

**SRI LANKA MEDICAL ASSOCIATION OF NORTH AMERICA  
EASTERN REGION INC.  
PRESENTS**

**SLMANA EAST  
CHARITY BALL  
ANNUAL GENERAL MEETING  
&  
SCIENTIFIC SESSIONS  
ON  
NOVEMBER 12TH, 2011**



**NEW YORK HILTON AND TOWERS  
1335 Avenue of The Americas New York, NY**

# Unicondylar Knee Arthroplasty for Unicompartmental Osteoarthritis of the Knee

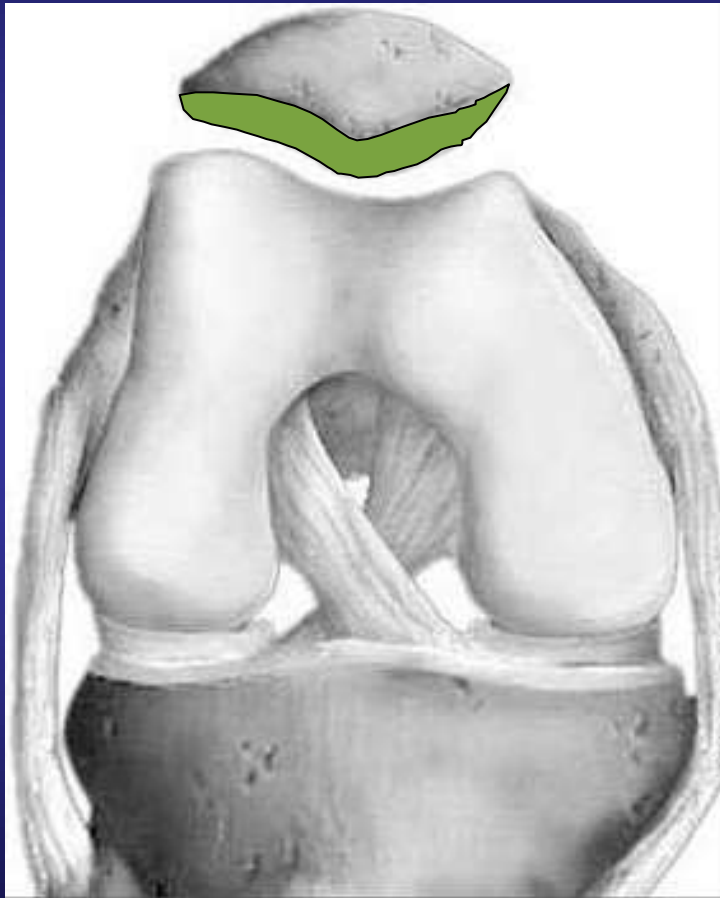
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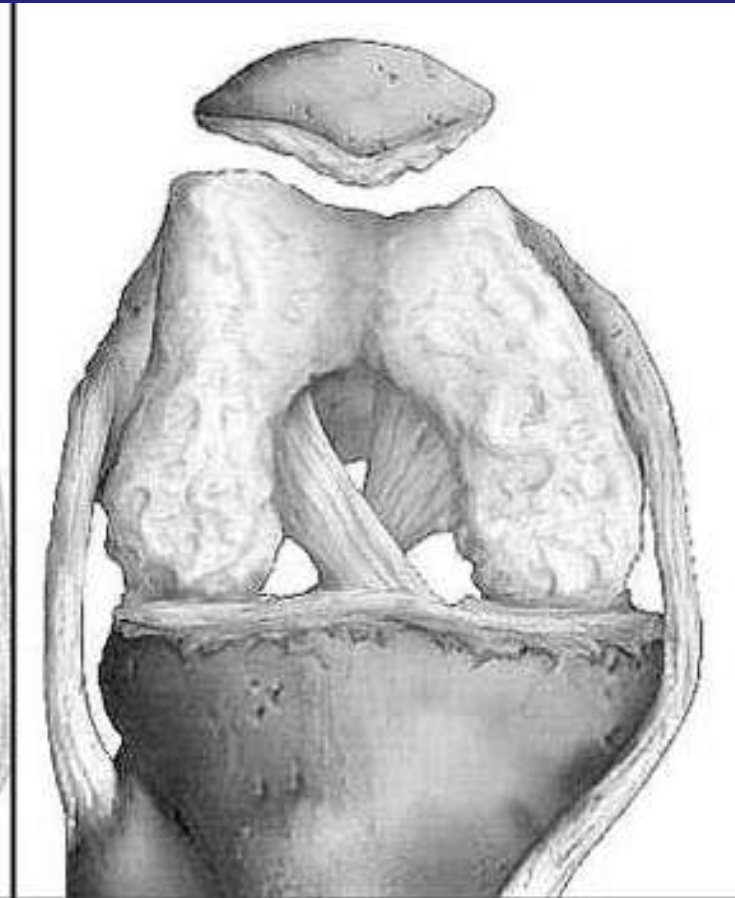
# Osteoarthritis of the Knee

- Knee osteoarthritis is a leading cause of disability in the United States
- In 2005, approximately 9 million American adults were diagnosed with knee osteoarthritis
- Total Knee Arthroplasty (TKA) is the most common surgical solution for advanced OA of the knee

# What is Osteoarthritis of the Knee?



Normal, smooth articular cartilage in knee joint.



Osteoarthritis in articular cartilage in knee joint.

