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# Knee Arthroplasty with the Robotic-Arm

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# Overview

- Lifestyle
- Failed treatment
- Pain
- Who is at risk?
- Does Age Matter?
- What is a joint replacement?
- What are my restrictions?

# History

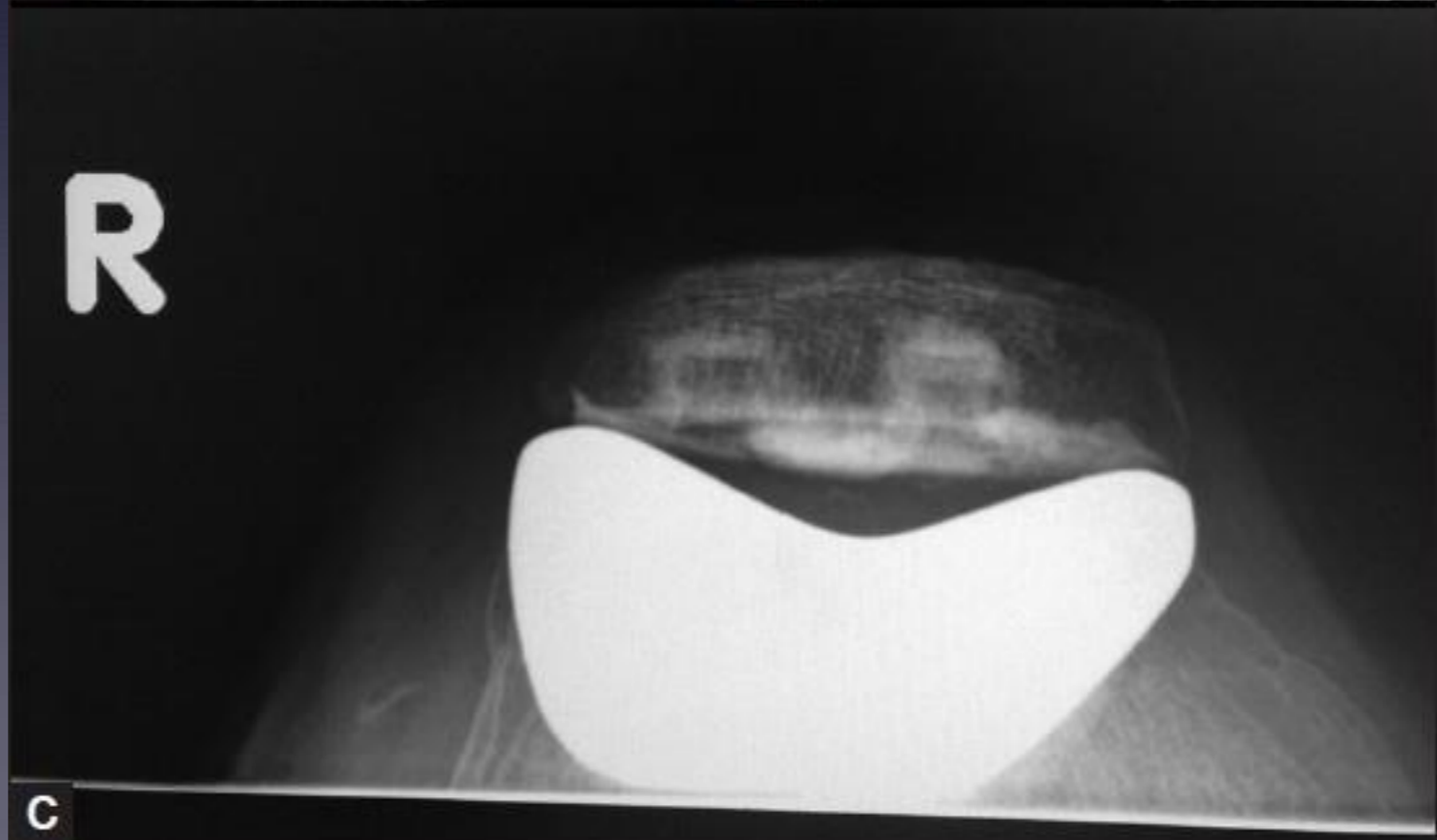
- How long has Total Knee Replacement been around?
  - 1860 but in earnest, 1950's and significant growth in the 1970's and 1980's
- When did Partial knee replacement become an option
  - Parallel to total knee from early 1950's
- Which was better?
  - Partial knee had more limited indications and still does today
  - Total Knee Replacement is final common pathway

# What is a Partial Knee Replacement?

- Resurfacing of one compartment in the Knee
- Usually Medially, can be Lateral or Patellofemoral
- What does it look like?







