

UNICONDYLAR KNEE ARTHROPLASTY

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HTO v UKR

- HTO - Distraction (Weale 2001)
 - 76 HTO, 65 patients with OA
 - Mean age 55, mean follow up 6yr

HTO v. UKR

- UKR Oxford < 60years
 - Survival - JWG & US combined
 - 52 UKR, Follow up to 15 years
 - Function - All Oxford surgeons
 - 78 UKR, Mean follow up 5 years

Conclusion

- HTO function and survival worse than UKR (not RCT)
- What are the indications for HTO?

Conclusions

- Very high demand (eg contact sport), ACL deficient etc?
- Only definite indication primary tibia vara.

UKR and TKR Comparative studies

- Rougraff 1991
 - 120 UKR & 91TKR, mean 8 yr follow up
- Laurencin 1991
 - 23 bilateral UKR and TRK
- Newman 1998
 - RCT, 45 UKR & 46 TKR, 10yr follow up

Advantages - function

- Preserves undamaged structures
 - Cruciate mechanism - 'normal' kinematics.
- ROM better

Advantages - function

- Pain relief as good or better,
- Function better (gait studies)
 - Especially demanding activities eg stairs
 - Knee has a better "feel"

Advantages - morbidity

- Blood loss less and no transfusions
- Complications less frequent and severe
- Recovery and rehabilitation more rapid

Advantages - *morbidity*

- Cheaper implant and operation
- Minimal invasive surgery

UKR *disadvantage*

- Higher revision rate in initial studies

UKR *disadvantages*

- Options
 - Accept
 - Don't do UKR (eg USA)
 - Consider UKR as pre TKR (eg Repicci)
 - Minimise failure rate
 - To equal that of TKR



UNI KNEES

1) **Fixed Bearing**

1) Metal-on-plastic e.g.

1) *Gunston*

2) *Cloutier*

3) *Marmor*

4) *Modular, I-III*

5) *St Georg Sled*

6) *Brigham*

Uni Knees

Fixed_Bearing

- 1) *Charnley* Plastic-on-metal
- 2) MIS e.g.
 - 1) *Repicci, metal-on-plastic, inset bearing.*
 - 2) *Preservation*
 - 3) *Eius*
 - 4) *Zimmer*
 - 5) *Etc., etc....*

Uni Knees

Mobile Bearing.