# Evaluating a Patient with Knee Pain

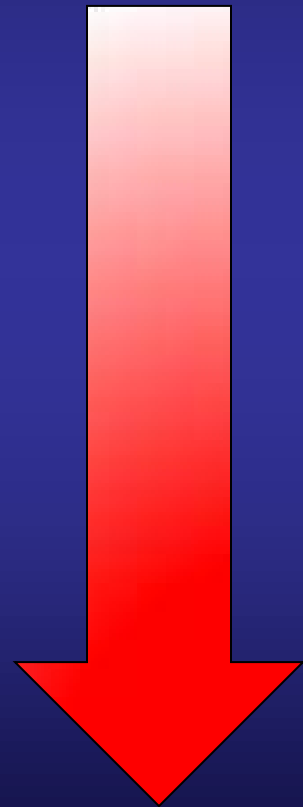
- History
  - Age
  - Activity level
  - Pain pattern
    - With activity
    - Nocturnal pain
    - Walk tolerance
- Physical Exam
  - Deformity
  - Range of motion
  - Locus of pain
- Standing X-Rays
  - AP, Tunnel, Lateral, and Merchant views



# Treatment Options for OA of the Knee

- Activity modification
- Physical Therapy
- Weight control
- NSAID
  
- Cortisone or viscosupplementary injection
  
- Knee arthroscopy
- Joint replacement

Less Invasive



More Invasive

# Primary Care Physician's Initial Treatment

- Counsel patient
  - Weight control
  - Modify activities
- NSAIDS
- Enroll in PT
- Referral to specialist
  - If no response to initial treatment

# Orthopedist Evaluation and Treatment

- Accurate Diagnosis
  - OA vs. RA
- Physical exam
  - Deformity
    - Fixed or correctable
- X-Rays
  - Angular deformity quantified
  - Assess how if single or multi-compartment
- Indicate for
  - Continued conservative care
  - Surgery
    - TKA
    - UKA



## Indications for Surgery

- Failure of conservative care
- Refractory pain
  - Nocturnal pain
- Severe limitations in walk tolerance
- Limitations in lifestyle
- Weight gain
- Other health issues arise or worsen
  - HTN
  - DM
  - Heart Disease

# Total Knee Arthroplasty

## Pros

- Proven track record
- 21year survival = 90%
- Reliable pain relief
- High acceptance by patients

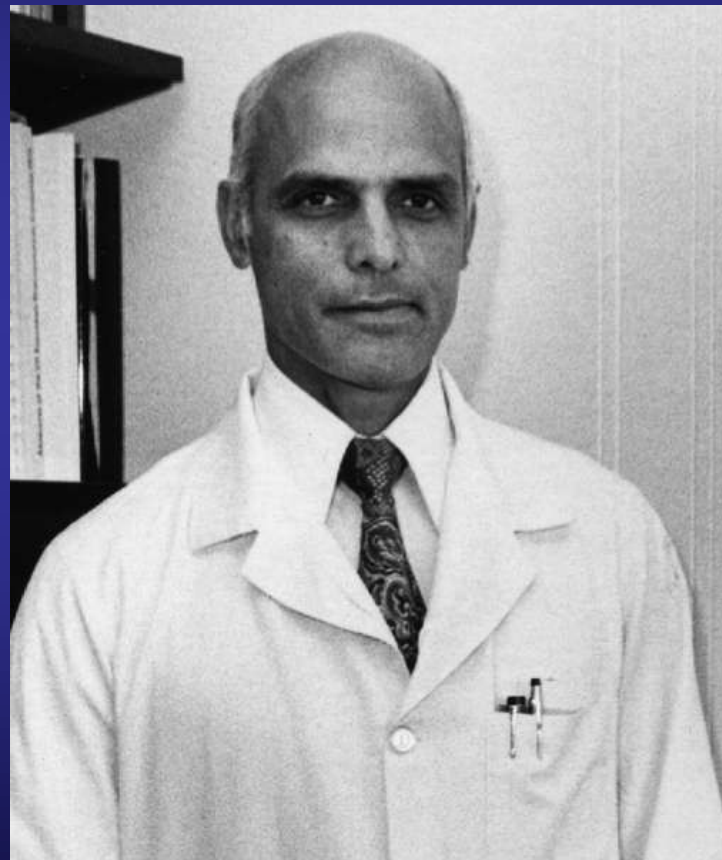
## Cons

- Invasive surgery
- Decreased knee ROM
- Inability to return to some activities
- 3 to 4 day hospital stay
- Complications
  - DVT, PE, Fat embolism
  - MI

# Unicondylar Knee Arthroplasty

- Track record of longevity
- Improved knee range of motion
- Less invasive
- Outpatient to overnight hospital stay
- Return to most activities possible
- Slightly lower risk of major complications
- Bearing surfaces and wear characteristics

