



# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

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# **ISOLATED PATELLO-FEMORAL ARTHROPLASTY**

Indications, Contraindications and Pitfalls  
of Patellofemoral Arthroplasty.

JBJS 2006, Vol 88-A: Supplement 4 2006

Wayne Leadbetter MD et al

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- McKeever 1955
  - All Metal , abandoned due to Trochlear wear
- Richards 1979
  - Reported by Blazina, 42-92% good-excellent but patella tended to impinge in flexion  $>90$

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Lubinus ( Waldemar Link)
  - Several poor result reports
  - 28% revision rate
    - Especially with
      - WSIB claim
      - Poor pre-op range
      - More 2 previous operations

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Leadbetter et al.
  - Avon PFA
    - 30 knees
    - 25 patients
      - 23 Female
      - 2 Male
    - Average age 48

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- INDICATIONS

1. OA limited to Patellofemoral joint
2. Severe symptoms, failed conservative R
3. Post Traumatic Arthritis
4. Extensive Grade III Chondrosis; trochlea and medial facet or prox half of Patella
5. Failed extensor unloading procedure
6. PF malalignment/ dysplasia-induced degen. With or without instability

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Contraindications
  1. >Kellgren Gr 1 OA of Tib-Fem joint
  2. Systemic inflammatory arthropathy
  3. OA or Chondrosis of Gr. 3 or less
  4. Patella baja (infera)
  5. Uncorrected malalignment
  6. Active infection
  7. Fixed loss of range (need 10-110 min.)
  8. Psychogenic Pain!! (No Kidding)

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Relative Contraindications:
  - Multiple previous operations or trauma
  - Prior arthrofibrosis
  - Ligamentous tib-fem instability
  - Prior meniscectomy
  - Chondrocalcinosis
  - Age <40 Patella alta
  - Primary OA
  - MALE



# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Results
  - 25 knees    Good to Excellent
  - 5            Fair (mostly due to poor on stairs)
  - 2 Revised to TKR
  - Post Fulkerson:
    - of 8: 6 Good- Excellent, 2 fair
    - No revisions

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Causes of Failure
  - Notching of Femur, 1
  - Stiffness, 4
  - Patellar tendon rupture, 2
  - Infection, 1
  - Revised to TKR, 2

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Recommends:
  - Never leave less than 10mm patella thickness
  - Never exceed original Patella thickness (25mm)
  - Never notch the femur
  - Balance the patella tracking.

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Leadbetter concludes:
  - Effective and pragmatic operation
  - Possible to avoid patellectomy
  - Delay TKA significantly
  - Very easy conversion, should it become necessary.

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Sisto
  - JBJS July 2006
  - Reports on custom PFA
  - 25 knees, 22 patients from 1995-2002
  - None revised
  - Excellent 18
  - Good 7

# **ISOLATED PATELLO-FEMORAL ARTHROPLASTY**

- **THE AVON PATELLOFEMORAL ARTHROPLASTY**
- **Ackroyd, Newman et al., JBJS 2007; 89-B:310-315**
  - **Five Year Survivorship and Functional Results**

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

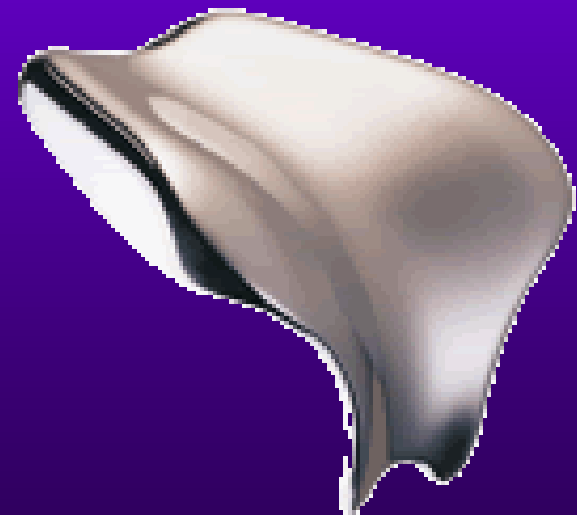
**Avon™**



# Avon™ Design Rationale



- Femoral Component
  - 1.5 mm (centre of groove)
  - Reduced sides
  - U shaped distal tip
  - Symmetrical
- CoCr Alloy





