



**Ortho**Virginia

# **Knee Replacements: Partials, Totals, & New Technology**

Ryan N. Robertson, MD



# OBJECTIVES

- Review the background of arthritis and joint replacement
- Review treatment alternatives
- Introduce partial and total knee replacement concepts
- Introduce new technologies
- Answer all questions

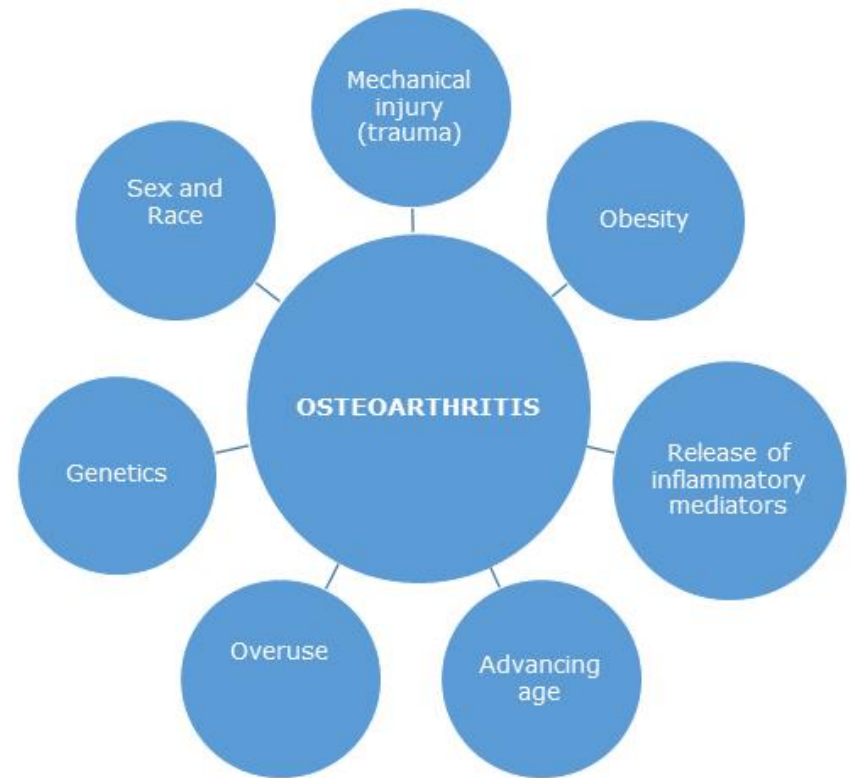
# PREVALENCE

- As many as 91 million Americans affected by arthritis (all types)
- 31 million affected by osteoarthritis (OA)
- Lifetime risk of developing symptomatic knee OA is 45%