# Historical Perspective of the Development of TKA

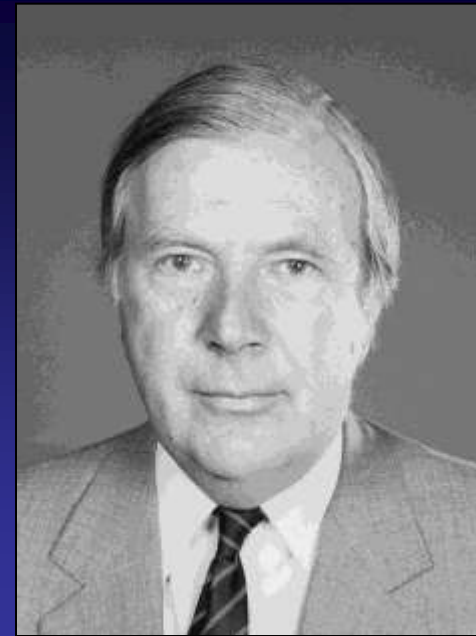


# Total Knee Implant



# Bicompartmental 1976

Over 300 implanted, saw cuts



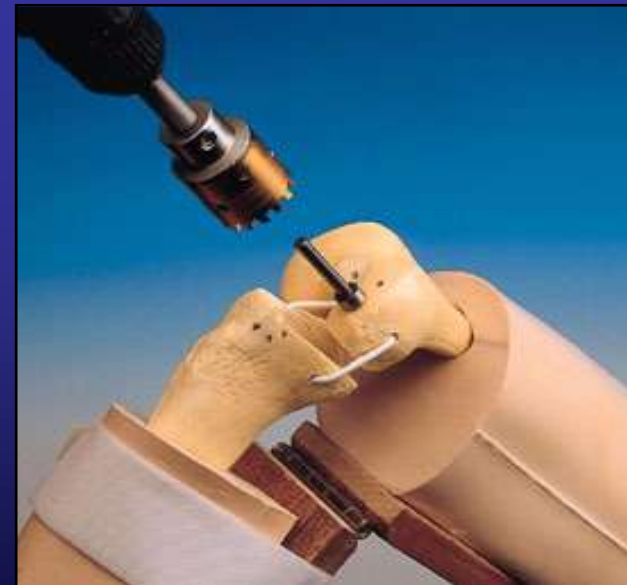
Phase 1





# Unicompartmental (Open Approach)

- 1982
- Phase 1
- 1987 – Phase 2
  - Mill for accurate ligament balance
  - Reduced dislocation



## Phase 3 – Minimally Invasive Approach 1998

- Operation simpler & more reliable
  - Modified instruments
  - Increased range of sizes
- Minimal invasive approach
- Surgeon training instructional courses



