

Mobile is better?

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Magic Mobile bearing Potion I fall down when I was a kid



Seb, For the nice cars, you need a good flexion!



JN Argenson in the JM Aubaniac car!



I can be objective!

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that maintaining the anterior cruciate ligament
advantageous in terms of survivorship, stairclim
ity, patient satisfaction, and joint kinematics [3,
31]. Historically, the first available UKAs were
fixed-bearing all-polyethylene UKAs [17]. In 198
fellow and O'Connor described a mobile-bearin
backed UKA designed to improve wear charac

Background

Mobile-bearing concept

Buechel, 1986

LCS

The Oxford Knee

Goodfellow, 1988

CEMENTED ROTATING-PLATFORM TOTAL KNEE REPLACEMENT

A CONCISE FOLLOW-UP, AT A MINIMUM OF FIFTY YEARS, OF A PREVIOUS REPORT

BY JOHN J. CALLAGHAN, MD, MICHAEL E. O'BRIEN, MD, MICHAEL E. SONG, DCL, STEVE S. LEE, MD, PHILIP M. COOPER, MD, DAVID A. VITTORE, MD, PATRICK M. SULLIVAN, MD, and ROBERT C. SHARPE, MD

2005 BY THE JOURNAL OF BONE AND JOINT SURGERY

Tibial Rotation

High flexion requires internal and external rotation of the tibia

CHU Sud Marseille

Mobile bearing knees

Background

Mobile-Bearing Knee Replacement: Clinical Results

A Review of the Literature

John J. Callaghan, MD

"surgeons must remember that although the best-fixed bearing knee replacement designs performed well, there were numerous designs that did not perform well. This also is likely to be the case with mobile-bearing designs"

Mobile-Bearing Total Knee Arthroplasty

Do the Polyethylene Bearings Rotate?

Douglas A. Dennis, MD^{†‡}; Richard D. Komistek, PhD^{†‡}; Mohamed R. Mahfouz, PhD^{†‡}; Joel T. Outten, BS[‡]; and Adrijta Sharma, MS[‡]

Implant Type	Femur/PE (degrees)	PE/Tibia (degrees)	Femur/Tibia (degrees)
Sigma at 3 months	2.2	3.1	5.3
Sigma at 15 months	0.1	2.1	2.2
LCS RP	2.3	5.8	9.0
LCS RP Deep Dish	-0.2	5.5	3.8
LCS APG	0.9	5.1	5.9

Limited rotation of the Polyethylene

Background

2000: New specific mobile-bearing TKA design

Characteristics

1. High-flexion
2. Postero-stabilized
3. Mobile bearing

Goals

1. Restore normal knee kinematics
2. Increase ROM
3. Restore patient function
4. Minimize wear and improve survivorship

Comprehensive Step by step Validation Approach

LPS Flex Mobile Design

LPS-Flex

Congruous contact to 155°-165° Passive

ROM (deg)

0 25 50 75 100 125 150

400 300 200 100 0

--- LPS --- LPS-Flex

LPS Flex Mobile Design

PRESSURE DISTRIBUTION

10° FLEXION (3210 N)

