The Painful Total Knee Replacement:

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Most common surgeries in the USA

1. Cataract (3,000,000)
2. C-section (1,300,000)
3. Joint replacement (TKR 720,000; THR 330,000)
4. Circumcision (not disclosed)
5. Fracture repair (670,000)

Source: Agency for Healthcare Research and Quality (AHRQ), Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project (HCUP), National Inpatient Sample (NIS), 2012

- 4.7 million (3.0 million women, 1.7 million men) individuals with total knee replacement in 2010

Male and Female Joint replacement incidence by age

Incidence of 1st and Rev TKR by Age and Sex
What is a knee joint replacement?

1. Partial knee replacement AKA Unicompartmental replacement
2. Total knee replacement (resurfacing)
3. Segmental knee replacement

18-20 year TKR survivorship
91.2-96.5%
What is a knee joint replacement?

1. Partial knee replacement AKA Unicompartmental replacement
   - Partial Knee Replacement
   - X-Ray Images:
   - Unicompartmental Medial
   - Bicompartmental

2. Total knee replacement (resurfacing)
   - Partial Knee Resurfacing
   - X-Ray Images:
   - Unicompartmental Medial
   - Bicompartmental
Mobile bearing, Cruciate substituting
What is a knee joint replacement?

1. Partial knee replacement AKA Unicompartmental replacement
2. Total knee replacement (resurfacing)
3. Segmental knee replacement
Distal Femoral Replacement using an APC (allograft-prosthesis composite)

Not constrained

APC dislocated

APC also infected
Segmental replacement after infection eradicated

Tibial plateau fracture, treated by Open Reduction, Internal fixation

After surgical debridement and antibiotic-cement spacer
Proximal Tibial Allograft w Extensor Tendon and Patella

Cementing allograft prosthetic composite (APC)
Why do TKRs Fail?


Tibial Segmental Defect – ROM at 5 years
WHY ARE THEY FAILING NOW??


2016 Australian Joint Registry Evaluation of a painful TKR

- History
- Examination
- Radiographs
- Bone Scan, CT scan
- Lab work
  - CBC w differential
  - CRP
  - ESR
  - Aspiration

Figure 7B Cumulative Incidence Revision Diagnosis of Primary Total Knee Replacement

Total Knee

- Laxation/lysis
- Infection
- Total/partial failure
- Pain
- Instability

Cumulative Incidence

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Years Since Primary Procedure
Evaluation of a painful TKR

- History
  - Location
  - Onset
  - Occurrence
    - Weight-bearing or at rest
    - Fever, Chills
    - Swelling, locking, giving way

- Examination
  - Inspect
  - Observe gait
  - Palpate
  - ROM (Active and Passive)
  - Assess Stability, Swelling, Pulsates, Hair pattern, Varicosities
  - Assess for Swelling
  - Check the hip
TKR: Anterior Knee Pain: Crepitus and Clunk

- Incidence: 0-18%
  - Mostly associated with PS designs

- Treatment
  - Debride fibrosynovial tissue at TKR surgery
  - Femoral component design: reduced intercondylar box ratio

Evaluation of a painful TKR

- History
- Examination
- Radiographs
  - AP, lateral, sunrise patella
  - Bone Scan
    - WBBS for loosening and for hip and spine assessment
    - 3 phase for pain syndrome, vascularity and loosening
  - CT scan
    - Evaluate component position and lytic defects
Osteolysis due to polyethylene wear
Unicompartmental TKR: tibial fracture

osteolytic defect, allografted

Fracture 3 months later
Tibial Fracture at osteolytic lesion

Patellar fracture
Unstable Patellar Fracture

Extension Lag Present

Femoral tibial subluxation

Hip X-ray evaluation
(Arthritis series)
Post-traumatic Arthritis

Crowe’s Classification for CDH
Group III: 75 - 100 % subluxation

Hilton’s Law—Pain is referred in distribution of muscles
Evaluation of a painful TKR

- History
- Examination
- Radiographs
- **Lab work**
  - CBC w differential
  - CRP *
  - ESR *

- * if both CRP and ESR elevated, Aspiration
- **INFECTION IS ALWAYS SUSPECTED UNTIL RULED OUT**
Important Information on TKR Aspiration

• **Cell count > 2500, PMN's > 60%**
  
  Sensitivity 0.98
  Specificity 0.95
  PPV 0.91
  NPV 0.82

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**DO NOT START ANTIBIOTICS UNTIL ADEQUATE FLUID AND TISSUE SAMPLES ARE AVAILABLE!**
There’s more, but sometimes they just hurt!

Expectations
Healing phase: 18-24 months
Return to Activity: 8-12 months

The TKR will last 20 years, better do your exercises!
Muchas Gracias!