1. Fully conforming e.g.

Oxford

LCS

2. Maximally conforming e.g.

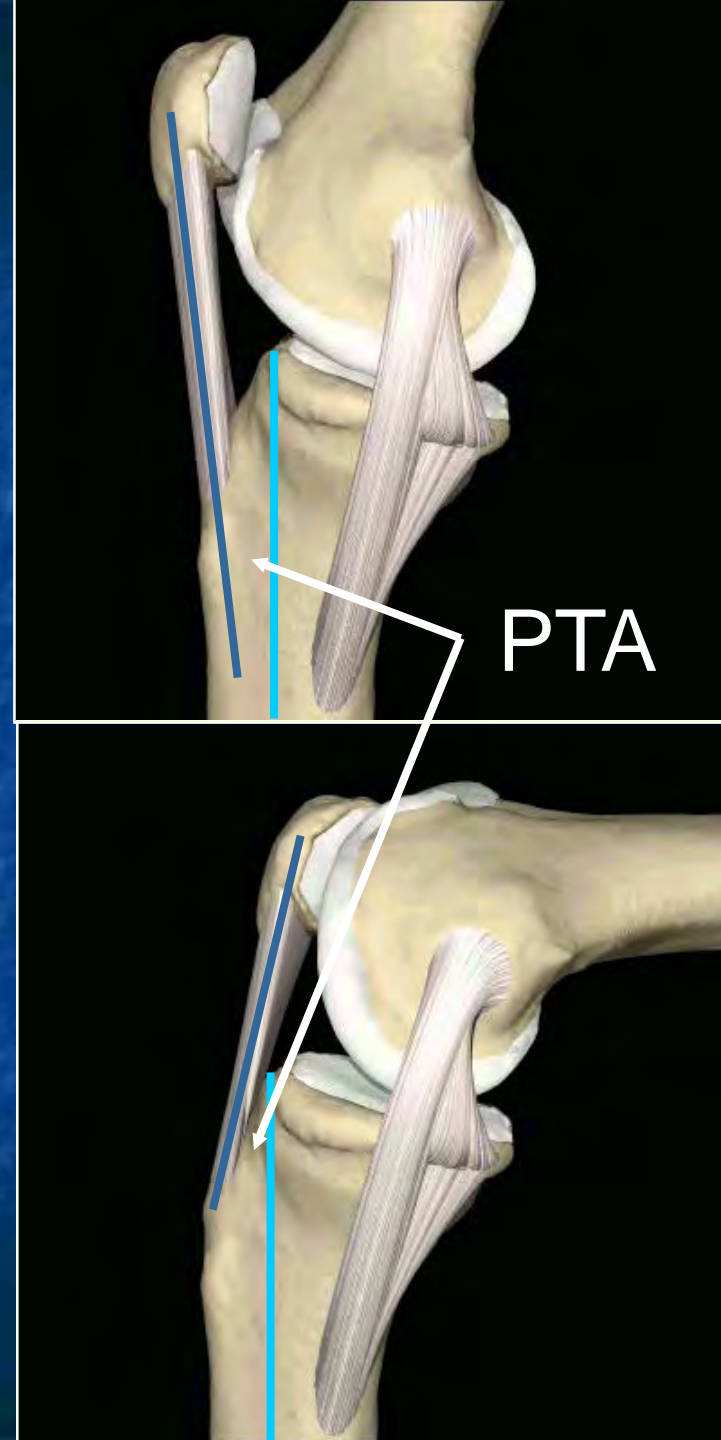
Uniglide

Patello-femoral Angle

- Preserved in Unicondylar Arthroplasty
- Cruciate and Collateral ligaments untouched
- Proprioception left intact

Sagittal plane kinematics

- PFJ main problem of TKR
- Measure PTA
- PTA related to Tib/Fem kinematics
- PTA influences PFF
 - Lever arm (cf Maquet)
- In vivo fluoroscopic study



Uni Knees

- The key to a rapid recovery following UKA is subluxing the patella rather than dislocating and everting the quadriceps mechanism.