LPS

D femur

yellow tibia

LPS-Flex Mobile

D femur

D tibial TM1209.00

MPa

>= 24.00

20.00

18.00

16.00

14.00

12.00

10.00

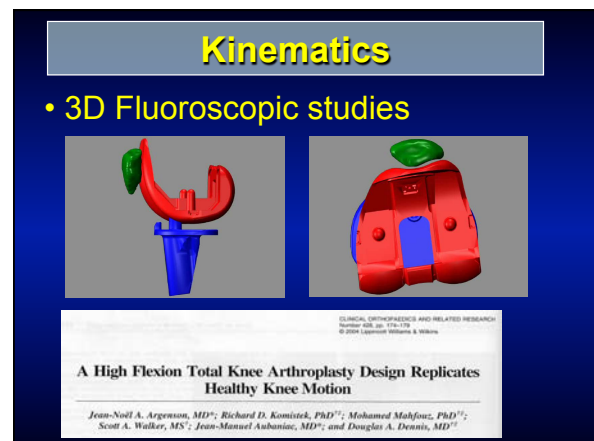
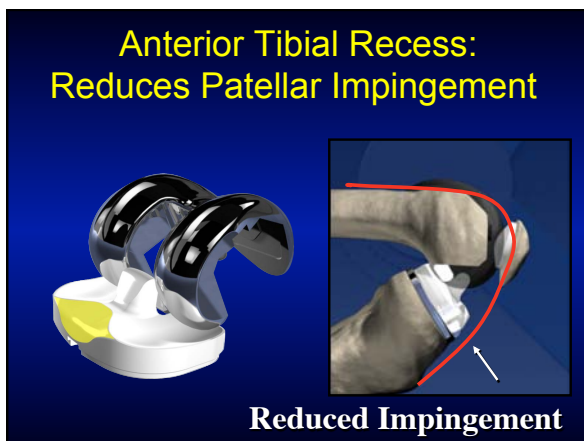
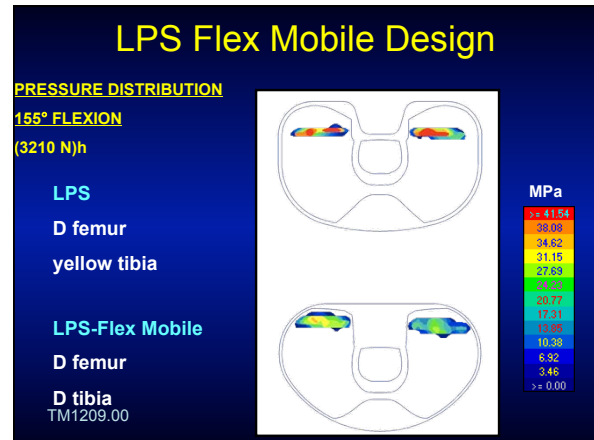
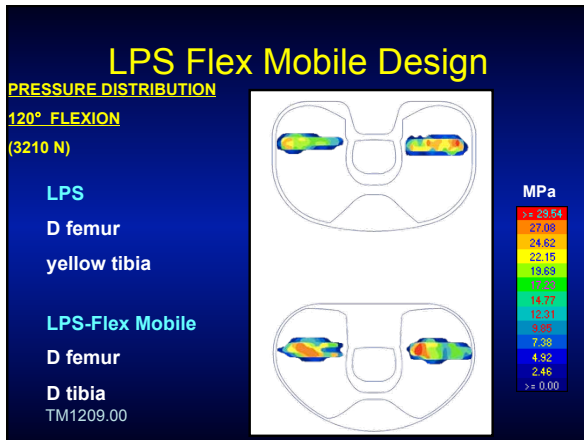
8.00

6.00

4.00

2.00

>= 0.00




Background

Goals

1. Restore normal knee kinematics
2. Increase ROM
3. Restore patient function
4. Minimize wear and improve survivorship

YES

?



Goals of the study

➡ **High-flexion mobile-bearing postero-stabilized TKA**

1. Objective functional outcomes as measured by the **Knee Society Score** and range of knee flexion?
2. Subjective outcomes and the knee related

Clin Orthop Relat Res (2008) 466:2669–2676
 DOI 10.1007/s11999-008-0418-x

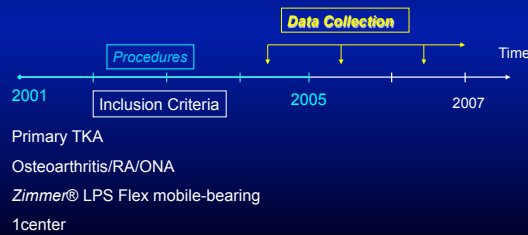
SYMPOSIUM: PAPERS PRESENTED AT THE ANNUAL MEETINGS OF THE KNEE SOCIETY

Patient-reported Outcome Correlates With Knee Function After a Single-design Mobile-bearing TKA

Jean-Noël Argenson MD, Sébastien Parratte MD, Abdullah Ashour MD, Richard D. Komistek PhD, Giles R. Scuderi MD

Material and Methods

- Study design: prospective study



Material and Methods

1. Objective evaluation

- Knee Society Score**
 - Physical exam and clinical evaluation
 - Independent observer (Sandra Coudreuse)
 - Knee score and Function Score