# Partial Knee Candidates?

- One compartment arthritis
- No morbid obesity
- No rheumatoid arthritis
- No deformities or contractures
- Painful knee
- Failed conservative measures: injections, NSAIDs, Physical therapy, arthroscopy



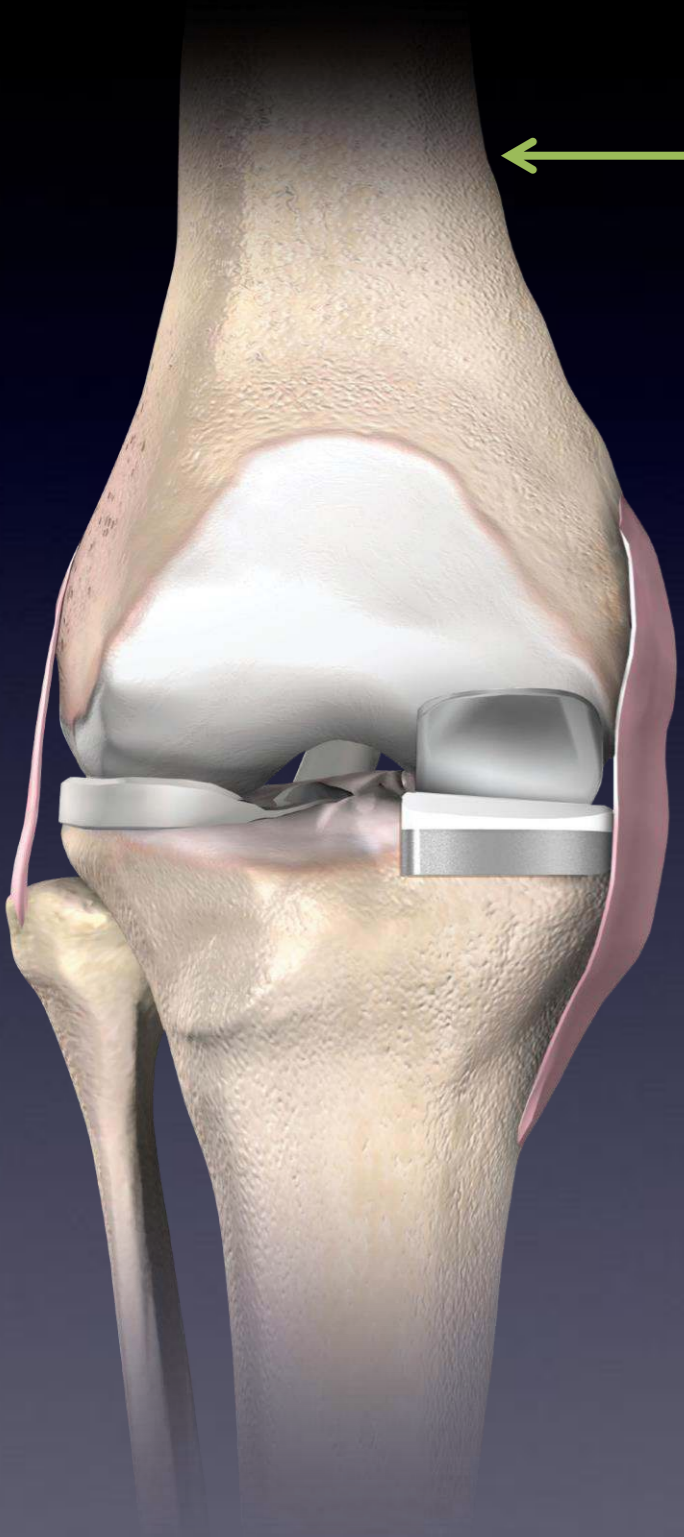
# Why Partial Knee?

- Faster Recovery
- Less Pain
- Less invasive
- Less Bleeding
- Feels more natural
- Stable


# Why Total Knee?

- More than one compartment with arthritis wear
- Last longer than partial
- Lower revision rate/failure rate
- Many underestimate candidates for partial knee severity of arthritis and wear

# Partial vs. Total Knee Replacement



Partial knee replacement is a surgical procedure that helps relieve arthritis in one or two of the three compartments of the knee. Only the damaged area of the knee joint is replaced, which may help to minimize trauma to healthy bone and tissue.