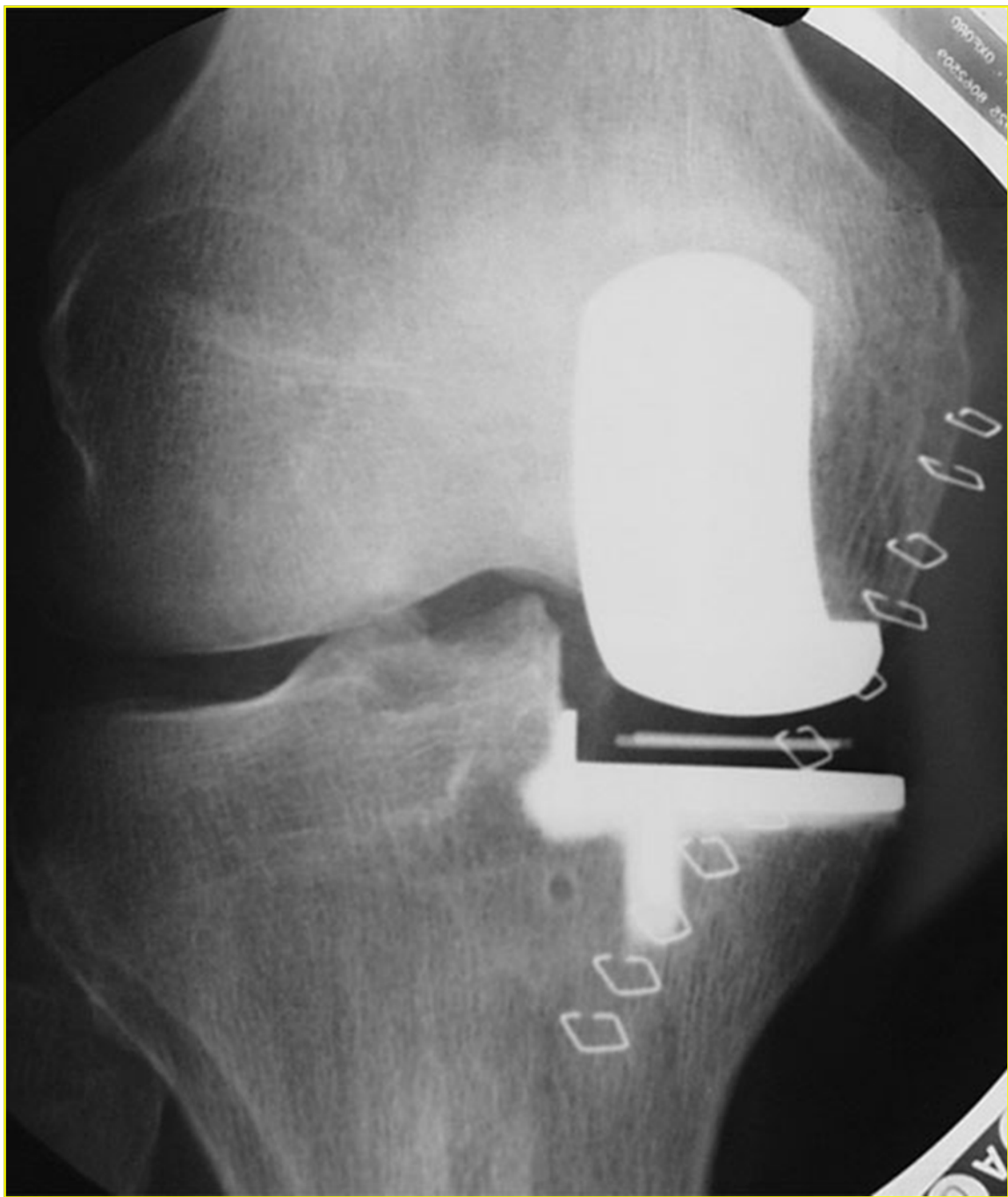
The First Mobile Bearing Uni

- The Oxford Unicompartment Knee
 - John Goodefellow
 - David Murray

Femoral component

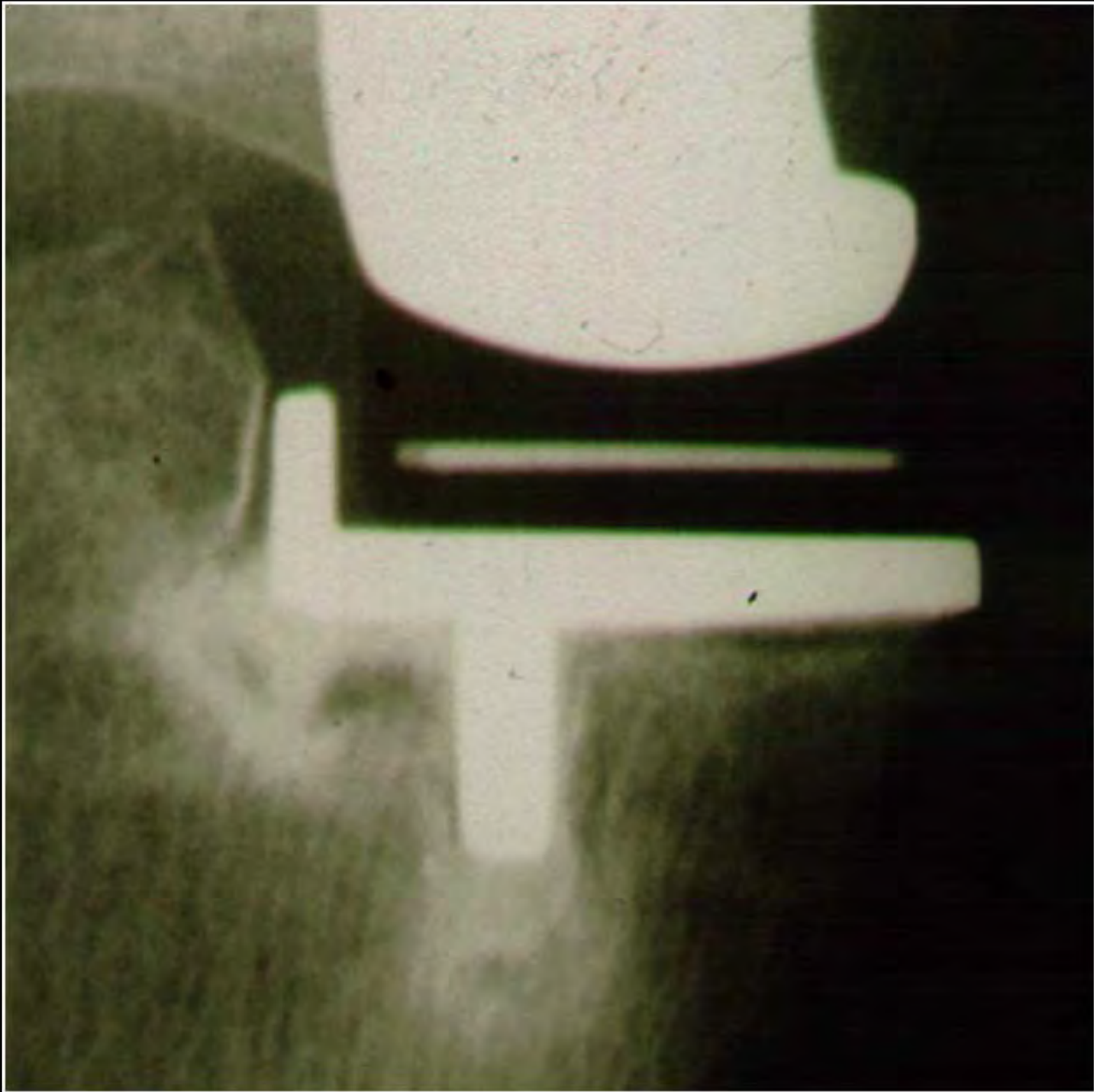
- Four sizes