Rationale of the Knee Society Clinical Rating System: Insall et al, CORR, 1989

Range of knee flexion

- Same independent observer
- Two-arms goniometer



Range-of-motion measurements: Lea & Gerhard, Jbjs Am, 1995

Material and Methods

Ability and return to previous level of activity

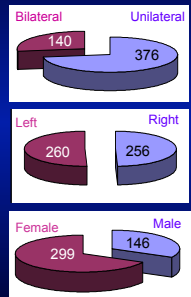
- UCLA Score** the value of patient activity level in the outcome of THA Beaulé et al, JOA, 2006
 - Self-administrated questionnaire (1 mn)
 - 10 points scale (0: completely inactive/ 10: High impact sport)
- Patient perception of Sport and Activities :**
 - Delay?
 - Type of activity?
 - Return to previous level?
 - Patient perception of limitation related to the knee during sport practice?

Material & Methods

The series: 516 knees in 445 patients

- Mean Age= 71.6 ± 8 years old
- Mean BMI= 28.3 ± 4.6 Kg/m²

Etiologies :	N knees	%
OA	474	92
Others*	42	6



* = post-traumatic OA, ONA, systemic disease

Material and Methods

2. Subjective evaluation

- Knee Osteoarthritis Outcomes Score**
 - self-administrated questionnaire (8 to 10 mn)
 - Free access: www.koos.nu
 - "Improved WOMAC"
 - Validated and correlated with SF-36 QOL questionnaire

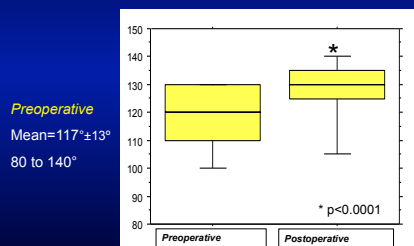
Health and Quality of Life Outcomes

Research
Knee injury and Osteoarthritis Outcome Score (KOOS) – validation and comparison to the WOMAC in total knee replacement
Eva M Roos^{1,2} and Søren Toksvig-Larsen¹

Results

1. Objective results

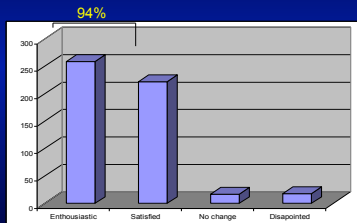
Range of knee flexion



Results

2. Subjective results: patient perception

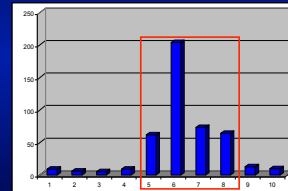
General overall satisfaction



Results

3. Sports and activity results

UCLA SCORE



• Mean UCLA : 6.9 ± 1.6

• 82% involved in sportive activities (373 out of 455)

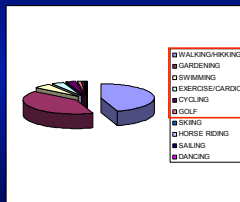
• Delay before return : 6 ± 4 months

Results

3. Sports and activity results

Type of activity

Patient perception



1. Ability to performed the activity/previous level

1. Better: 72%
2. Same: 13%
3. Lower: 14%

2. Percept knee related limitations

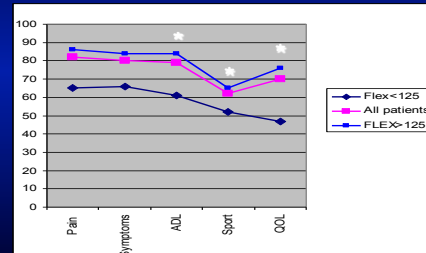
1. None: 35%
2. Slight: 50%
3. Major: 14%



Results

4. Correlations between objective and subjective scores

Postoperative flexion and KOOS

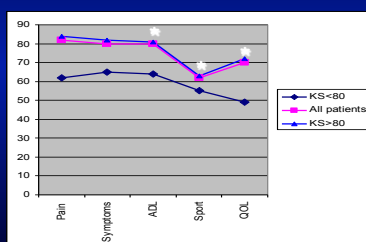


0.001

Results

4. Correlations between objective and subjective scores

Postoperative Knee Score and KOOS



$p < 0.001$

Discussion

High-flexion mobile-bearing postero-stabilized TKA

1. Satisfying objective functional outcomes
3. Satisfying Subjective outcomes and knee related quality of life?
5. Return to previous activity level
6. Correlation between objective and patient-reported outcomes :
 - High flexion and Knee score and function during ADL
 - High flexion and Knee score and function during sport
 - High flexion and Knee score and QOL

Discussion

1. Kinematics
2. Improve ROM
4. Fonction restauration



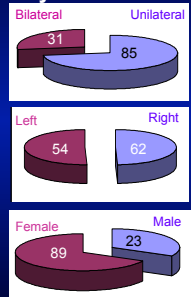
Survivorship ?

