ISSUES FROM AN ORTHOPEDIC PERSPECTIVE

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Objectives:

• Understand the common orthopedic problems of the geriatric population.

• Describe the standard treatment algorithms for the orthopedic problems of the elderly.

• Discuss the impact of aging on the musculoskeletal system

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Issues from an Orthopedic Perspective

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Geriatric Orthopedics

- Over 20% of population will be over 65 by 2020
- Increasing age leads to increasing vulnerability in the musculoskeletal system
- Approximately 80% of those over age 65 will have a musculoskeletal complaint

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Geriatric Orthopedics

- Osteoarthritis of the hip and knee will be reported by 40-60% of older persons
- The need for joint replacement is expected to increase 80% by 2030
- 1993 to 1995, joint replacement surgery was performed at an annual rate of 648,000
- Approx 70% over age 65
Geriatric Orthopedics

- Age related changes in bone and soft tissue account for increased rate of disabling fractures
- Osteoporosis affects approx 20 million persons
- 1.3 million fractures per year are attributable to the condition

Geriatric Orthopedics

- Muscle strength decreases by 1/3 after age 60
- Leads to difficulty maintaining balance
- Predisposes to falls

Geriatric Orthopedics

- By the age of 90
  - 1/3 of women
  - 1/6 of men will experience a hip fracture
  - 2/3 will not achieve pre-morbid function
  - 1/3 will die in 1st year following hip fracture
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Geriatric Orthopedics

- Cost of treating all of the osteoporotic fractures is high
- In 1995 estimated at 13.8 billion
- Expected to double in the next 50 years

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Degenerative Joint Disease

- The most common articular disease of those 65 years of age and older
- Leads to decreased function and loss of independence

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Degenerative Joint Disease

- Clinically diagnosed by pain that worsens with activity, lessened with rest
- May be associated with weakness of lower extremity musculature
- Overall decrease in flexibility
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Degenerative Joint Disease

- Pharmacologic treatment
  - Begins with acetaminophen (3000 to 4000mg/day)
  - Traditional NSAIDS are second line
  - Can be associated with GI irritation/bleed
  - Decreased renal function, sodium retention
  - 20 to 30% of all hospitalizations and deaths due to peptic ulcer dz are attributable to NSAID therapy

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Degenerative Joint Disease

- Viscosupplementation
  - Injectable Hyaluronic Acid
    - Synvisc, Supartz, Orthovisc, Euflexxa
  - Provide sustained relief and improved function
  - As effective with fewer side effect v. NSAIDs
  - MOA not clear

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Degenerative Joint Disease

- Exercise
  - Improves symptoms of OA
  - Increases bone density (secondary effect of preventing hip fractures)
  - Increases muscle strength (provides joint stability)
  - Increases muscle mass
  - Improves neural coordination and strength
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Degenerative Joint Disease

- Surgical Treatment
  - Joint replacement
  - Significantly improves patient’s health and well-being
  - Post-operative outcome dependent on pre-operative function, not age
  - Improves physical function, positively influencing comorbidities

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Hip Arthritis

- Total hip replacement
  - Advanced age is not a contra-indication for THA
  - However, there is a higher complication rate in patients over 80
  - Improves pain and physical activity
  - Increases independence and function

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Total Hip Arthroplasty

- Literature supports cementless acetabular components and both cemented and cementless femoral components
- Revision surgery, when necessary improves function
- Higher complication rate (death 13%, dislocation 20%)
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Total Hip Arthroplasty
- Future advances
- Optimal techniques for fixation
- Revision techniques
- Prevention of periprosthetic fracture
- Materials and wear prevention
- Prevention of infection

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Knee Arthritis
- Surgical options include arthroscopy and arthroplasty

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Arthroscopy
- Shown to improve function, decrease pain, and decrease need for joint replacement
- Much better results in those with true “mechanical” complaints
- Malalignment is a poor prognostic factor
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**Total Knee Arthroplasty**

- End stage osteoarthritis
- Reliably provides pain relief and improved function
- Predictable, pain relieving, quality of life restoring operation
- Age does not have a negative impact on outcome

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**Total Knee Arthroplasty**

- Patients over 80 demonstrated improved pain, emotional reaction, sleep, and physical mobility
- Over 85: improved pain
- Successful TKA has been demonstrated in patients over 90

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**Total Knee Arthroplasty**

- The future
  - Materials and wear
  - Biomechanics
  - Infection prevention
Degenerative Disease of the Shoulder

- More common than you think when arthritis and rotator cuff disease are combined
- 34% of those 65 and older have shoulder pain
- Rotator cuff disease is the major cause of disability

