

# EARLY CLINICAL RESULTS OF PRIMARY CEMENTLESS TOTAL KNEE ARTHROPLASTY

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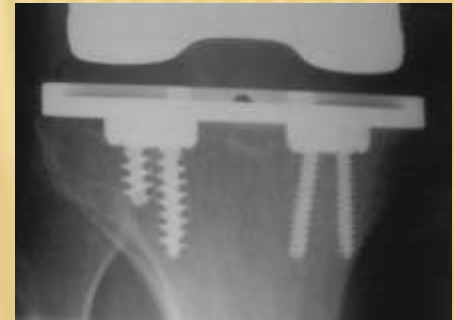
Cemented total knee replacements will remain the standard for total knee arthroplasty, however, some promising results have been demonstrated by use of uncemented designs with bioactive surfaces (eg, hydroxyapatite)



# CEMENTLESS FIXATION BACKGROUND

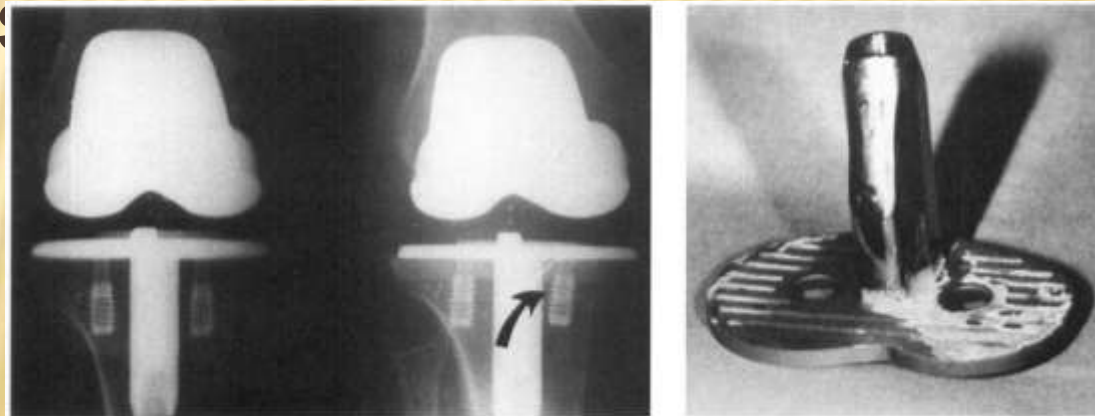
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- ✘ Cementless implants were introduced in the 1980s,
- ✘ Implants have a surface topography that is conducive to attracting new bone growth
- ✘ Screws or pegs are used to stabilize the implant until bone ingrowth occurs
- ✘ Cementless implants require a longer healing time than cemented replacements



# CAUSES OF FAILURES

- ✘ Screw track osteolysis
- ✘ Poor polyethylene
- ✘ Metal-backed patellar component failures





# IMPROVEMENT OF RESULTS

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- ✘ Introduction of new porous materials and design modifications
- ✘ Highly porous metals
- ✘ Crosslinked polyethylene
- ✘ Advances in the surgical technique

# ADVANTAGES

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- ✘ Potential for lifetime fixation
- ✘ Preservation of bone stock
- ✘ Less potential for backside wear
- ✘ Shorter operative time

# DISADVANTAGES

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- Longer healing time
- The problems of wear and bone loss
- Higher prosthetic costs
- Dependence on precise surgical technique and prosthetic fit
- Dependence on bone quality
- Primary tibial fractures secondary to tibial loosening
- Unexplained periprosthetic pain

# Criteria for Patient Selection

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- Age is definitely a deciding factor
- Significant osteoporosis and inactive lifestyle precludes the use of cementless TKA
- Poor vascularity of underlying bone
- Poor ligamentous stability (excessive stress on implant bone interface)

(Murali Podeval, Kenneth Krackow

2001)



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## ✘ OUR RESULTS

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- ✘ This is by no means a comparison to cemented TKA
  - ✘ Our goal is just to share with you our experience with cementless TKA

# MATERIALS AND METHODS

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- ✘ From March 2008 to February 2012
- ✘ Uncemented knee replacement were performed in 325 patients (358 knees)
- ✘ Hybrid total knee replacement (cemented tibial tray) – 23 knees for 23 patients
- ✘ 2 knees with cementless patellar component
- ✘ Mean age of patients 64.7
- ✘ 118 men and 207 women
- ✘ Mean follow-up 2.1 years

# PATIENTS

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- × Most patients had osteoarthritis – 303
- × Chondrocalcinosis – 3
- × Psoriatic arthropathy - 4
- × Rheumatoid arthritis – 12
- × S/P HTO - 3



# PROSTHESIS

- ✘ **Cementless LCS TKA was performed in 270 knees**



# PROSTHESIS

- ✘ **Uncemented ROCC Vanguard was used in 88 knees**
- ✘ **44 of them by Signature system**



# PROSTHESIS

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- ✘ **Signature System has been used in 60 knees**
- ✘ **44 of which are included in the actual follow-up**



# EVALUATION

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- ✘ Patients were assessed clinically and radiologically at 3, 6, 12 and 24 months postoperatively
- ✘ Evaluation was based on the Knee Society Score (clinical and functional)



# KNEE SCORES

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- ✘ The Knee Society clinical rating score consists of
  1. clinical results (pain, presence of flexion contraction, extension lag, total range of motion, alignment and stability)
  2. functional outcomes (distance walked, stair climbing and assistive device rating).