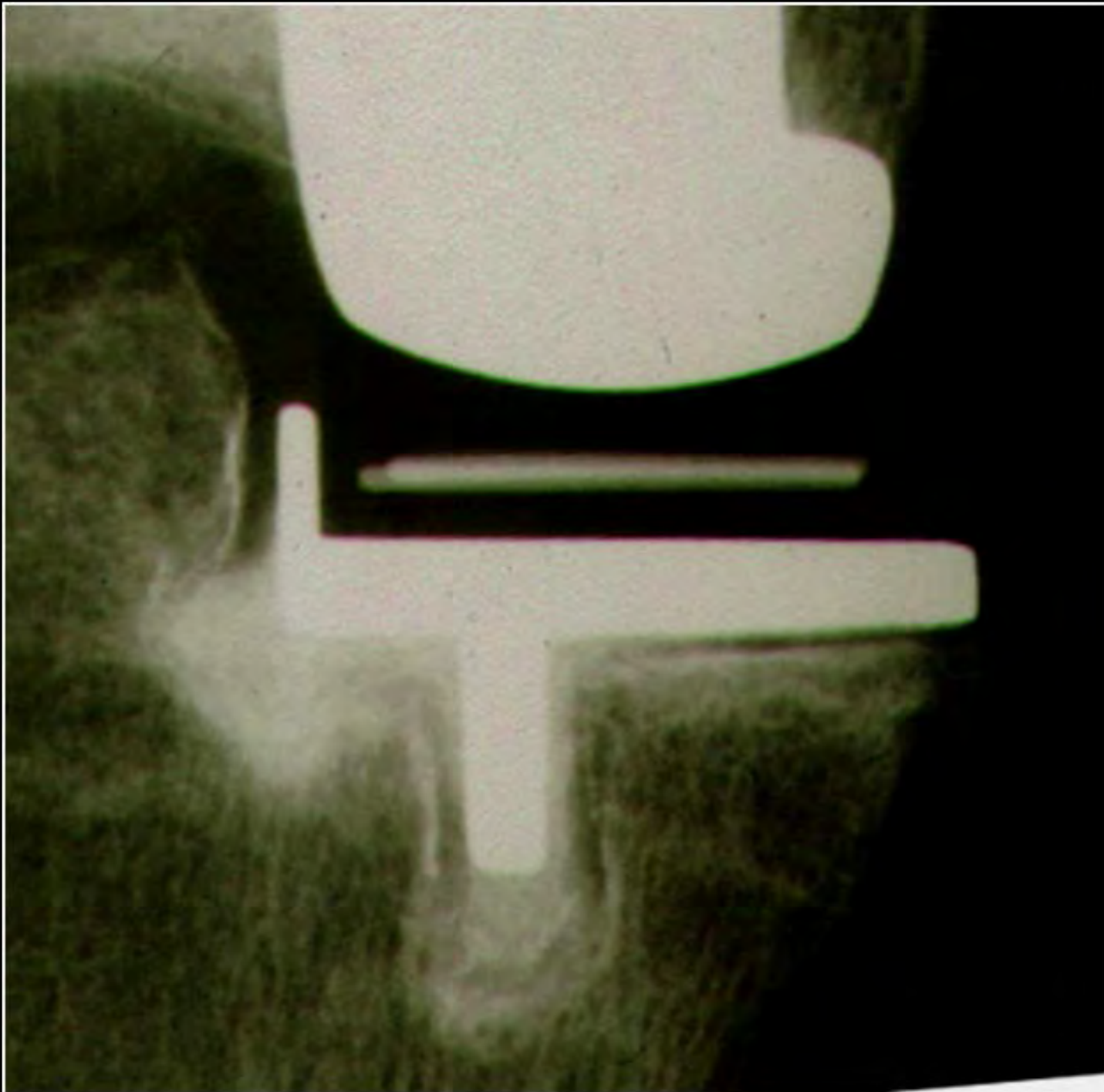




Five years out



Ten Years out



Uni Knees

- **Minimally invasive unicondylar versus total condylar knee arthroplasty--early results of a matched-pair comparison.**

Yang KY, Wang MC, Yeo SJ, Lo NN.