# Avon™ Design Rationale

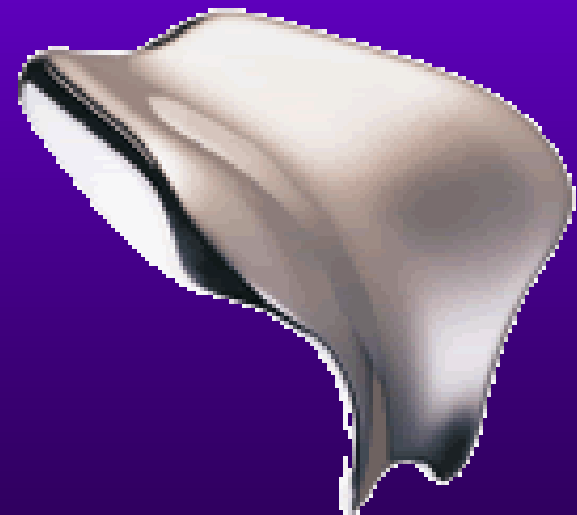


- Femoral Component

- 4 Sizes

- Extra Small, Small, Medium, Large

Size	M/L width (mm)	A/P length (mm)
Extra Small	43.5	42.5
Small	46.5	42.5
Medium	50.3	47.5
Large	54.3	49.0



# Avon™ Design Rationale



- Femoral Component

- Fixation

- Stability
    - Position
    - Alignment

- Avon

- 4 small pegs
    - Spaced apart



# Avon™ Design Rationale



- Design Criteria
  - Surface replacement only
    - Minimal bone resection
    - Easy conversion to TKA
  - Broad trochlear surface → ↑ contact area
  - Congruous articulation throughout ROM
  - Improved patellofemoral tracking
  - ↑ survivorship

• Kinemax® Plus  
Total Knee System  
Modular Components



# Avon™ Design Rationale



- Patella Component

- All-Poly button
- Pegged fixation (3)
- 3 available sizes
- Sm = 9mm, M = 9.5mm, L = 10mm