With total knee replacement, the entire knee joint is diseased or injured and is replaced. 



# How Long Has This Procedure Been Available?

- June 2006
- Approximately 83,000 knee and hip replacements have been performed around the world with robotic technology.



# Does the Robotic-Arm Actually Perform Surgery?

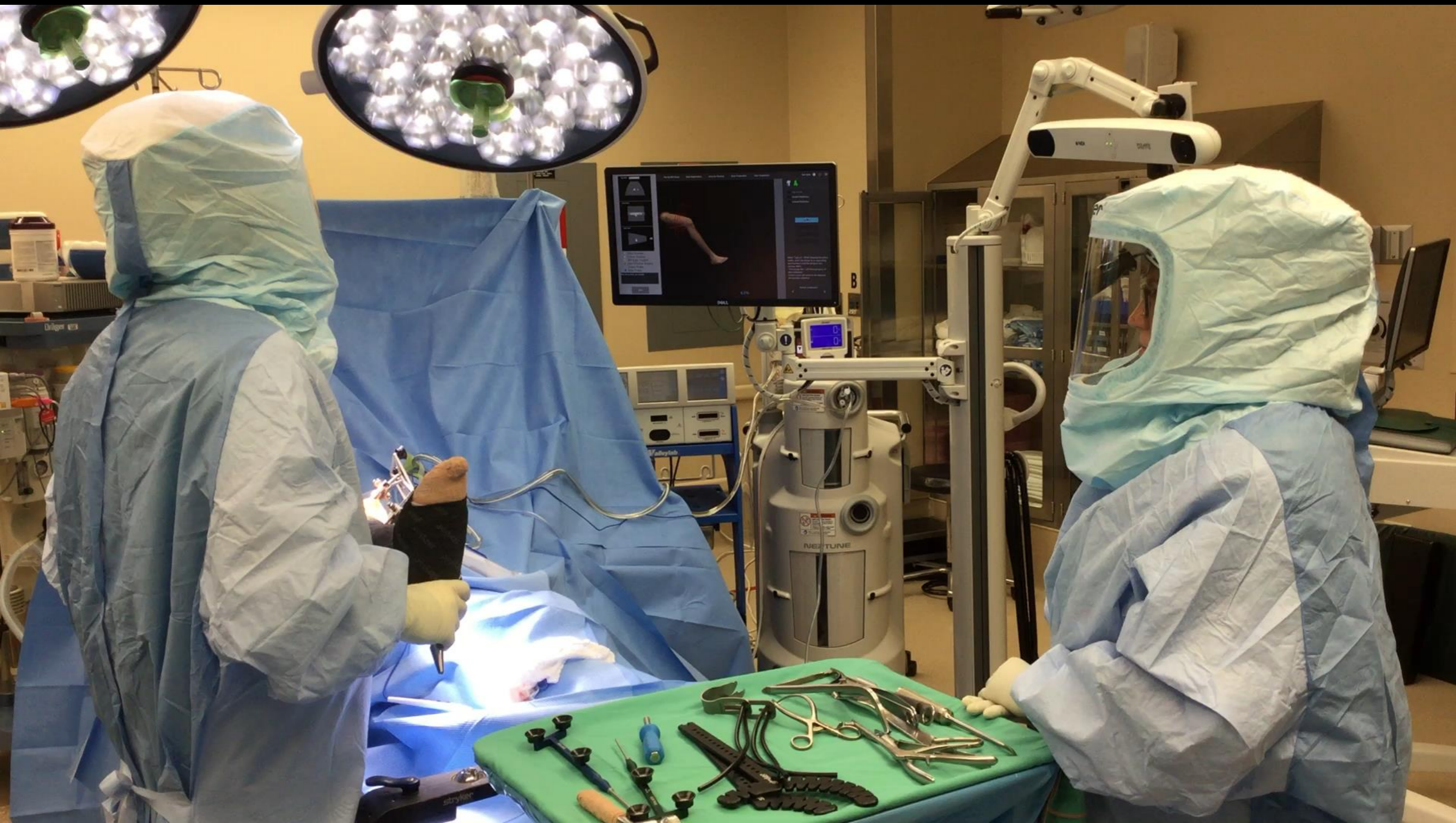
- The robotic-arm doesn't perform surgery, nor can it make decisions on its own or move without the **surgeon guiding it**.