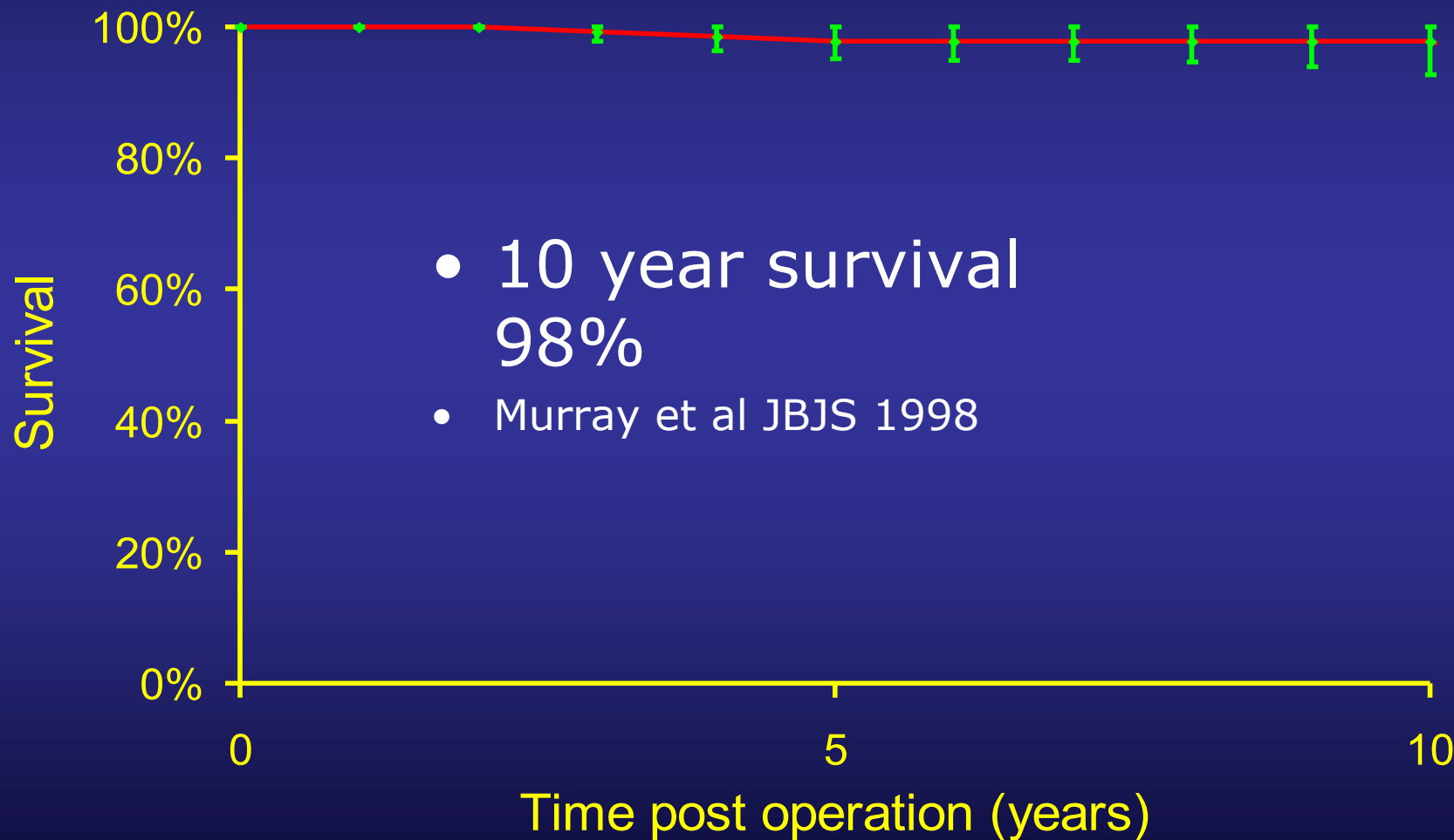
# Other UKA Designs

## Fixed bearing

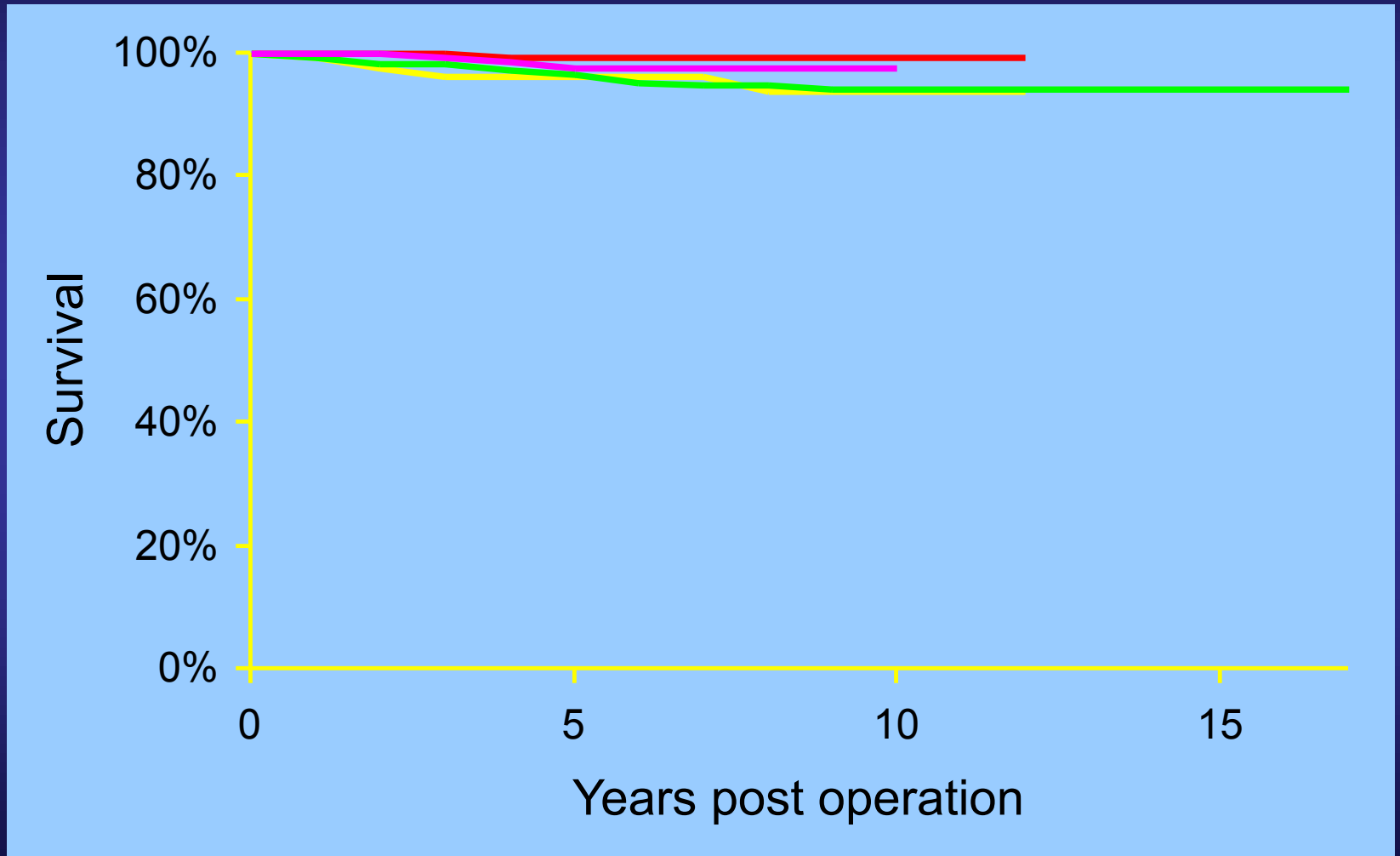
- High contact stresses
- Increased wear rates
- 10year survival 90%
  - Increased failures thereafter



