

MOBILE OR FIXED BEARING IN UNICOMPARTMENTAL KNEE ARTHROPLASTY

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Unicompartmental Arthroplasty (1974 - 2006)

- Marmor I : 161
- Marmor II : 227
- Oxford : 101
- MG, ZUK : 385
- Others : 82



Revision

- Arthritis progression (16) 83 months (11 - 157)
- Loosening (13) 49 months (1 - 138)
- Wear (9) 31 months (4 - 72)
- Infection (1) 22 months (5 - 26)
- Bearing dislocation (1) 3 months



Loosening

- Malposition !
- Malignment !



Polyethylene wear

- 3 mm : 1
- 6 mm : 16
- 8 mm : 5
- 10 mm : 2



Wear in UKA :

- Design issues
- Technical issues

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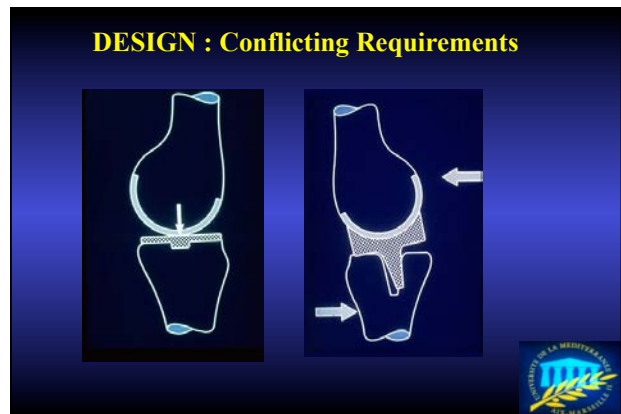
The Unicompartmental Knee Design and Technical Considerations in Minimizing Wear

Jean-Noël A. Argenson, MD; and Sébastien Parratte, MD



Wear in UKA : design issues

- Lindstrand A, Sternstrom A : Polyethylene wear of the PCA unicompartmental knee : prospective 5 (4-8) year study of 120 arthrosis knee. *Acta Orthop Scand* 63(3) : 260, 1992.
- Knight JL, Gorai PA, Atwater RD, Grothaus L : Tibial polyethylene failure after primary porous coated anatomic (PCA) total knee arthroplasty : aids to diagnosis and revision. *J Arthroplasty* 10 : 1995.
- Knight JL, Atwater RD, Guo J : Early failure of the porous coated anatomic cemented unicompartmental knee arthroplasty. Aids to diagnosis and revision. *J Arthroplasty* 12(1) : 11-20, 1997.

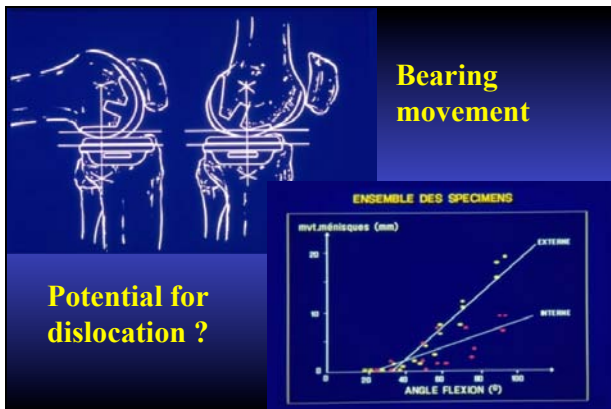


Polyethylene wear in meniscal knee replacement. *J.N.Argenson, J.J.O'Connor.*
JBJS[Br], 1992

Minimum wear in Oxford UKA knee

Psychoyios V, Crawford RW, O'Connor JJ, Murray DW : Wear of congruent meniscal bearings in unicompartmental knee arthroplasty. A retrieval study of 16 specimens. *J Bone Joint Surg* 80B : 976-982, 1998.

Price AJ, Short A, Kellett C, Beard D, Gill H, Pandit H, Dodd CAF, Murray DW : Ten year *in vivo* wear measurement of a fully congruent mobile bearing unicompartmental knee arthroplasty. *J Bone Joint Surg* 87B:1493-1497, 2005.



Mobile bearing : dislocation !