Department of Orthopaedic Surgery,
Singapore General Hospital, Outram Road,
Singapore 169608. kyyang@orthopods.net

Uni Knees

Comparison of the two groups at six months show that patients with minimally invasive UKA have less blood loss, quicker rehabilitation, earlier ambulation, shorter hospitalisation stay and better post-operative range-of-motion with reduced hospitalisation cost.

Uni Knees

Reflecting on a six-month follow-up and immediate post-operative events, we conclude that minimally invasive UKA is a relatively more cost effective procedure than TKA for these patients.

Uni Knees

- Orthopedics. 2003
Sep;26(9):951-2.

**Unicondylar arthroplasty:
redefining itself.**

Scott RD.

Harvard Medical School, Boston,
Mass, USA.

Uni Knees

- Unicompartmental knee arthroplasty is the right operation for the right patient when performed by the right surgeon using the right surgical technique.

Uni Knees

Josten T. Sieman, Universitat Leipzig

In the 90s significantly better results were noted with 5 and 10 years survival in more than 95 % of the cases. Thus, like current studies prove, unicondylar sleigh arthroplasties have reached the standard of complete surface replacement. Additionally minimal loss of bone stock, sparing of the crucial ligaments

Uni Knees

- **Unicompartmental osteoarthritis: an outpatient arthritic bypass Minimally invasive Unicondylar knee arthroplasty**
Repicci JA, Hartman JF.

Orthop Clin North Am. 2004 Apr;35(2):201-16.

Uni Knees

- This review summarizes past studies examining the progression of osteoarthritis (OA) of the knee.

Uni Knees

- They have led to the conclusion that the disease is slow, progressive, and typically limited to one tibio-femoral compartment.

Uni Knees

- Treatments such as Unicondylar Knee Arthroplasty (UKA)...
- That address the single diseased compartment, preserving bone and soft tissue...
- Seem appropriate.

Uni Knees

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Singapore Med J. 2003 Nov;44(11):554-6.

Uni Knees

- Fifty consecutive patients with isolated medial compartmental osteoarthritis of the knee
- Were treated with minimally invasive unicompartmental knee arthroplasty (UKA).

Uni Knees

- An equal number of patients with total knee arthroplasty (TKA) performed in the same period were selected
- They were matched with respect to:
 - age,
 - pre-operative range of motion
 - radiological grade of knee arthrosis. (Kelgren)

Uni Knees

- UKA have:
- Less blood loss,
- Quicker rehabilitation
- Earlier ambulation
- Shorter hospitalisation stay
- Better post-operative range-of-motion
- Reduced hospitalisation cost.

Uni Knees

- Reflecting on a six-month follow-up and immediate post-operative events:
 - We conclude that minimally invasive UKA is a relatively more cost effective procedure than TKA for these patients.

Uni Knees

- J Bone Joint Surg Br. 2002 Jul;84(5):667-72.



**A comparative study of the medial St Georg
sled and kinematic total knee arthroplasties.
Ten-year survivorship.**

**Ackroyd CE, Whitehouse SL, Newman JH, Joslin
CC.**

Bristol Knee Group, Winford Unit, Avon Orthopaedic
Centre, Westbury-on-Trym, Bristol, England.





Uni Knees

- There was no statistically significant ($p > 0.05$) difference between the rates of survival for the two types of arthroplasty
- using any of the endpoint criteria.

Uni Knees

- Good or excellent results were recorded for 77.9% of the medial sled knees and 75.1% for the Kinematic knees.

Uni Knees Bristol Study

- The former (UKA) had 93.8% of cases with a final range of movement in excess of 90 degrees
- compared with 83.7% for the Kinematic knees (TKR) ($p < 0.01$).

UNI KNEES

- Cemented Unicondylar knees
 - Two cases of cement loose bodies
 - Definite "Proctalgia"
- Search for Non-Cemented as the LCS had low loosening rate.