# UKR - Designer's series



# Phase 1 & 2 series >10yr, >100 UKR, with Oxford indications



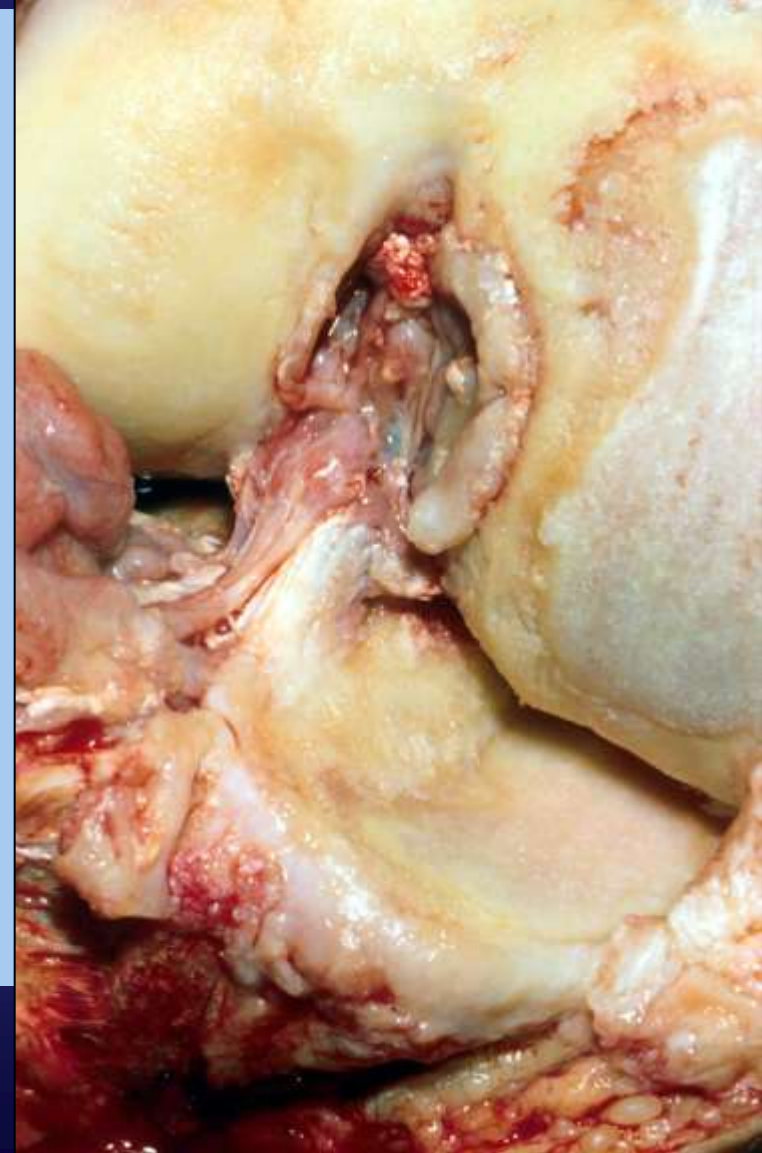
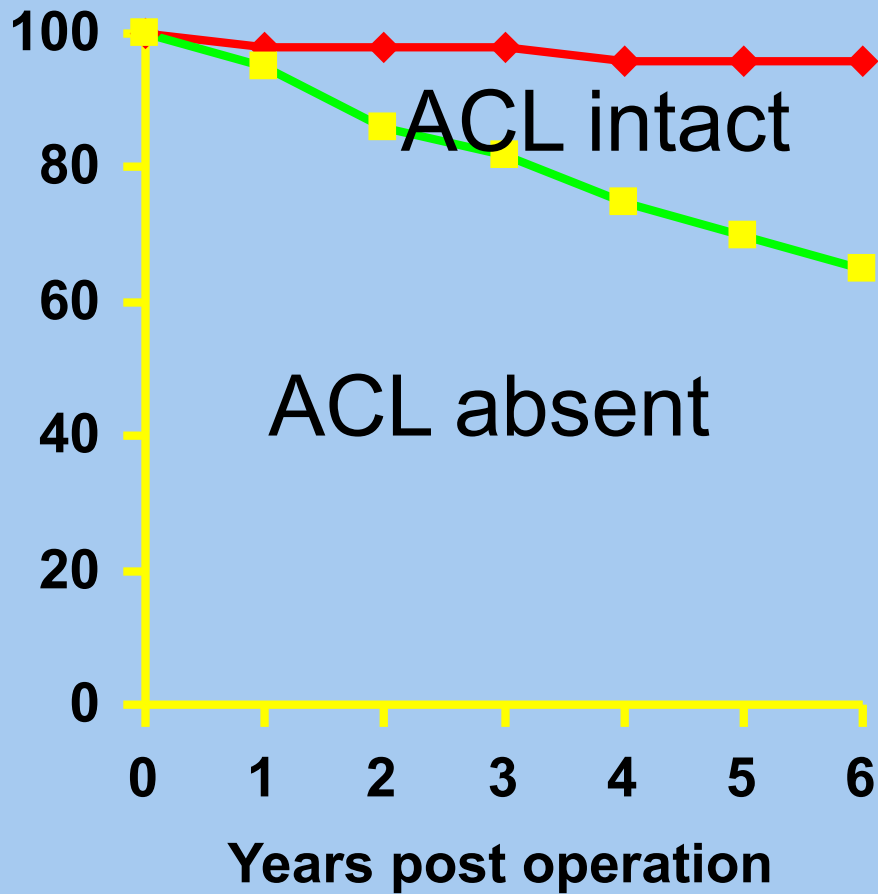
# Polyethylene Wear

- Average penetration rate 0.03mm per year
- Average time for 1mm penetration 33 years