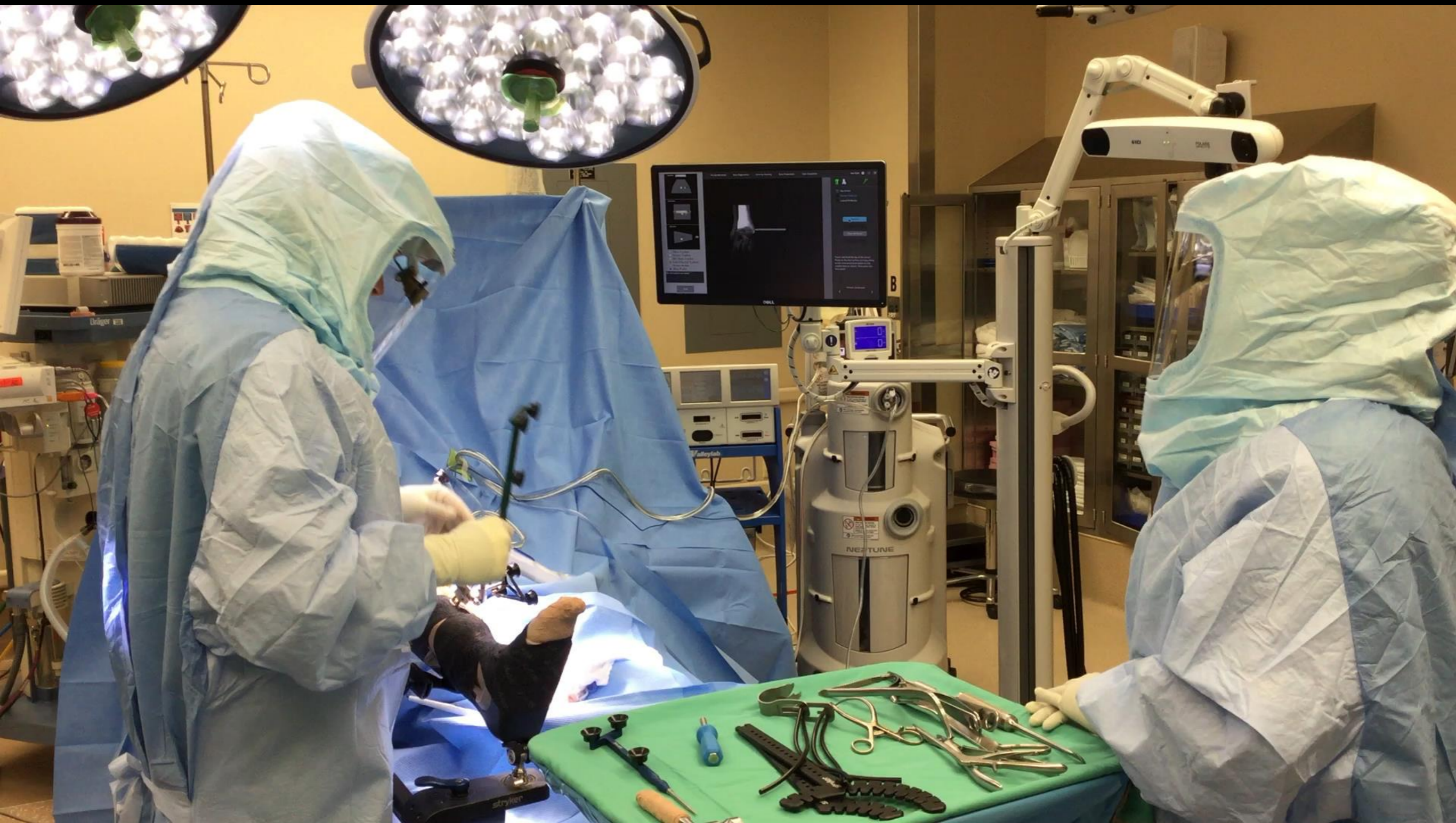
# Surgical Steps

- Make initial dissection
- Place reference points and threaded pins for camera arrays
- Capture hip center and ankle center
- Plot data points on femur and tibia
- Capture corrected knee position in extension and flexion
- Adjust component position virtually for perfectly balanced knee
- Place robotic arm device next to patient and proceed with bone preparation