# OSTEOARTHRITIS

*Multifactorial disease of joints*

- Abnormal anatomy
- Abnormal biology
- Overuse
- Genetics



# NORMAL FUNCTIONING JOINT



- Healthy cartilage
- Well lubricated
- Full motion
- Pain free

# OSTEOARTHRITIC JOINT

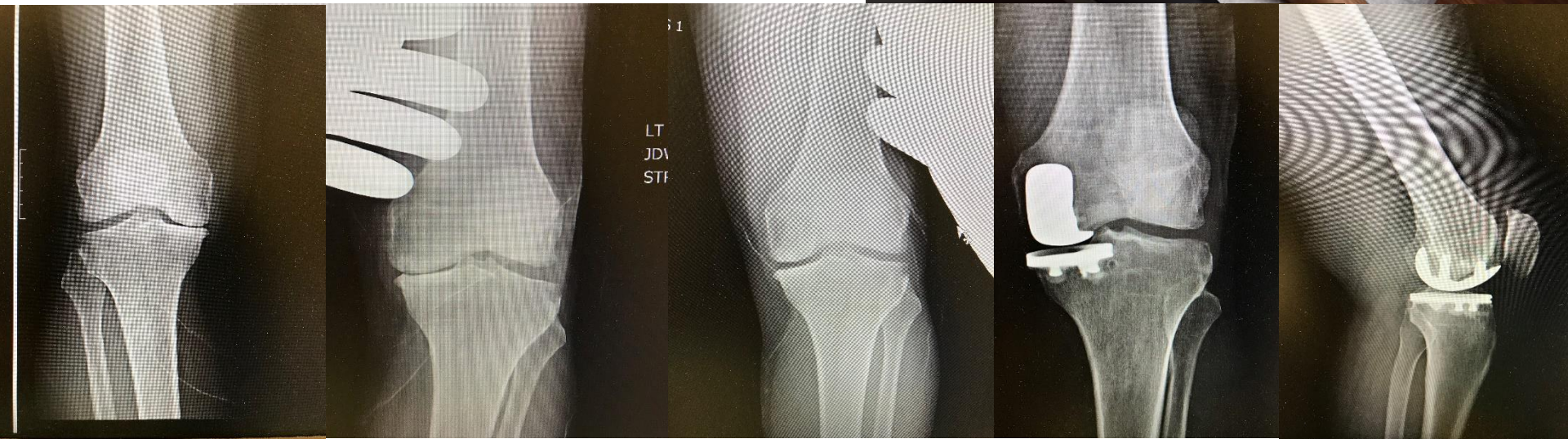


- Damage to cartilage
- “Bone on bone”
- Loss of lubricating mechanism
- Loss of motion
- Pain



# DIAGNOSIS

- Medical History
- Physical Exam
- X-rays



# NORMAL KNEE

- Well maintained joint space
- Smooth joint surfaces
- No bone spurs





# ARTHRITIC KNEE

- Loss of joint space (bone on bone)
- Flattening of surface
- Bone spurs
- Leg deformity



# TREATMENT OF OA

- Patient Education
- Activity Modification
- Weight Reduction
- Medication
- Cane or Ambulatory Aid
- Surgery

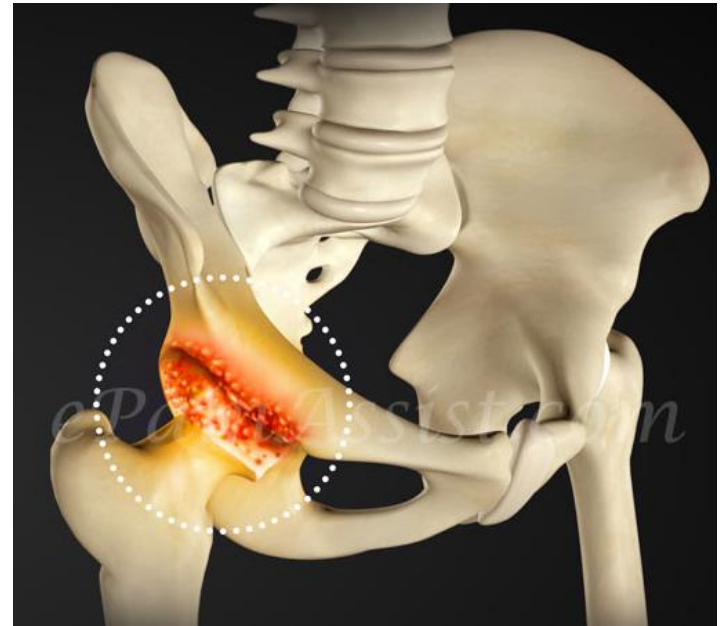
# ACTIVITY MODIFICATION

- Lower impact exercise
- Decrease symptoms
- Keeps you active



# WEIGHT REDUCTION

- Knee experiences forces up to 4-6x body weight
- Less load on joints
- May “wear out” slower
- Safer surgery, less complications



# MEDICATION: ANTI-INFLAMMATORIES

- Many varieties
- Most effective class of medication
- Some topical forms
- Discuss with your physician