- Lindstrand A, Stenstrom A, Lewold S. : Multicenter study of unicompartmental knee revision. PCA, Marmor, and St Georg compared in 3 777 cases of arthrosis. Acta Orthop Scand 63(3) : 256-259, 1992.
- Lewold S, Goodman S, Knutson K, Robertsson O, Lidgren L : Oxford meniscal bearing knee versus the Marmor knee in unicompartmental arthroplasty for arthrosis : a Swedish multicentre survival study. J Arthroplasty 10 : 722-731, 1995



Wear in UKA :

- Design issues
- Technical issues

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The Unicompartmental Knee

Design and Technical Considerations in Minimizing Wear

Jean-Noël A. Argenson, MD; and Sebastien Parratte, MD

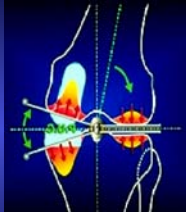
Results Vs ACL

- Berger, Argenson : 2 UKA failures
- Lessons :
 - no posterior slope > 7° (Hernigou JBJS 2004)
 - no mobile bearing (Goodfellow CORR 1992)
 - sedentary or active
 - combined ACL reconstruction ?

Results Vs Lat. Compart.

- Good results for lat. compart. (Ohdera et al. J Arthroplasty 2001, Ashraf et al. JBJS 2002)
- Argenson et al. : no revision out of 15 lat. UKA at ten years
- No mobile bearing (>10% dislocation Swedish register)

OVERCORRECTION ⇒ O.A. PROGRESSION



• Severe undercorrection is associated with increased wear in the medial tibiofemoral compartment (Ridgeway et al. *JBSJ* 2002)
Hernigou and Deschamps *CORR* 2004)



OA Progression



**Consequences of wear in UKA :
Fixed = Mobile**

- Hart WJ, Jones RS : Wear debris associated with a large lateral femoral condyle cyst following an Oxford medial unicompartmental knee replacement. *Knee* 11(5) : 409-412, 2004.



Wear in UKA : multifactorial

- Collier MB, Engh Jr CA, Engh GA : Shelf age of the polyethylene tibial component and outcome of unicompartmental knee arthroplasty. *J Bone Joint Surg* 86A(4) : 763- 769, 2004.
- McGovern TF, Ammeen DJ, Collier JP, Currier BH, Engh GA : Rapid polyethylene failure of unicompartmental tibial components sterilized with gamma irradiation in air and implanted after a long shelf life. *J Bone Joint Surg* 84A : 901-906, 2002.

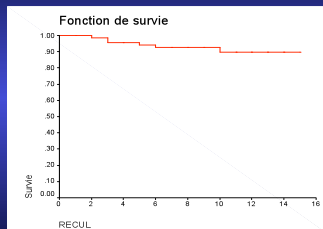


OUR RESULTS

Oxford UKA

Lino, Argenson, Aubaniac *SOFCOT* 2004

90 % at 12 years (ic 86-93) Kaplan-Meier .



DISCUSSION

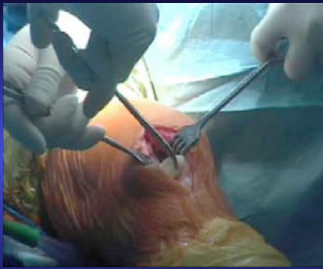
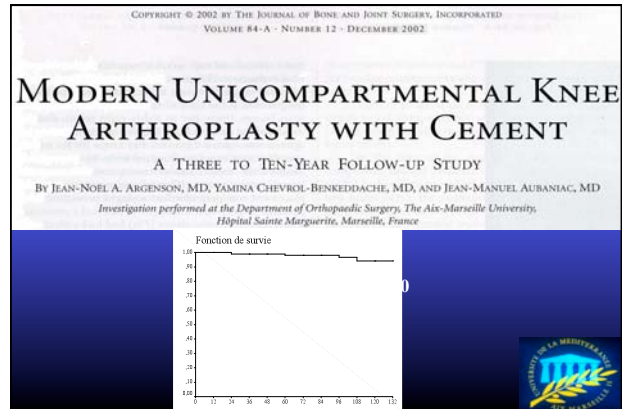
Lino (sofcot 2002)	Lewold (1995)	Svard (2001)	Murray (1998)	Goodfellow (1993)
72	698	124	143	121
90%	90%	95%	97.70%	95%



DISCUSSION : Lucencies

Lino (sofcot 2002)	Sheo (1984)
12,4 ANS	2,6 ANS
67%	62%

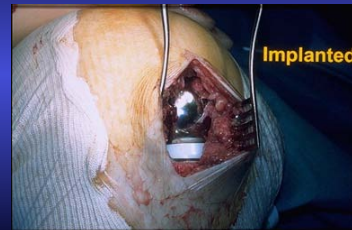
- Usually since the first year
- More frequent in the revision group (FISCHER TEST, $p=0,004^*$).
- Do not mean loosening !