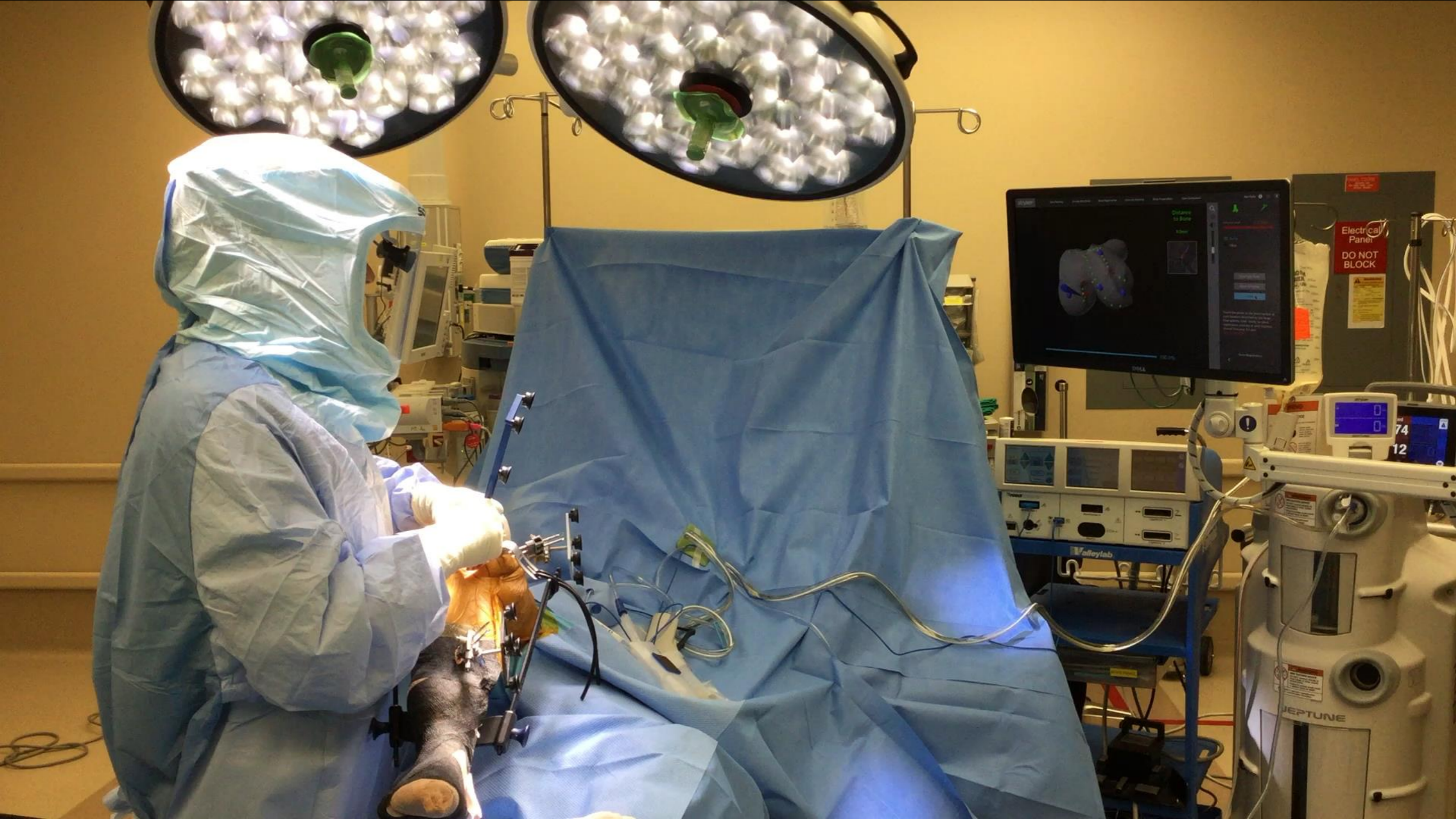
Now for some videos!!