# MEDICATION: INJECTIONS

- Steroid shot
  - Anti-inflammatory
  - No more than 3-4 per year
  - Law of diminishing returns
- Lubricating injections
  - Single shot or series
  - Variable pain relief
  - Small chance of reaction
- Stem cell/PRP
  - Variable pain relief
  - Not shown to regrow cartilage
  - Out of pocket expense





# MEDICATION: SUPPLEMENTS

- Glucosamine/Chondroitin Sulfate
  - Does not grow new cartilage
  - May be anti-inflammatory
  - More effective in mild arthritis
  - Few side effects
  - Not FDA approved



# SURGERY

- Good joint replacement candidates
  - Not satisfied with non-surgical treatment
  - Medically optimized
  - Understand the procedure, risks, benefits and recovery

# SURGERY



- Partial knee replacement
- Total knee replacement
- >1 million patients annually
- Goals of surgery
  - Relieve pain
  - Improve mobility
  - Return to more active/fulfilling lifestyle

# PREPARING FOR SURGERY

- Evaluation by internist/primary care physician
  - May need subspecialist clearance
- Pre-op education
- Family/Friend Support
- Therapy Plan



# WHAT IS A KNEE REPLACEMENT

- Surgical procedure that removes and replaces diseased joint surfaces with implants



# KNEE REPLACEMENT STEPS



- Expose the knee joint
- Reshape the bone ends
- Balance the ligaments and soft tissue
- Correct leg deformity
- Place final implants



# TOTAL VS PARTIAL KNEE REPLACEMENT

- Total knee replacement: replaces the entire knee
- Partial knee replacement (“uni”) replaces only the single diseased part of the knee



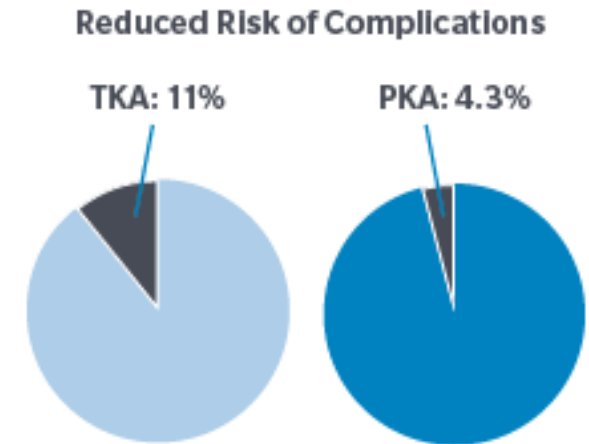
# BENEFITS OF PARTIAL

- Better range of motion
- More physiologic and functional with more natural motion than Total Knee Arthroplasty (TKA)
- Faster recovery and shorter hospital stay than TKA



# BENEFITS OF PARTIAL

- Fewer and less severe complications compared with TKA
- Registry data reports that TKAs are **2.6** times more likely to have risk of reoperation for infection
- Partial Knee patients were **59%** more likely to achieve excellent results than TKA patients, and **27%** more likely to be highly satisfied with their knee replacement than TKA patients (English Registry Data)



# WHO IS A CANDIDATE?

- Study of 200 knees found 47.6% of patients are PKR candidates
- Globally only 8% of Primary Knee Replacements are PKR
- Alternative to Cartilage Surgery / High Tibial Osteotomy
- Traditional versus Newer Indications
  - Older vs Younger
  - ACL Integrity
  - Isolated arthritis
  - Weight BMI <30



