90 degrees**
  - Resuming activities
    - Can start to climb stair by **3-6 weeks**
    - Can have sexual intercourse by **3-6 months**
    - Can flex hips and cross legs after **4 months**
- Pain management
  - Try and avoid giving IV pain meds since IV pole can disrupt ambulation
- Rehab and PT
  - 20% of pts will undergo revision
- Wound care
- Others

## Complications

- Dislocation
  - s/s:
    - Increased pain (esp. **groin pain in affected hip**)
    - Shortening of affected extremity
    - Abnormal rotation of affected limb
    - Immobility
    - Report of “**popping**” sense in hip
  - Interventions
    - Position pt as ordered
    - Use **abductor pillows or splints**
    - Always turn to the **unaffected side** and use pillow between legs when moving pts
    - Avoid any flexion of hip
    - Do not raise bed for more than 90 degrees
    - Assess for **discoloration of limb** (emergency!)
- Wound drainage
  - You should expect 200-500mL of drainage in the first 24 hours; but by 48 hrs, it should be **less than 30mL**
  - You will use **JP drain** for total knee replacement
  - Interventions
    - If there’s any abnormal drainage (smelly, color, etc.), notify HCP immediately and **mark the drainage site**
    - Frequently check amount, color, smell, etc.
    - Monitor pt for **hypovolemic shock and bleeding**; if this happens, may need to give **blood transfusion or administer fluids**
    - Monitor **hemoglobin and hematocrit**
- DVT
  - S/s:
    - Pain
    - Edema
    - Warmth
  - Treatment

- Sequential compression device; make sure that there's no **ulcers/skin issues**
- Skin care
- Anticoagulants: **coumadin/warfarin (last resort), Xarelto, arixtra, lovenox, Eliquis**
  - ✓ Put pt on bleeding precaution

- PE
  - S/s
    - **Pt will deteriorate rapidly**
    - Acute onset on dyspnea
    - Tachycardia
    - Confusion
    - **Pleuritic chest pain**
  - Treatment: give anticoagulants and use SCD
- Infection
  - Proper skin cleaning
  - Dressing changes as ordered
  - Education on proper dressing changes for pts to perform at home
  - Others

#### Post-Operative Care

- Use **compression bandage**
- **Ice pack**
- **Neurovascular check**
- **Wound suction drain** to help remove fluid accumulating in joint
- Proper discharge education
  - May discharge home the same day of surgery
- Anticoagulation med
- Others

#### FRACTURES

- Types:
  - Open
  - Closed
- Care depends on type

#### Open Reduction

- Skin is broken and higher risk of infection
  - Osteomyelitis

- Tetanus gangrene

- May need to give vaccination to prevent infection
- Wound vacuum treatment
- v/s monitoring to check for infection
- Check for **fat emboli** (very common in **femur fractures**)

#### Closed Reduction

- No skin breakthrough
- Make sure to **maintain alignment**
- Assess for **hemorrhage and edema**
  - Can have initial edema, but shouldn't persist **after 20 mins**
- **Ice and elevation**
- Neurovascular check
- Prep for surgery if needed

#### Casts

Fiberglass	Plaster
<ul style="list-style-type: none"> <li>- Provides full rigidity after 30 mins</li> <li>- Used for <b>simple fractures</b></li> </ul> 	<ul style="list-style-type: none"> <li>- Cheaper than fiberglass and has a better mold</li> <li>- Should be used with caution for geriatric pts due to temp sensitive skin</li> </ul> 
Splint	Braces
<ul style="list-style-type: none"> <li>- Most common</li> <li>- Very practical</li> <li>- Allow natural edema and inflammatory responses</li> <li>- Easy to remove and put back</li> <li>- Used for <b>simple and stable fractures</b></li> </ul> 	<ul style="list-style-type: none"> <li>- Prevents <b>additional injury</b></li> <li>- Customizable</li> <li>- For <b>long-term</b> use mostly</li> </ul> 

#### Nursing Interventions

- Assess skin and neurovascular status
- Give **tetanus booster** to prevent any infections and neurovascular dysfunction
- Treat any lacerations and abrasions **before applying splints or casts**

- Assess at **least every hour** for first 24 hrs, then every 1-4 hrs

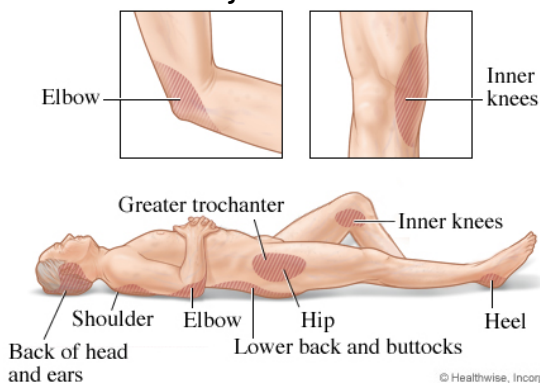
→ Cast is replaced and help in place by an **elastic compression dressing or tape**

#### Complications:

- **Compartment syndrome**
  - Most serious consequence of casting and splinting
  - Caused by **increased pressure within a confined space** → **compromises BF**
  - Can diagnose based on **6Ps**
    - **Early signs:** pain that seems out of proportion to underlying injury; tightness in cast or splint
    - **Late signs:** paralysis, pulselessness, and paralysis
  - Interventions:
    - **Notify HCP immediately**
      - ✓ Delay can cause amputation and other serious outcomes
    - Remove cast or splint right away
    - Elevate leg no more than heart level
    - May need to prep for emergency **fasciotomy**
    - Check neurovascular status frequently after emergent management and report

- **Pressure ulcers**

- **Major sites**



- **S/s:** pain in "hot spots" and tightness under cast
- Can lead to **necrosis**
- Treatment
  - Cutting an opening
  - Dressing

- **Disuse syndrome**
  - Muscle atrophy
  - Treatment:
    - Encourage contracting and relaxing muscles while in bed
    - **Isometric exercises**

#### AMPUTATION

- **Risk factors:**
  - Vascular disease
  - Diabetes (common)
  - Gas gangrene
  - Chronic osteomyelitis
  - Others
- Goal is to relieve symptoms, improve function, and save lives
- Will amputate at the most **distal point possible**
- Determination based on
  - **Circulation**
  - **Functional usefulness**

#### Nursing Interventions

- Neurovascular check (esp. on affected extremity)
- Monitor for **infections**
- Monitor for **hemorrhaging**
- Help with coping and body image
- **Soft compression dressing** before surgery, then may switch to rigid cast after
- Do not leave **residual limb on pillow** due to risk of **flexion contracture of hip**
- Prep for future prosthetics by putting **limb sock** (facilitates shaping)
- PT
- Others

#### Complications

- Risk of **immediate post-op bleeding**
  - Can show slow
  - Keep a **tourniquet** at the pt's bedside in case of massive hemorrhage
  - If bleeding is small, apply pressure
  - **Call HCP immediately**
- Infection