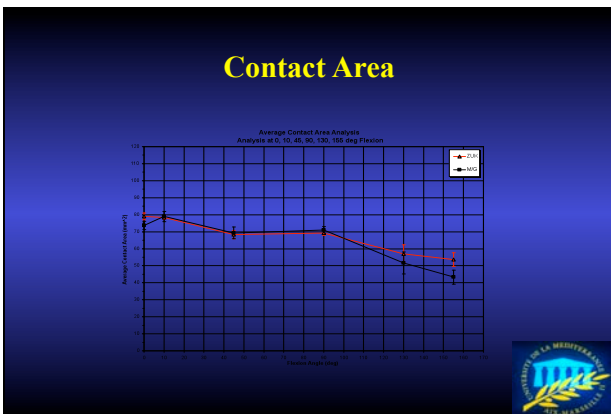
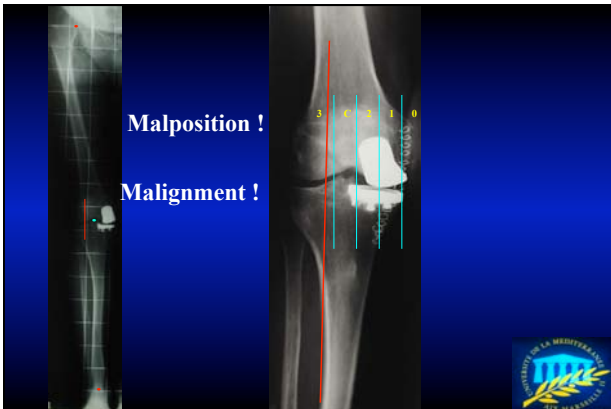


Polyethylene wear : 95 months, 104 months



Is Minimal Invasive Surgery changing something ?





Modern Designs

UKA: A Solution for the Young Arthritic Knee?

Yes

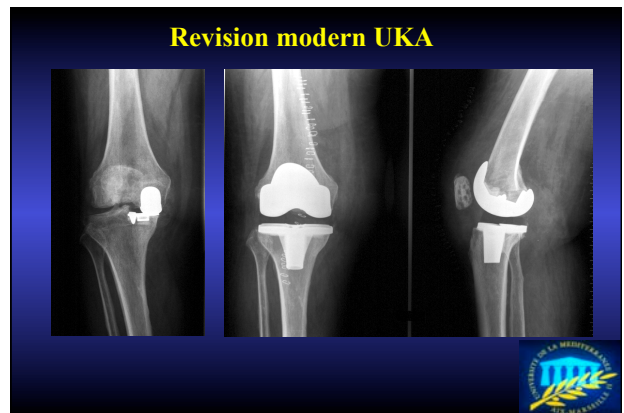
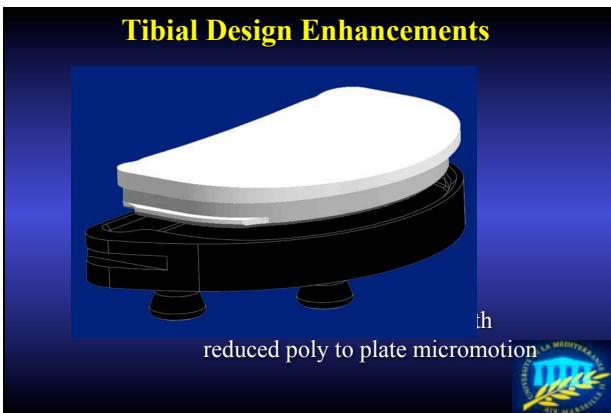
Design enhancement

New geometry for **high flexion**
Improve femoral placement

87.8% poly coverage

72.4% poly coverage

Net-shape molded poly articular surfaces





CONCLUSION

- **Ten years results** > 90 %
- **Fixed bearings** : - reproducible
- high benefit of design evolutions
- **Mobile bearing** : - ideal design
- technique sensitive