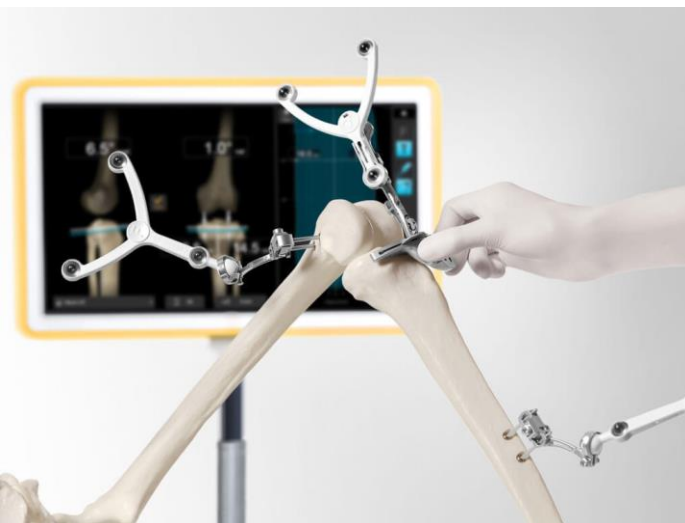
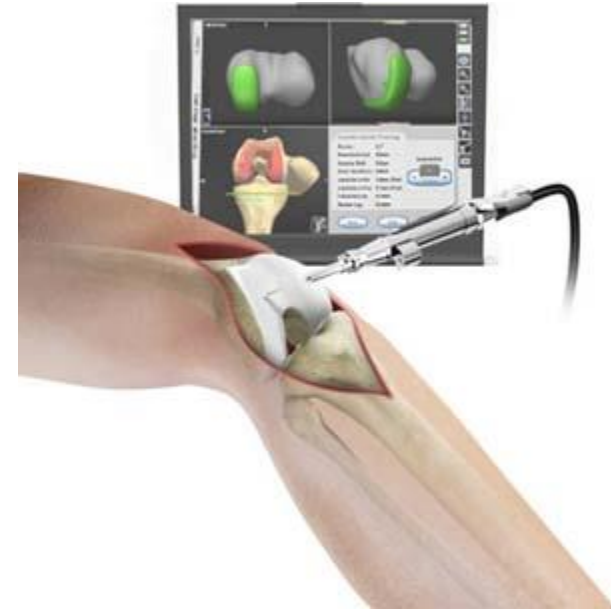
# New Technology

- Navigation
- Patient Specific Cutting Blocks
- Patient Specific Implants
- Robotics



# New Technology: Navigation

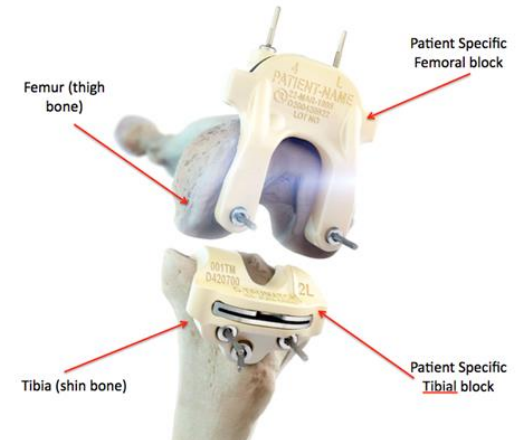
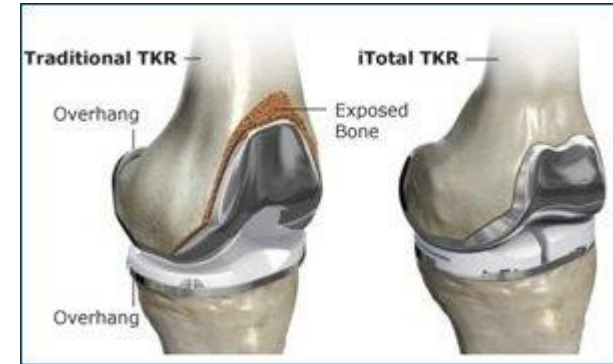
- Computer guidance and feedback
- Senses the position of the leg and give real time data on alignment and cuts