**Every score has a maximum of 100 points.**

# Knee Society Score

Clinician's name (or ref) \_\_\_\_\_

Patient's name (or ref) \_\_\_\_\_

During the past 4 weeks.....

[Click here for part 2 - FunctionScore](#)

## Part 1 - Knee Score

### Pain

- None
- Mild / Occasional
- Mild (Stairs only)
- Mild (Walking and Stairs)
- Moderate - Occasional
- Moderate - Continual
- Severe

### Flexion Contracture (if present)

- 5°-10°
- 10°-15°
- 16°-20°
- >20°

### Extension lag

- <10°
- 10-20°
- >20°

### Total Range of Flexion

- 0-5     6-10     11-15     16-20     21-25
- 26-30     31-35     36-40     41-45     46-50
- 51-55     56-60     61-65     66-70     71-75
- 76-80     81-85     86-90     91-95     96-100
- 101-105     106-110     111-115     116-120     121-125

### Alignment (Varus & Valgus)

- 0     1     2     3     4
- 5 - 10
- 11     12     13     14     15
- Over 15°

### Stability (Maximum movement in any position)

#### Antero-posterior

- <5mm
- 5-10mm
- 10+mm

#### Mediolateral

- <5°
- 6-9°
- 10-14°
- 15°

To save this data please print or

Nb: This page cannot be saved due to patient data protection so please print the filled in form before closing the window.

Final Knee Score is

(NB: consider a negative outcome as zero)

[Click here for part 2 - FunctionScore](#)

### Grading for the knee Society Score

Score 80-100 Excellent

Score 70-79 Good

Score 60-69 Fair

Score below 60 Poor

# Knee Society Score - Function

Clinician's name (or ref)  
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Patient's name (or ref) -----

Please answer the following questions.

## Part 2 - Function

### Walking

- Unlimited
- >10 blocks
- 5-10 blocks
- <5 blocks
- Housebound
- Unable

### Stairs

- Normal Up and down
- Normal Up down with rail
- Up and down with rail
- Up with rail, down unable
- Unable

### Walking aids used

- None used
- Use of Cane/Walking stick deduct
- Two Canes/sticks
- Crutches or frame

# RESULTS

KF2012

## PREOPERATIVE

- × Mean Knee Society Score 95 (47-148)
- × Mean Flexion 110 (65 – 135)
- × Mean Knee Society Clinical Score 41
- × Mean Functional Score 54

## POSTOPERATIVE

- × Mean Knee Society Score 177 (98 – 200)
- × Mean Flexion 118 (85– 130)
- × Mean Knee Society Clinical Score 84
- × Mean Functional Score 93



# PAIN

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According to Knee Society Score:

- ✘ None – 31
- ✘ Mild (Occasional) – 192
- ✘ Mild (Stairs only) – 64
- ✘ Mild (Walking and Stairs) – 35
- ✘ Moderate (Occasional) – 21
- ✘ Moderate (Continual) – 12
- ✘ Severe – 4

# RADIOLOGICAL ASSESSMENT

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- ✘ AP and lateral radiographs
- ✘ Measurement of prosthetic alignment
- ✘ Number and thickness of radiolucent lines
- ✘ **There have been no component subsidence or osteolysis**

# ESTIMATED COMPLICATIONS

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- ✘ Deep infection – 1 (treated by massive irrigation and poly replacement)
- ✘ Superficial surgical wound infection (treated with IV antibiotics) – 12
- ✘ DVT – 8
- ✘ Significant arthrofibrosis with stiff knee - 2
- ✘ Postoperative manipulation – 9
- ✘ Postoperative arthroscopy – 2
- ✘ None required revision surgery

# OUR EXPERIENCE IN TKA (SIGNATURE SYSTEM)

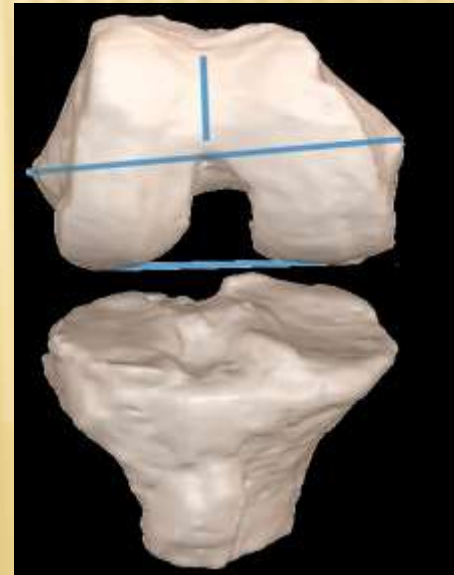
- ✘ 60 knees up today
- ✘ 44 patients (44 legs) in actual follow up
- ✘ 20 males, 24 females
- ✘ Using of Vanguard ROCC prosthesis
- ✘ The average operative time was 46 minutes
- ✘ Perioperative blood loss averaged 100 cc
- ✘ There were no intraoperative complications





# SIGNATURE SYSTEM ADVANTAGES

- ✘ Direct correlation between mechanical axis, preoperational varus and recommended distal valgus .
- ✘ Demonstration of satisfactory components position
- ✘ No infection
- ✘ Lesser perioperative blood loss
- ✘ Signature System is a new interesting instrument for accurate bone resection and restoration of alignment.



# CONCLUSIONS

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- ✘ Good and excellent clinical and radiological results of these series are comparable to outcomes achieved by cemented TKA
- ✘ The pain relief and restoration of function assessed clinically and by improvement in knee score
- ✘ Further long-term follow-up is still required, however, to maintain the efficacy of uncemented TKA

# THANK YOU FOR YOUR ATTENTION!

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