Material & Methods

116 knees in 112 patients Minimum 10 years ?

- Age= 69.4 ± 7 years
- BMI= 28 ± 5 Kg/m²

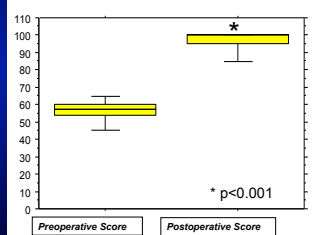
Etiology :	N knees	%
OA	106	92
Others*	10	6



Results minimum 10 years

Knee Society Knee Score

Pre-op
Mean=55±7
10 to 70

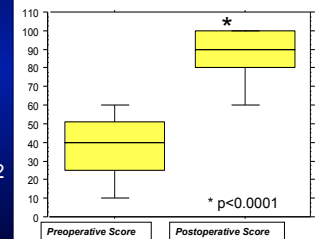


Post-op
Mean=96±3
42 to 100

Results

Knee Society Function Score

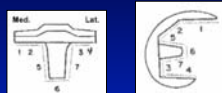
Pre-op
Mean=38±12
5 to 65



Post-op
Mean=91±6
42 to 100

Results

Radiological Evaluation



- 15 non progressive lucencies
- No PF complications

HKA	178
Tibial Angle	86°
Femoral Angle	90°
Tibial Slope	5°



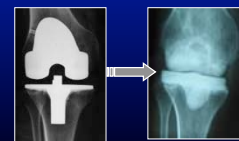
Revision

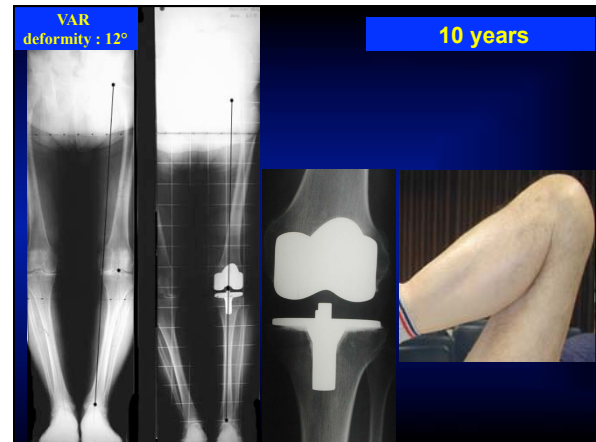
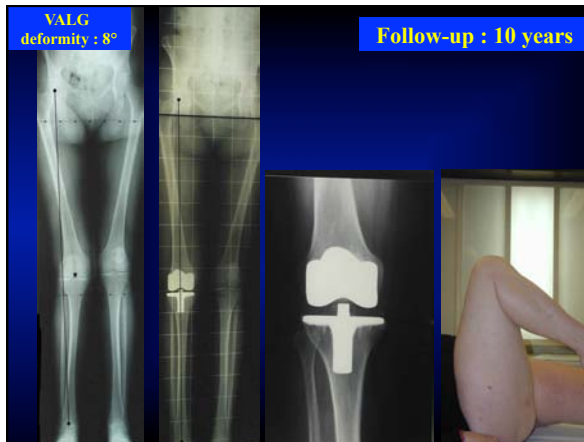
- 1 revision for tibial loosening
- tibial revision at 36 months
- 2 revisions for infection
- previous surgery ++
- 18 and 24 months
- 2 stage revision

Results



Survivorship at 10 ans
98.2% considering all revisions





Conclusion

- Not comparative
- Step by step comprehensive validation approach with more than 10 years of experience
- Basic surgical principals remains the most important keys of succes after TKA