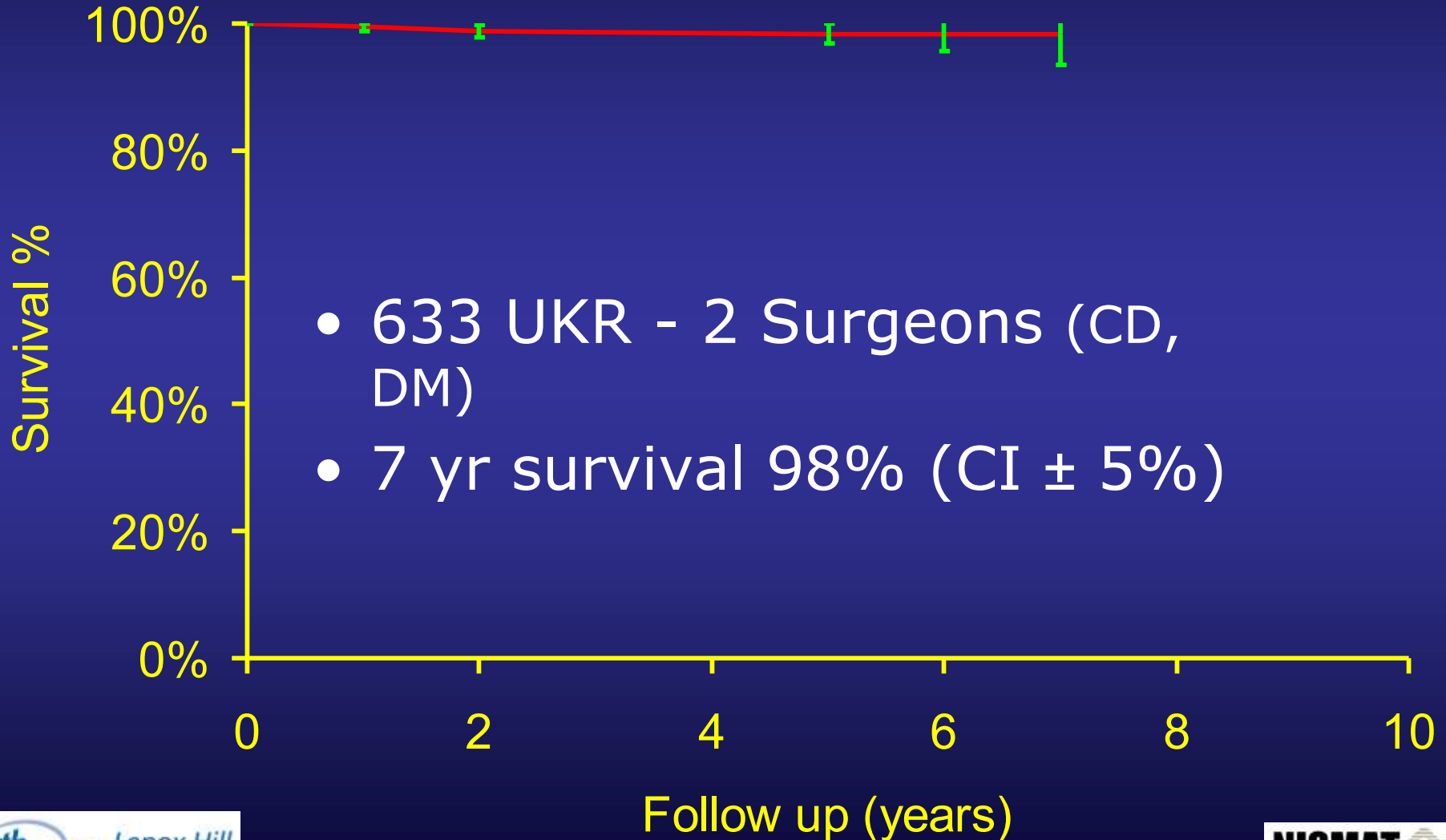




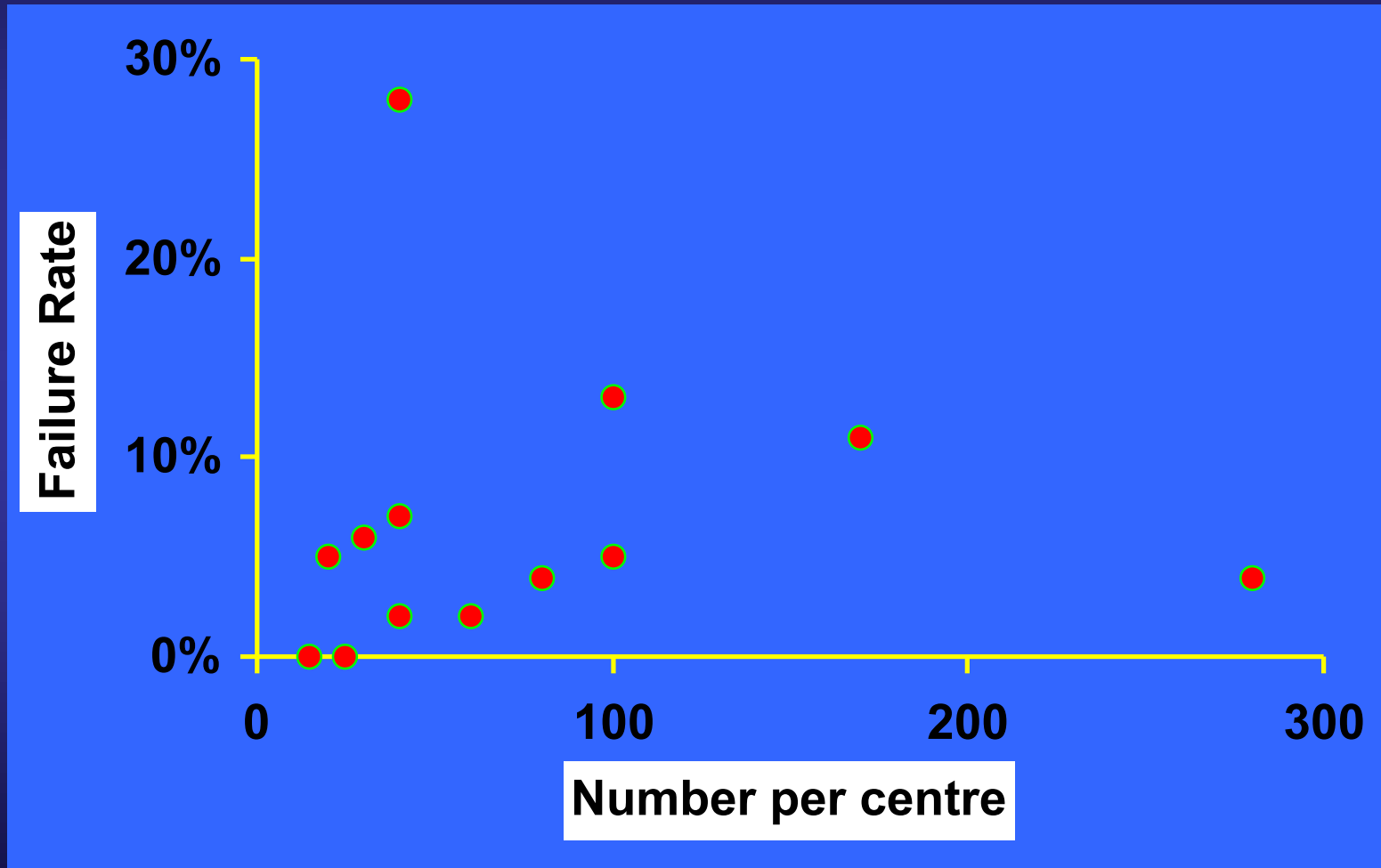
# Survival



# Phase 3 survival (Pandit 2005)



# Swedish Knee Arthroplasty Register Lewold et al 1995



## Korea (Prof Choy)

- 40 patients
- 3 months
- Full flexion in 95%
  - 2 others 135° & 120°
- Squat 86%



# Indications

- Medial OA
  - Full thickness cartilage loss on stress Xray
- Functionally normal ACL (PCL also)
- Functionally normal MCL
  - Correctable varus on stress X ray
- Full thickness lateral
  - Full thickness cartilage on stress Xray

## Contraindications (very rare if ACL intact)

- Fixed flexion deformity  $> 15^{\circ}$ 
  - (Pre Op mean 8, 1 year mean 2)
- Varus deformity  $> 15^{\circ}$
- Flexion  $< 90^{\circ}$  anaesthetised
- Lat femoral condyle central ulcer