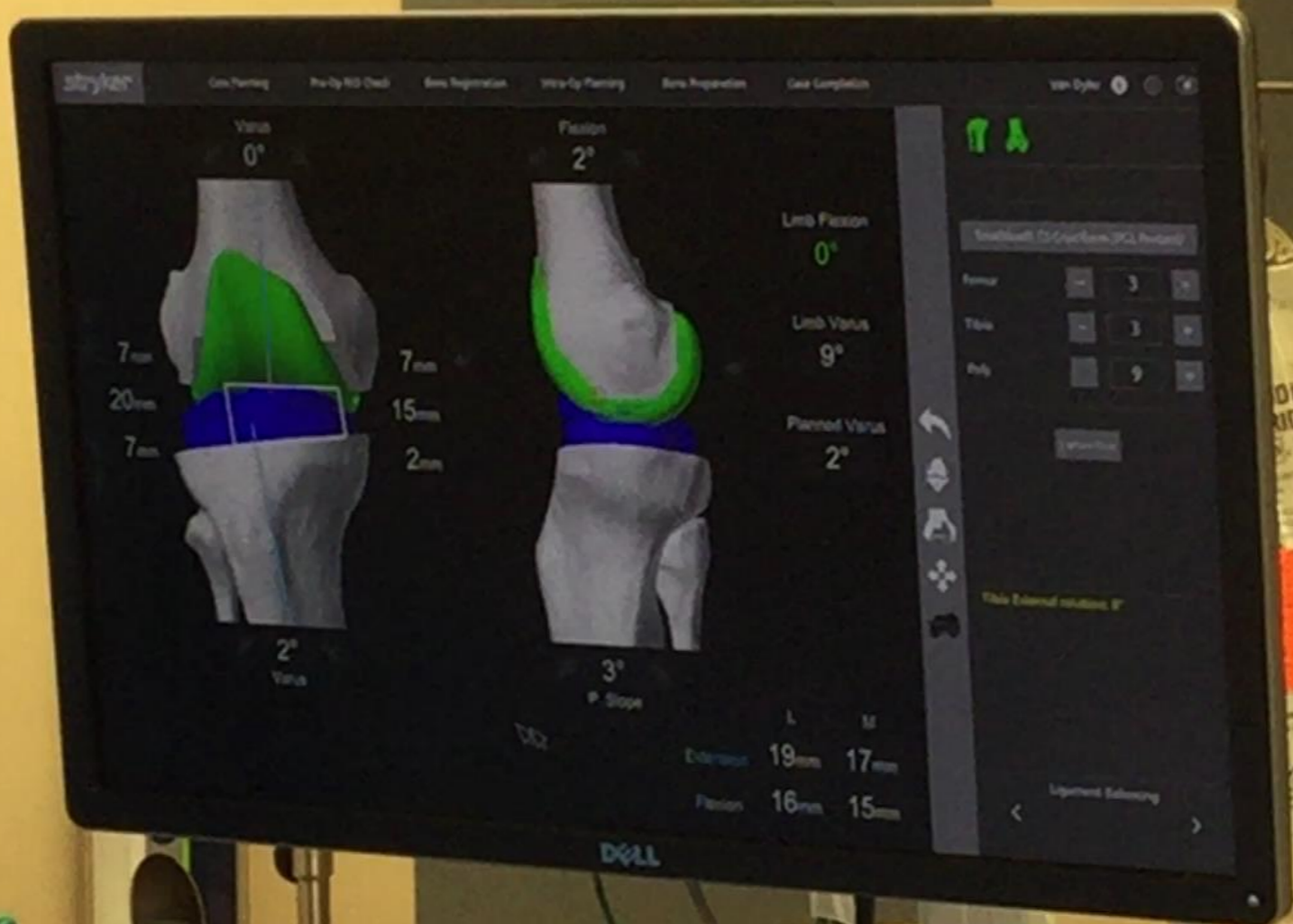












PANEL 1209E

PANEL 1209E

Electrical Panel  
DO NOT BLOCK

WARNING







5

stryker

Case Planning Pre-Op RIO Check Bone Registration Intra-Op Planning Bone Preparation Case Completion

Van Dyke

Posterior



Flexion

97.5°



Side Right  
Femur 3  
Tibia 3 x 8mm  
Tool Straight Saw,  
Mode Approach

2: Posterior

Hold the trigger to start alignment

Bone Preparation

DELL



# Why Robotic Assisted Surgery?

- Proven Technology
- Less dissection and easy exposure
- Customizable and adjustable with precision
- Less painful
- Reproducible
- Safe
- Equivalent or better outcomes



Thanks!!



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