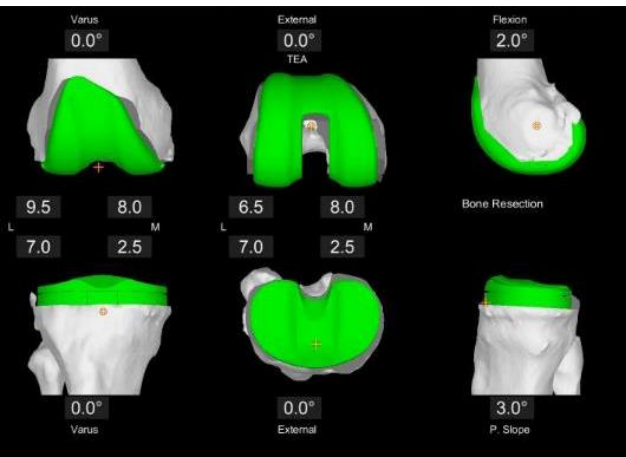
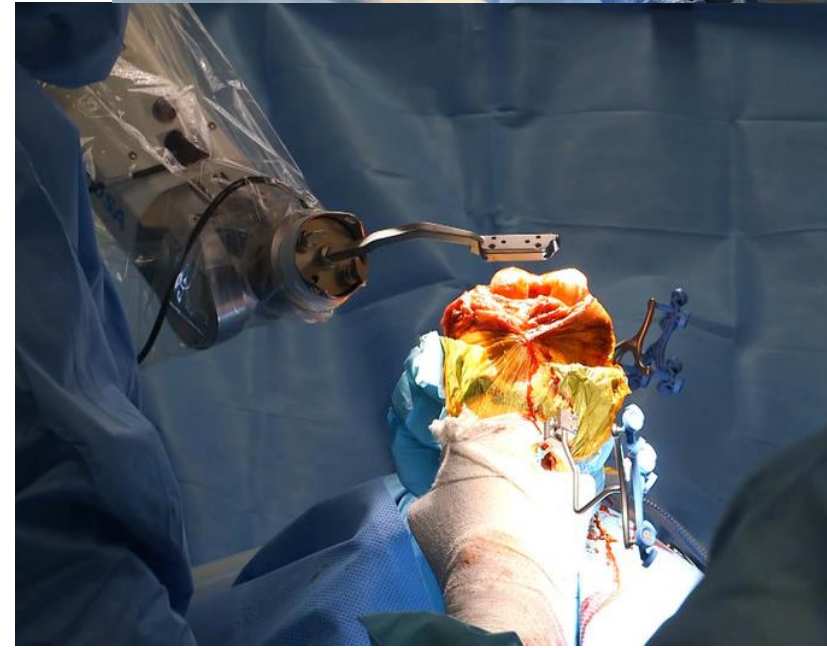
# New Technology: Patient Specific Blocks and Implants

- CT or MRI guided patient specific blocks or implants manufactured before surgery



# New Technology: Robotics

- Machine assisted surgery
- Uses navigation and advanced imaging to guide cuts and procedure



# WHAT TO EXPECT

- Out of bed on the day of surgery with therapy
- Immediate full weight bearing, no range of motion restrictions
- Progression of therapy as patient tolerates
- Home the same day or next day
- Home with walker
  - Transition to cane



# WHAT TO EXPECT

- Waterproof dressing – able to shower immediately
- Sutures typically underneath the skin – dissolve on their own
- *Comprehensive Rapid Recovery Program*
  - Spinal with twilight sedation
  - Precise surgery to minimize tissue trauma
  - Multi-modal pain program to decrease pain after surgery
  - Rapid return to exercise and activity

# How long will this last me?

- We expect these to last 20-25 years in the right patients
  - 98% Survivorship at 10 Years
  - 95% Survivorship at 15 Years
  - 90% Survivorship at 20 Years
- Most continue to function well
- Can wear out/loosen
- Revision can be done and good results can be achieved



# SUMMARY

- Very successful surgery
- Patients very happy with all methods you just need to decide along with your surgeon which is right for you



# THANK YOU



# QUESTIONS?

[ryanrobertsonmd.com](http://ryanrobertsonmd.com) for more information.

Follow on instagram  at [@ryanrobertsonmd](https://www.instagram.com/ryanrobertsonmd)