# Other “Accepted” Contraindications

Kozinn & Scott (J Arthroplasty 1989) and others

Patellofemoral OA and Anterior Pain

Age (< 60 and very old)

High Activity

Obesity

Chondrocalcinosis

Most NOT FOUNDED ON SCIENTIFIC EVIDENCE

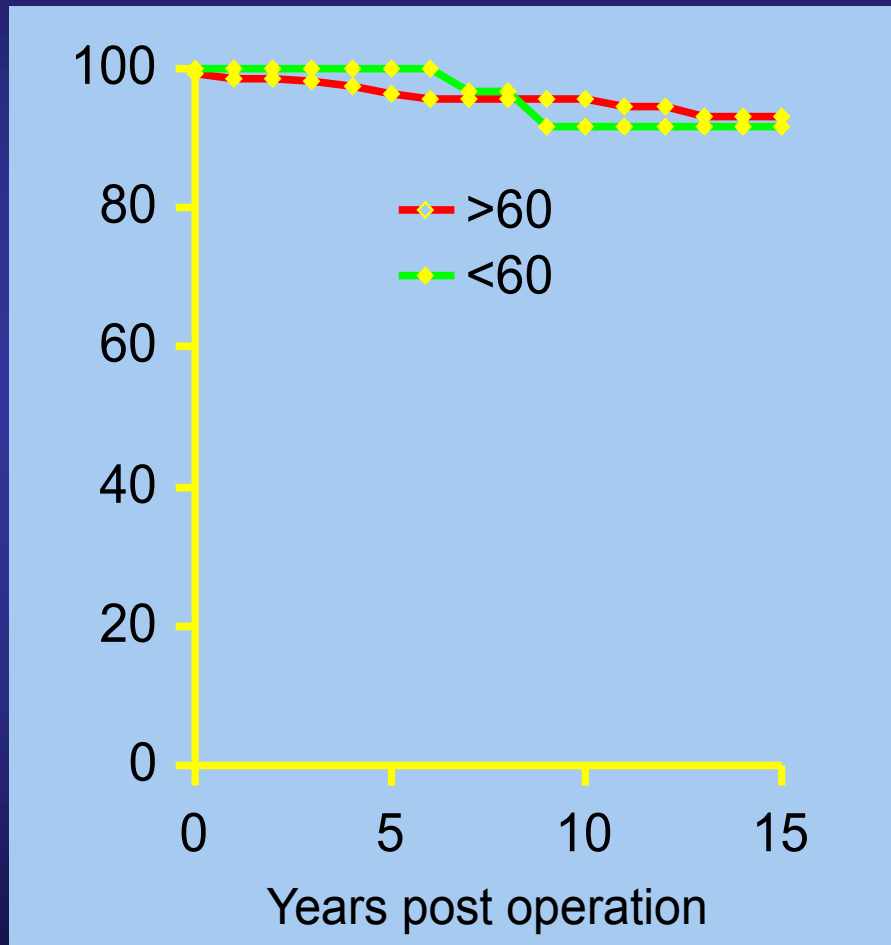
The designer's never considered these to be contraindications and now have some evidence to support their view

## Patello-femoral joint For the Oxford knee

- Full thickness cartilage loss
  - Seen at operation
  - Or on Pre-operative Xrays
  - Is not a contraindication
- Pain anteriorly is
  - Not a contraindication

# Age

- Old/unfit - ideal
  - minimal invasive
  - low morbidity
- Young (50s or less)
  - <60 & >60 NSD
  - JWG & Svard
  - mean 55, n=52
  - 92% 10yr survival



