


## Knee Problems in Baby Boomer and Aging Population

Kevin Khajavi, MD  
 Director, Department Orthopedic Surgery  
 St. Jude Heritage Medical Group


## Background

- Director Department of Orthopedics
- Specialize in Knee and Shoulder surgery
  - Knee replacements
  - Arthroscopic knee and shoulder surgery


## Background




Duke University



Baylor College of Medicine



Stanford University




NYU-Hosp Joint Diseases

## Objectives

- Anatomy overview
- Discuss common knee problem
  - Meniscus tears
    - Arthroscopic surgery
  - Osteoarthritis
    - Total knee replacement
    - Advances in joint replacement


## Aging Population

- Data from Administration on Aging
  - Currently, 40 million people aged 65 and older
  - By 2030, number grows to 72 million
- As baby boomers age, number of people with knee pathology increases
  - People are maintaining active lifestyle later in life




## Statistics

- Knee replacements
  - Currently, around 700,000 knee replacements performed each year in U.S.
  - By 2030, that number is expected to increase to roughly 3.5 million!




### Common Knee Problems

- Two most common knee problems I see in my office
  - Meniscus Tears
  - Arthritis




- Varying from mild to severe


### Knee Anatomy






### Knee Anatomy



- Knee comprised of four main bones
  - 1. Femur (thigh bone)
  - 2. Tibia (shin bone)
  - 3. Patella (knee cap)
  - 4. (Fibula)




### Knee Anatomy

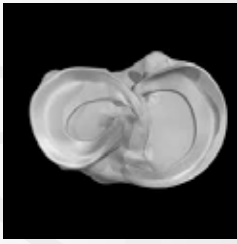
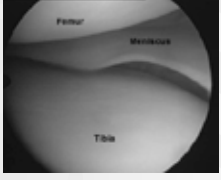
- Articular cartilage
  - Covers the surface of the bone
  - Allows joint to glide smoothly without causing damage to the bone
  - Nourished/lubricated by synovial fluid
  - Almost frictionless surface

### Meniscus



- Rubbery C-shaped disc
- Meniscus is a shock absorber for cartilage
- Most common injury seen

### Meniscus Tears

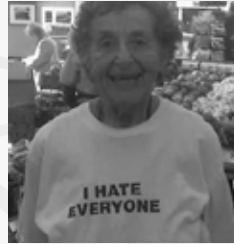
-

## Meniscus Tears



- Two main types of tears
  1. Traumatic  
(less common)

## Meniscus Tears



- Two main types of tears
  2. Degenerative:  
Tissue wears thin over time and is more prone to tear. Often associated with arthritis

## Meniscus tears

- Symptoms
  - Pain (can range from mild to severe)
  - Sense of locking or catching (flap)
  - Difficulty squatting
  - Decrease range of motion
  - +/- swelling

## Meniscus Tears

- Diagnosis
  - History
    - Twisting injury, squatting, no injury
  - Physical Examination
    - ROM
      - Usually tender to touch over the meniscus
  - Xrays
  - MRI



## Meniscus tears

- Treatment
  - Depends on:
    - Level of pain (most important)
    - Activity level



## Meniscus Tears

- Non-operative treatment (mild tears with minimal symptoms)
  - Rest
  - Ice
  - Anti-inflammatories
  - Activity modification




### Meniscus Tears

- Operative treatment
  - Pain which interferes with activity
    - Walking
    - Sports (Golf/Tennis)
    - Stairs




### Meniscus Tear

- Surgery
  - Two small incisions (1/4 inch)
    - Camera
    - Instruments
  - Outpatient surgery



### Meniscus Tears



- Arthroscopy
  - Remove torn piece of meniscus
    - Will relieve pain
    - Decrease mechanical symptoms (locking)
    - Allow return to activities (sports)

### Meniscus Tear

- Recovery
  - Can put weight on it right away
  - Start physical therapy in 1 week
  - Pain usually very mild
  - Full recovery 6-8 weeks

### Meniscus Tears


- Results
  - Much better in patients with isolated meniscus tear
  - Those with arthritis may continue to have some degree of discomfort
    - Cannot treat arthritis with an arthroscopic procedure



# ARTHRITIS

## Arthritis



- What is arthritis?
  - Arthro-
    - Joint
  - Itis-
    - inflammation




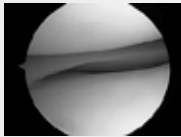
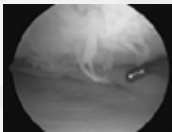

"I already diagnosed myself on the Internet. I'm only here for a second opinion."