R



Uniglide Knee



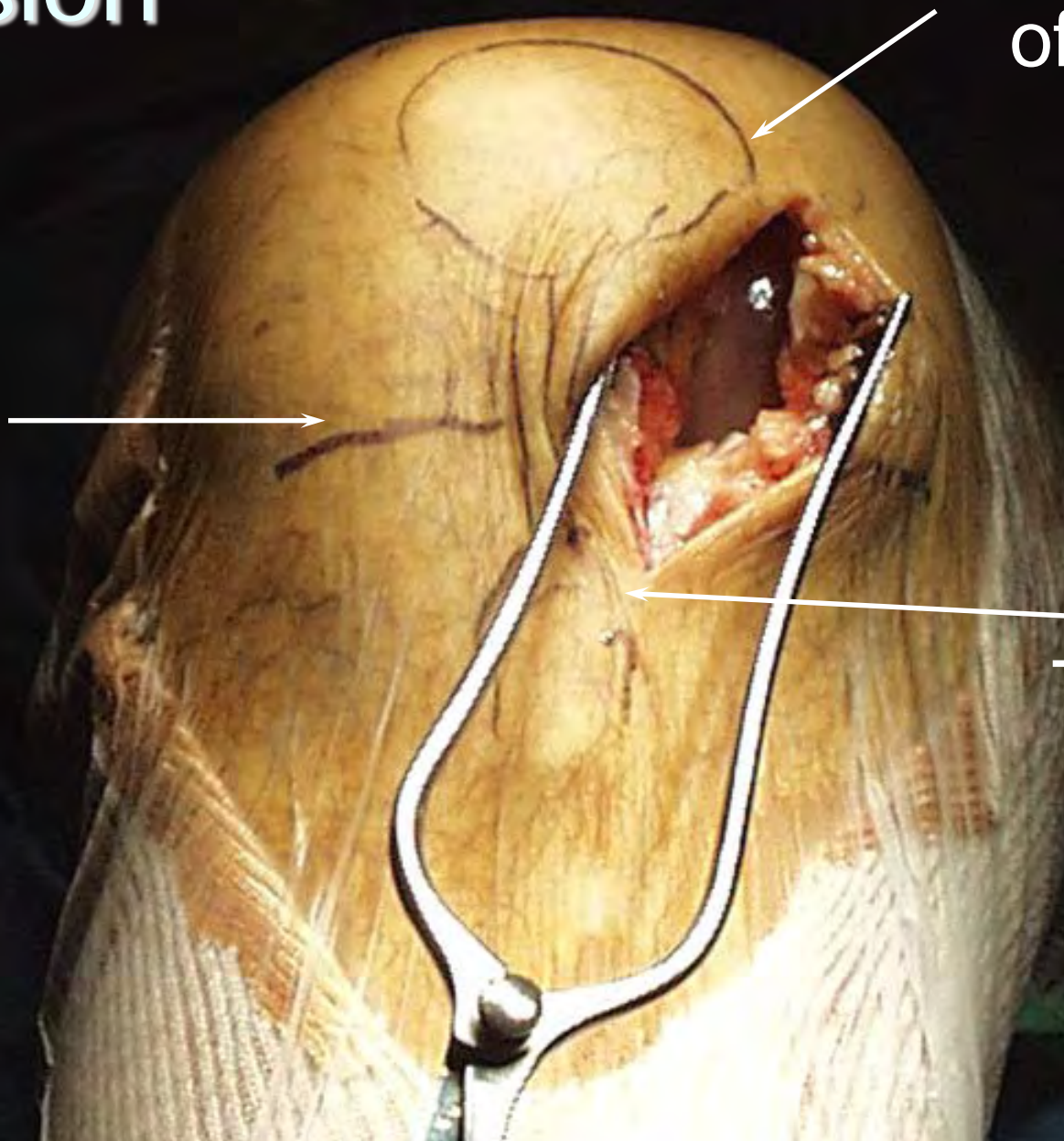


Incision

**Medial pole
of patella**

**Joint
Line**

**Tibial
Tuberosity**

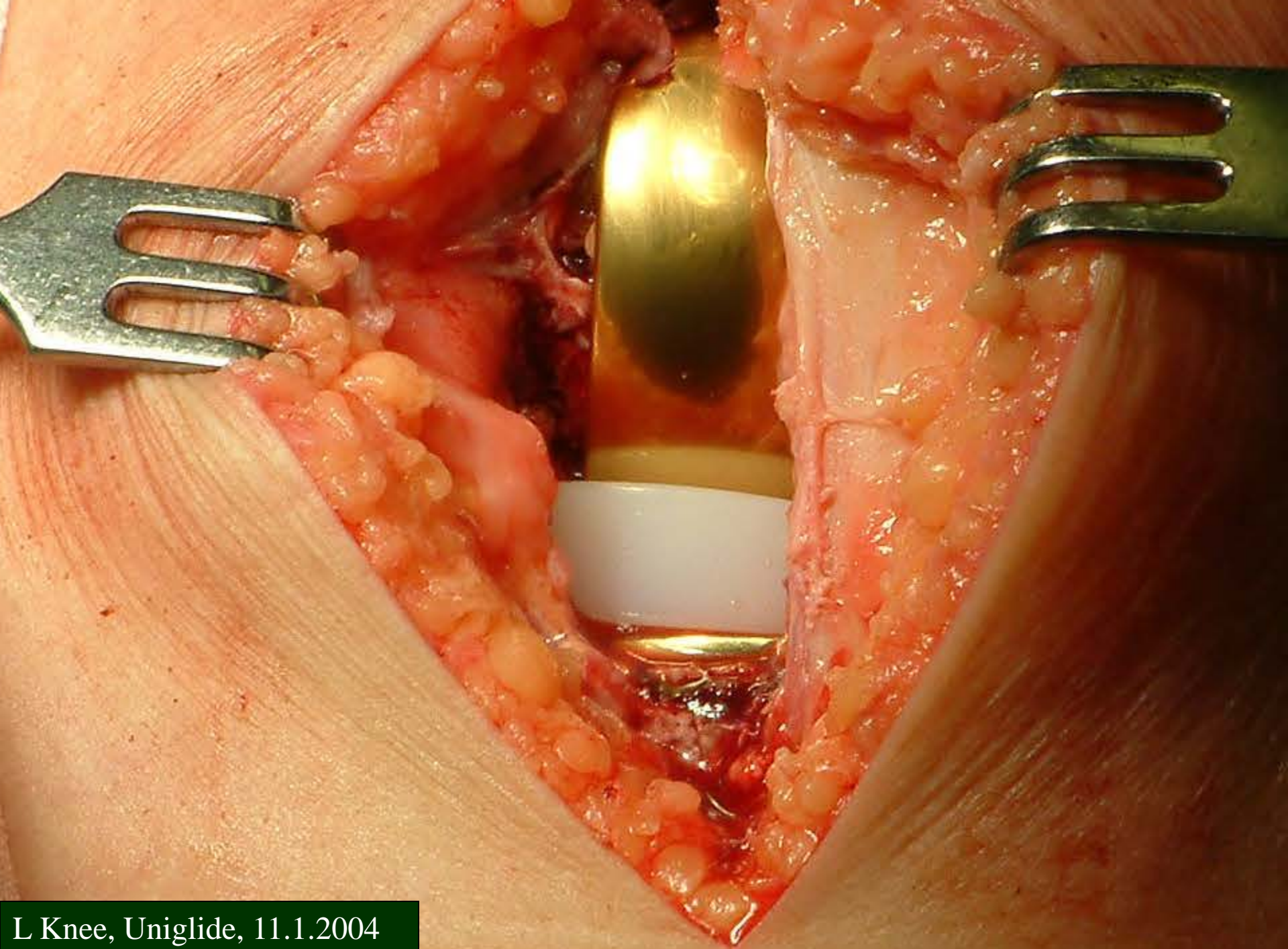




Tibial Plateau, Uniglide, 11.1.2004



Posterior Femoral Condyle, Uniglide,
11.1.2004

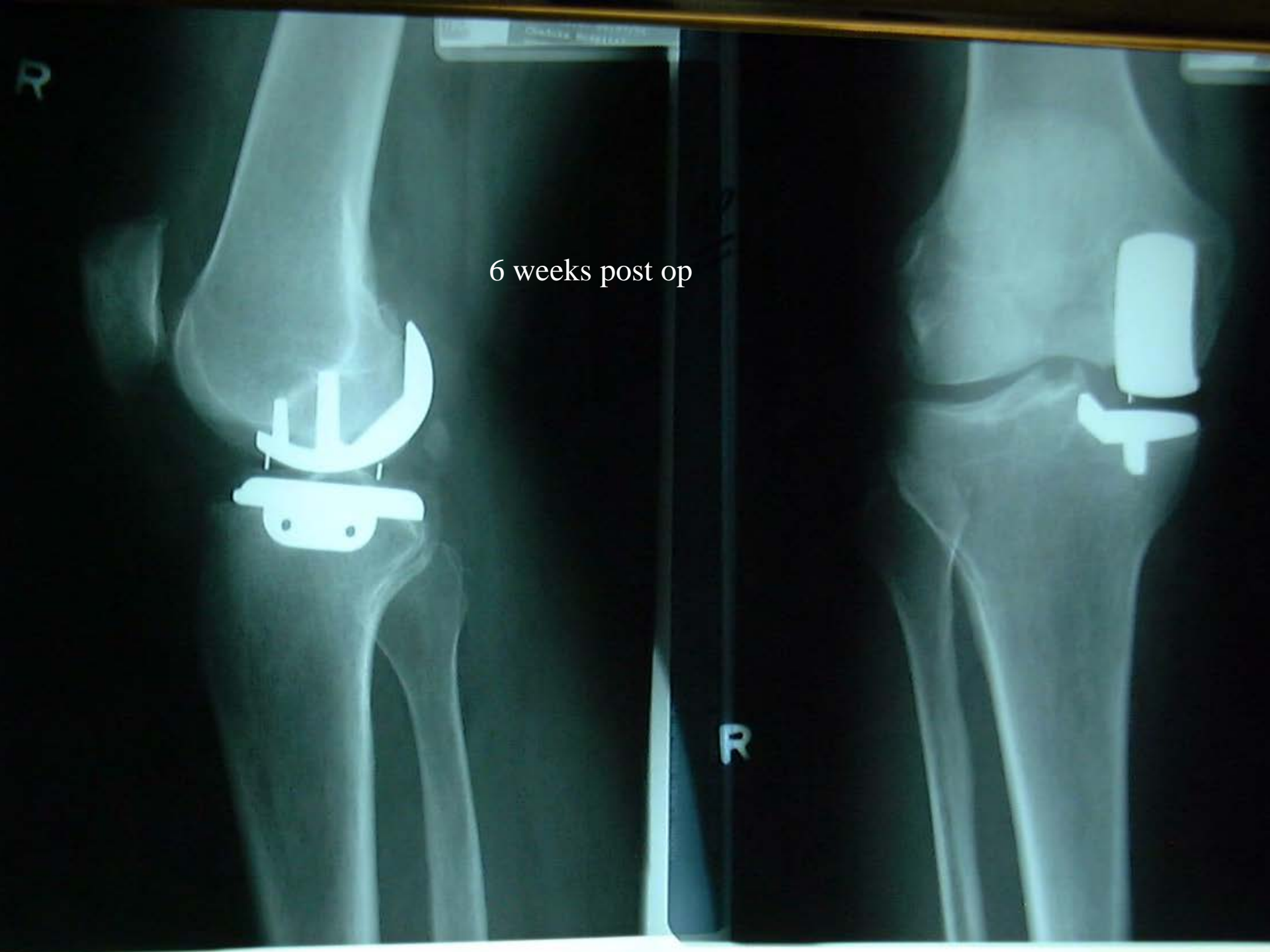


L Knee, Uniglide, 11.1.2004





6 weeks post op



1 Year post-op



Uni Knees

- Case Reports
 - Tricky cases

81 Year old male

Still practising as ER Physician!
Now, at 87!!

Increasing varus

Knee pain and giving way

Night pain





81 Year old male

- Right tibial osteotomy 1988
- Atrial Fibrillation