Degenerative Disease of the Shoulder

- Rotator cuff tears
  - Large tears are more common in the elderly
  - Treatment depends on comorbidities and level of function
  - Physical Therapy and pain management is acceptable for those with preserved function and limited nighttime pain
  - Nonsurgical options are less acceptable for those with significant nighttime pain

Rotator Cuff Tears

- Rotator cuff repair
  - Age is not a determinant in functional outcome
  - The larger the tear, the poorer the result
  - Rehabilitation is important
  - 12 month full recovery
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Shoulder Arthritis
- Luckily, we don’t walk on our hands
- Initially treated with acetaminophen and NSAIDs
- Physical Therapy can help to maintain function

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Shoulder Arthritis
- Surgical treatment
  - Hemiarthroplasty
  - Total Shoulder Arthroplasty
  - Reverse Total Shoulder Arthroplasty

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Shoulder Arthritis
- Total Shoulder Arthroplasty
  - Resurfacing of humeral head and glenoid
  - Predictable, Pain relieving, Quality of life restoring operation
  - Preoperative ROM main determinant of outcome
  - Component position is critical
  - Relies on an intact rotator cuff
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Shoulder Arthritis
- Hemiarthroplasty
  - Resurfaces humeral head only
  - Less predictable outcome v. TSA
  - Limited applications
  - May be used with rotator cuff deficiency

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Shoulder Arthritis
- Reverse shoulder arthroplasty
  - Glenohumeral arthritis in the face of a massive rotator cuff tear
  - Pseudo paresis of the affected extremity
  - Restores function and provides pain relief
  - Long term data not available

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Fractures of the Hip
- By 2025, predict 2.6 million hip fractures/year
- Lifetime risk of hip fracture is 11% for men and 23% for women
- Half of hip fractures occur in those over 80
- Up to 30% mortality rate in first year
Fractures of the Hip

Determinants of fracture
- Falls
- Decreased bone density
- Low body weight
- Decreased physical activity
- Increased tobacco use
- Poor socioeconomic status
- Visual impairment

90% of fractures are the result of falling
- Direct impact on the hip

Two main types of fracture
- Femoral neck fracture
- Inter-trochanteric fracture

Both necessitate operative repair for optimal outcome
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Fractures of the Hip

- Timing of surgery is critical
- The sooner the better
- But, medical stabilization is paramount
- Operative delay of a medically stabilized patient of more than 2 days is associated with a significantly higher mortality within 1 year

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Fractures of the Hip

- Femoral neck fracture
  - Displaced fracture
    - Hemiarthroplasty
  - Nondisplaced fracture
    - Closed reduction, percutaneous pinning

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Femoral Neck Fractures

- Hemiarthroplasty
  - Replace the ball
  - Immediate post-op weight bearing
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Femoral Neck Fractures

- Percutaneous Pinning
  - Strictly for non-displaced fractures
  - "my hip has been hurting for a couple of days after I fell and I've been walking on it"
  - Needs stabilization
  - In more osteoporotic bone, hemiarthroplasty

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Intertrochanteric Hip Fractures

- Fixed with intramedullary nail
  - Short nail for standard fracture patterns without sub-troch extension
  - Long nail for complex fracture patterns with sub-troch extension
  - Immediate post-op weight bearing

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Hip Fractures

- Keys
  - Efficient medical stabilization
  - Timely surgery
  - Early mobilization
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**Hip Fractures**

- Long term survival
  - Determined by host factors, not injury severity
  - 0 comorbidities, mortality is 0
  - 1 or 2, mortality is 14%
  - Three or more, mortality reaches 30%

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**Hip Fractures**

- Long term survival
  - Gradual increase in mortality in first 5 years
  - Age at time of fracture is a predictor of mortality
  - Dramatic decline in function at 2 years
  - Only 50% achieve pre-morbid level of function
  - Recovery is directly influenced by increasing age, comorbidities and complications

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**Hip Fractures**

- Long term survival
  - The surgical techniques work well
  - Need to reduce peri-operative delirium, improve continuity of care (hospital/rehab), optimally manage co-morbidities, enhance optimal nutrition
Wrist Fractures

- In functional, active patients, best treated operatively with ORIF
- Lower demand patients do well with conservative tx

Compression Fracture

- Must be differentiated from Burst fracture
- Mechanism of injury
  - CT to eval of bony retropulsion
  - Neurologic symptoms
- Treated conservatively with bracing, PT, early ambulation
- If this fails, kyphoplasty may be indicated
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Proximal humerus fractures

- 80% can be treated non-operatively with sling and early ROM
- 20% require operative intervention
  - ORIF
  - Hemiarthroplasty

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Conclusion

- Orthopedics in the geriatric population is a very rewarding experience, most of the time
- Inherent issues regarding the geriatric population can create a variety of challenges
- We are at the mercy of time and the resultant effects on the musculoskeletal system