# Actual Activity - Tegner Score

50 patients, < 60yr, min 2yr

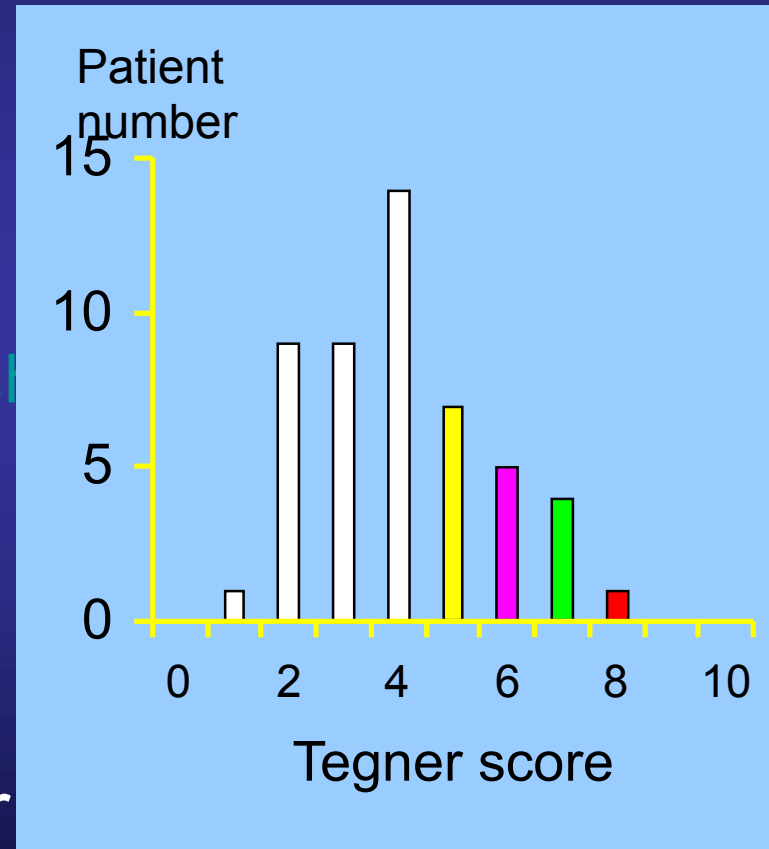
5 Heavy labour, competitive cycle, jog uneven ground

6 Tennis, downhill skiing

7 Competitive tennis, running

8 Competitive soccer, squash

- 4 or less “Advised”
- 30% 5 to 8
- Don’t do as advised!
- ?Does not seem to matter



# Obesity

- No increased wear
  - Argenson et al JBJS 1992
- No data on grossly obese
- In very obese
  - Exposure relatively straight forward as instrumentation works from front
  - Easier than TKR



# Complications NOT Requiring Revision

- Pain at 1 year 2%
- Stiffness requiring MUA 0.7%
- Hemarthrosis - scope 0.2%
- PE 0.3%
- CVA 0.5%
- Death 0

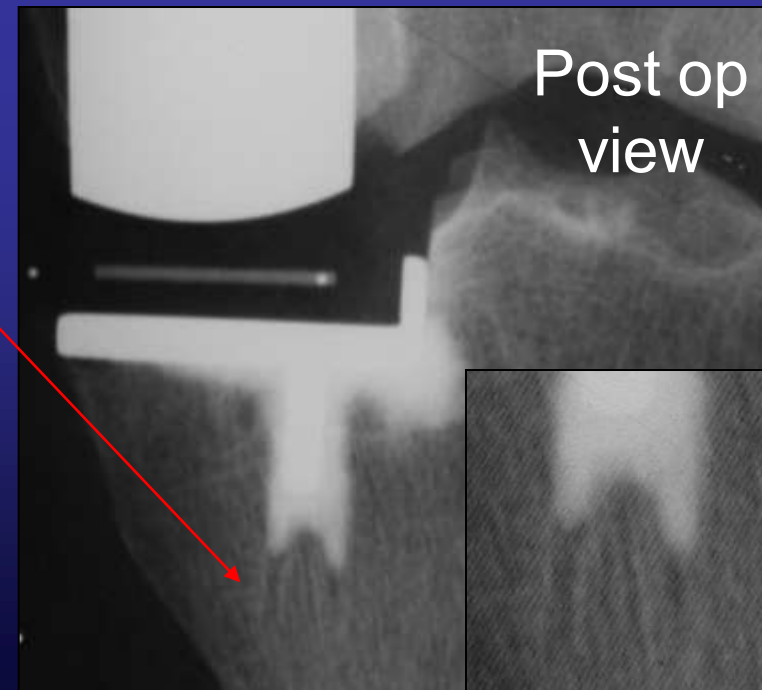


## Revisions – Medial OA

	CD & DM 600 5yr	Svard 600 20yr
Lateral OA	0	2%
Infection	0.5%	0.3%
Dislocation	0.2%	0.8%
Loosening	0	0.8%
Unexplained pain	0.4%	0
Tib plateau #	0	0
Wear	0	0
PFJ problems	0	0

## Tibial plateau #

- Cause
  - Bone weakened per-op
- Presents
  - Per-op or early post-op
- Prevention
  - Light hammer
  - AVOID DEEP SAW CUTS
  - Preserve posterior cortex
  - Adequate slot for keel



# Post Operative Care

- Eat & drink - 2hrs
- Mobilization
  - Walk from 2hrs (helps pain relief)
- Drain – removed following morning
- Flexion
  - Day 1 achieve flexion
  - Thereafter flex as tolerated - will improve
  - Physio for gait training
- Analgesia
  - Naproxen 500 mg BID
  - Or Celebrex 400mg QD
  - Ranitidine 150 mg BID
- As necessary - breakthrough pain
  - Percocet 5/325 Q4h PRN
- Discharge Home POD #1 or 2
  - Moving towards same day surgery

# Post Op Course

- 6 weeks
  - Patients usually have
    - Some pain
    - Small effusion
    - Some restriction of movement
- 3 months
  - Walk without limp
  - Flexion near normal
- 6 months to 1 year
  - All remaining symptoms usually resolve

# Oxford UKR - Summary

- Results
  - Rapid recovery
  - Normal kinematics
  - Excellent function
  - Good long term survival, even in young



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