## Arthritis

- Osteoarthritis
  - Most common type of arthritis
    - Often called 'wear and tear' arthritis
  - Progressive loss of the smooth cartilage
  - As cartilage wears away, bare bone starts to become exposed


## Knee Arthritis

MOORE, M. "Change in Whites"

## Knee Arthritis

- Causes
  - Probably multi-factorial
    - Aging
    - Obesity
    - Gender
      - Women age 55 and older more likely to develop knee arthritis than men
    - Trauma
    - Genetics
    - Meniscus tears




## Knee Arthritis

- Symptoms
  - Pain
    - Usually progressive
    - May interfere with activities/sleep
  - Swelling
  - Stiffness
  - Deformity



## Knee Arthritis

- Diagnosis
  1. History
  2. Physical Examination
    - Swelling
    - Decrease ROM (flexion/extension)
    - Contracture
    - Deformity
    - Tenderness




## Knee Arthritis

Xrays





## Knee Arthritis

- Treatment (non-operative)
  - Lifestyle Modification
    - High impact to low impact
  - Weight Loss
  - Tylenol/NSAIDs
  - Physical Therapy
    - Strengthen muscles around the knee
  - Heat or Ice
  - Glucosamine/chondroitin



## Knee Arthritis

- Treatment (non-operative) cont.
  - Cortisone Injection
  - Hyaluronic Acid Injection
    - Synvisc
    - Euflexxa
  - Un-loader brace
    - Shifts load away from affected side of knee

## Knee Arthritis


Knee replacement

Total Knee replacement    Partial Knee replacement

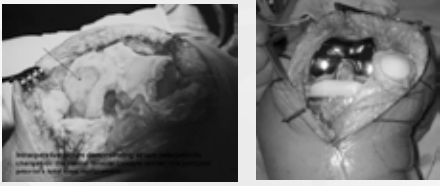


## Knee Replacement

- What is a knee replacement?
  - Really a resurfacing of the damaged cartilage -- 'cartilage replacement'



## Knee Replacement



## Knee Replacement



## Knee Replacement

- Indications
  - Failure of non-operative treatment
  - Xray evidence of moderate to severe arthritis
  - Difficulty with activities of daily living
    - Trouble walking, etc
  - Night pain
  - Elective procedure
    - Ultimately, patient (along with guidance from surgeon) chooses when to proceed

## Knee Replacement

- In the past, generally performed in patients between 60-75
  - Over last two decades, age range has been broadened to include younger patients (late 40's) as well as older patients (80's)
  - Must consider medical condition
  - Must consider weight

## Knee Replacement

- Three categories of patients
  - 1. Ideal
    - Medically stable
    - Normal weight
    - Muscles strong
  - 2. Can be optimized
    - Pre-habilitation
    - Weight loss
  - 3. Ineligible
    - BMI (usually greater than 40)
    - Diabetes uncontrolled
      - HgA1C > 7.0
    - Medically unstable
      - Cardiac, etc



## Knee Replacement

- Day of Surgery
  - Check in to pre-op area
  - Usually spinal anesthetic in addition to general anesthesia
  - IV antibiotics
  - Surgical Procedure
  - Recovery room
  - Hospital room



## Knee Replacement

- Post-op care
  - Usually in hospital for 2 days
  - Physical therapy
    - Encourage walking day of surgery
    - Strengthen muscles
    - Increase ROM
  - Home physical therapy



## Knee Replacement

- Results
  - Generally 90% success



## Knee Replacement

- Frequent questions:
  - 1. Will I set off metal detectors at airport?



## Knee Replacement

- 2. Can I return to sports?
  - Golf
  - Swimming
  - Tennis
    - doubles
  - Running
    - Not recommended



## Knee Replacement

- Frequently asked questions (cont.)
  - 3. How long will it last?
    - Generally 1% failure rate per year
      - 90% survival at 10 years
      - 80% survival at 20 years



## Knee Replacement

### Recent Innovations

1. Pain control
    - multi-modal
    - regional anesthesia
      - Spinal or nerve block
    - pre-operative cocktail
      - Celebrex, Neurontin, IV Tylenol, Oxycontin
    - post-operative
      - Pain pump
- Leads to a much shorter hospital stay



## Knee Replacement

2. Materials used in the prosthesis
  - Oxinium (oxidized zirconium)
    - combination of hardness, smoothness, scratch resistance
    - provides tremendous wear characteristics
    - Safe for use in patients with nickel allergy





### Knee Replacement

- 3. Polyethylene
  - Plastic
  - Tremendous improvement
  - 1/10 the wear of plastic used in the past



### Knee Replacement

#### 4. Tranexamic Acid

- Anti-fibrinolytic drug
  - Decreases blood loss
  - Injected into knee and/or give IV
  - Blocks the breakdown of blood clots
- Lead to tremendous decrease in need for blood transfusion after total joint replacement



### Knee Replacement

- 5. Minimally invasive
  - Shorter incision
  - Less muscle dissection
  - Rarely use staples
  - Dissolvable stitches
    - Skin glue (Dermabond)



### Knee Replacement

- 6. Custom knee replacement
  - MRI taken pre-op
  - Cutting blocks made to match your anatomy
  - Engineers will build 'jigs' that fit exactly to your knee
  - Cost



### Knee Replacement

- Future



### Thank You