- Coumadin



R

PF



81 Year old male

- Options
 - Total knees
 - Uni left, total right
 - Unis





MANN, GEORGE
Study Date:11/
Study Time:4:10
MRN:M

R
CNS



R
NS



81 Year old male

- Two years later
 - Left knee fine
 - 0-120
 - Right knee
 - 0-110
 - Pain with weight bearing not localised
 - Pain if rolls over in bed



81 Year old male

- Nil to find at knee examination
- Pain on hip rotation
- Flexes only 70 deg.



RT.

XXXXXXXXXXXX





81 Year old Male

- 6 years after knees and 4 years after THR
 - Walks 2 miles per day
 - Still working as Triage Doc in ER!

Uni Knees

However:

- Things can go Wrong!

UNI KNEES

- **Disaster Strikes !!**
 - 60 year old male widower
 - Lives alone
 - Multiple joint disease
 - Two Crutches
 - Morphine





506969
1783

R





3 months post op



5 months post op



Must Minimise failure rate

3 Factors

- Implant with minimal wear
 - (Many earlier UKR failures due to wear)
 - Fully congruent unconstrained mobile bearing
- Indications
- Surgical technique

Summary

- UKR superior to HTO in function and survival
- UKR have functional advantages over TKR
- UKR survival in general similar to TKR

Summary

Need to address:

Implant

Indications

Surgical technique

ALL DONE

■ Thank you