- Central Dome offset by 3mm medially











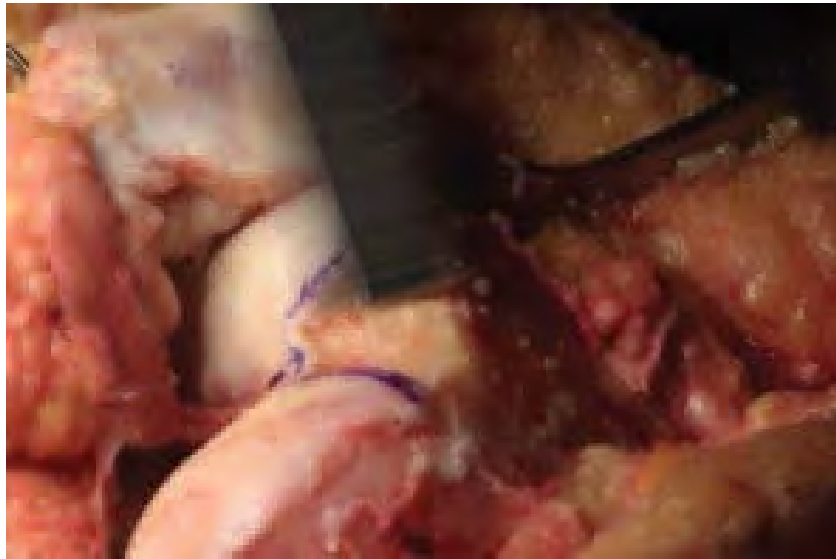












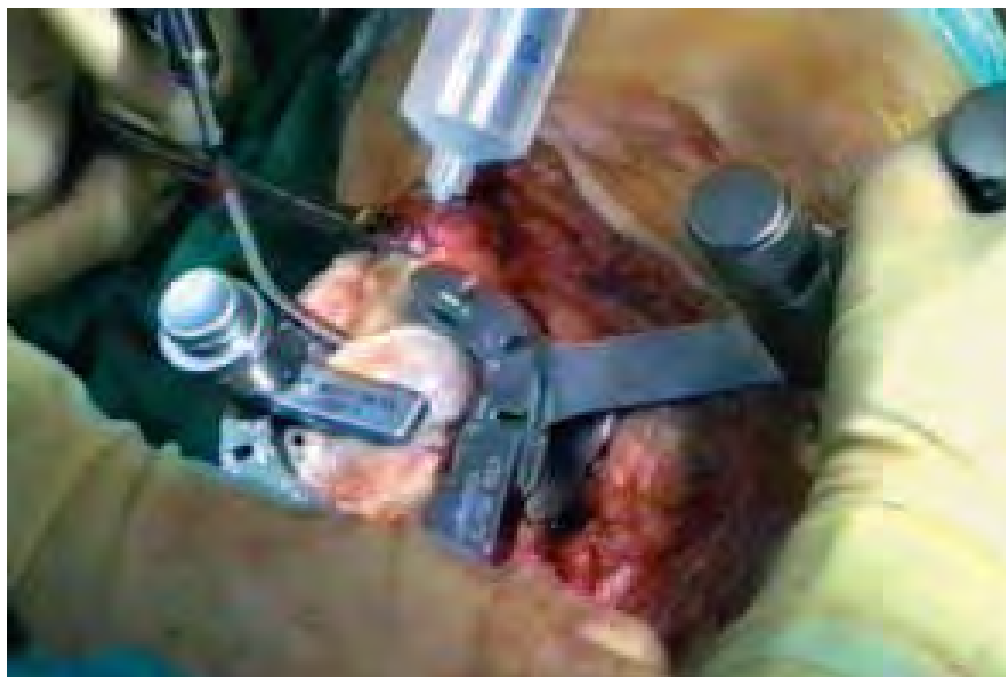






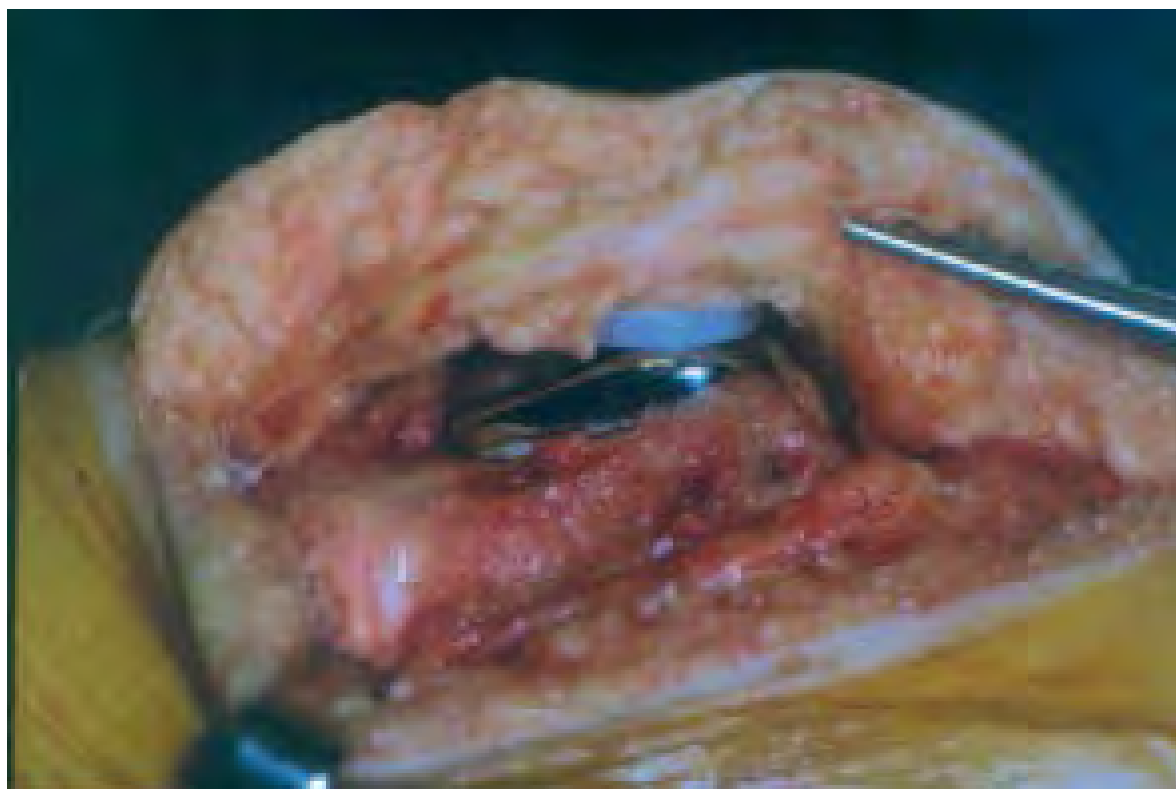
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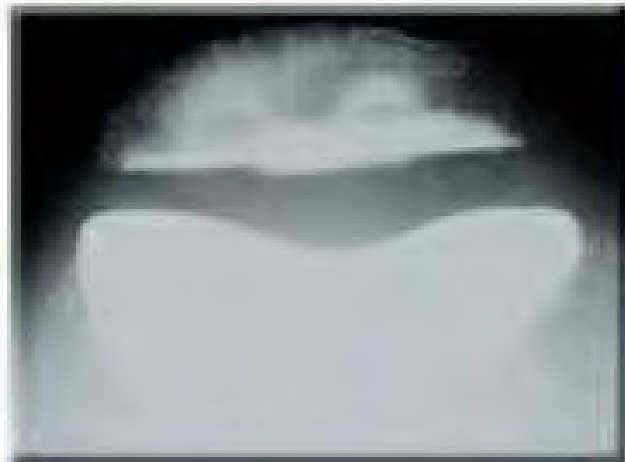
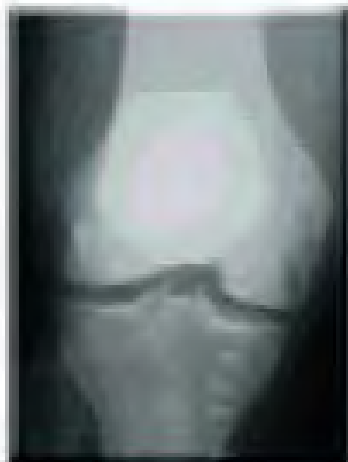












# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- 85 patients
- 109 knees
- >5years follow-up
- 95.8% No loosening, no revisions
- 18% showed progression of OA in tib-fem joint



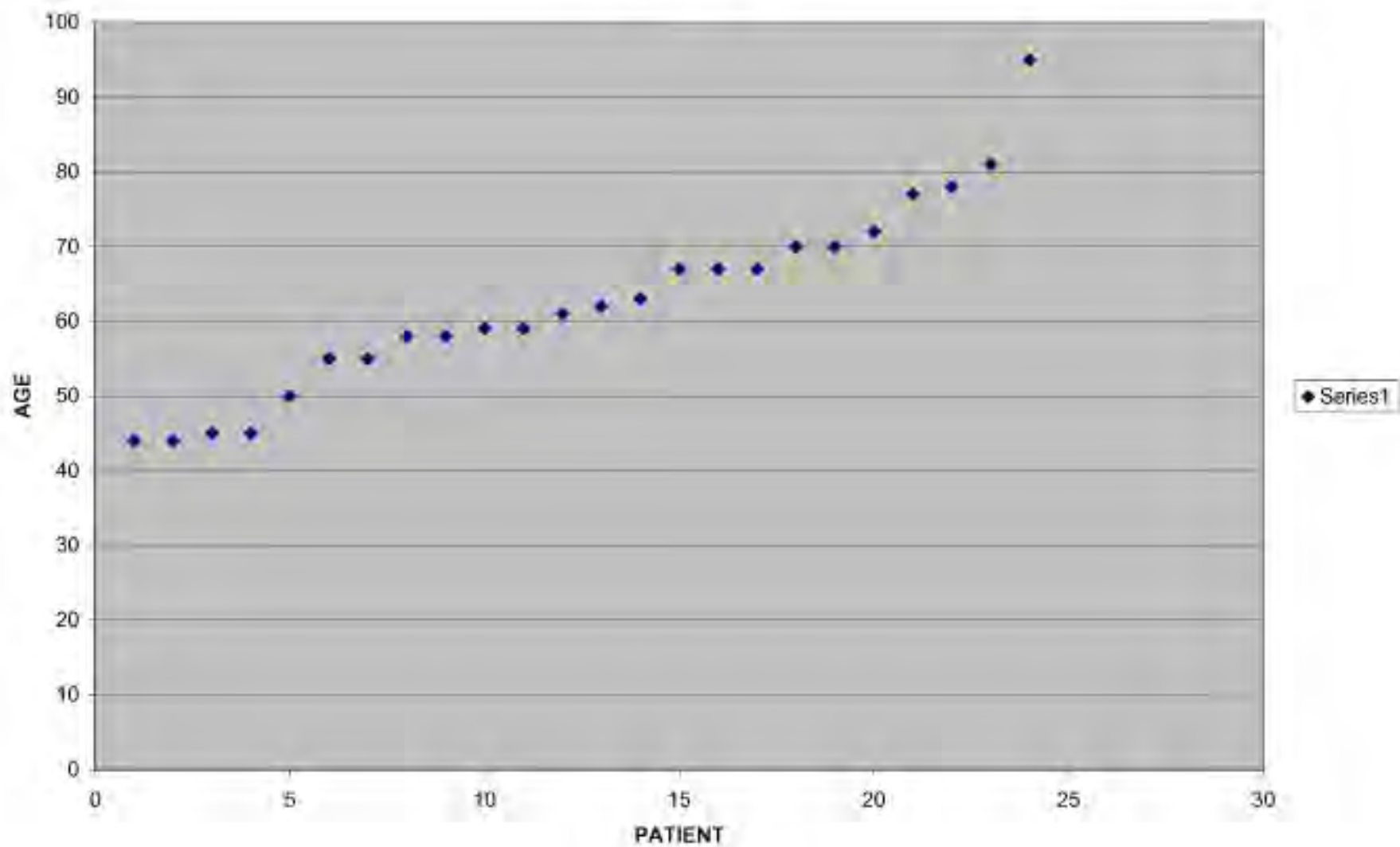
# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Reduced incidence of Maltracking and Patella wear though 70% had it pre-op
- Broad shallow proximal trochlear design
- Lifted from Kinemax plus
- Release Retinaculum at subperiosteal attachment to patella.
- 40% had some femoral condyle damage

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- F. Smith Avon Series.
- 23 knees
- 17 patients
  - 15 female
  - 2 male
  - (7.5:1 ratio, same as Ackroyd)
- Implanted 2003-2007

# AVON PFA



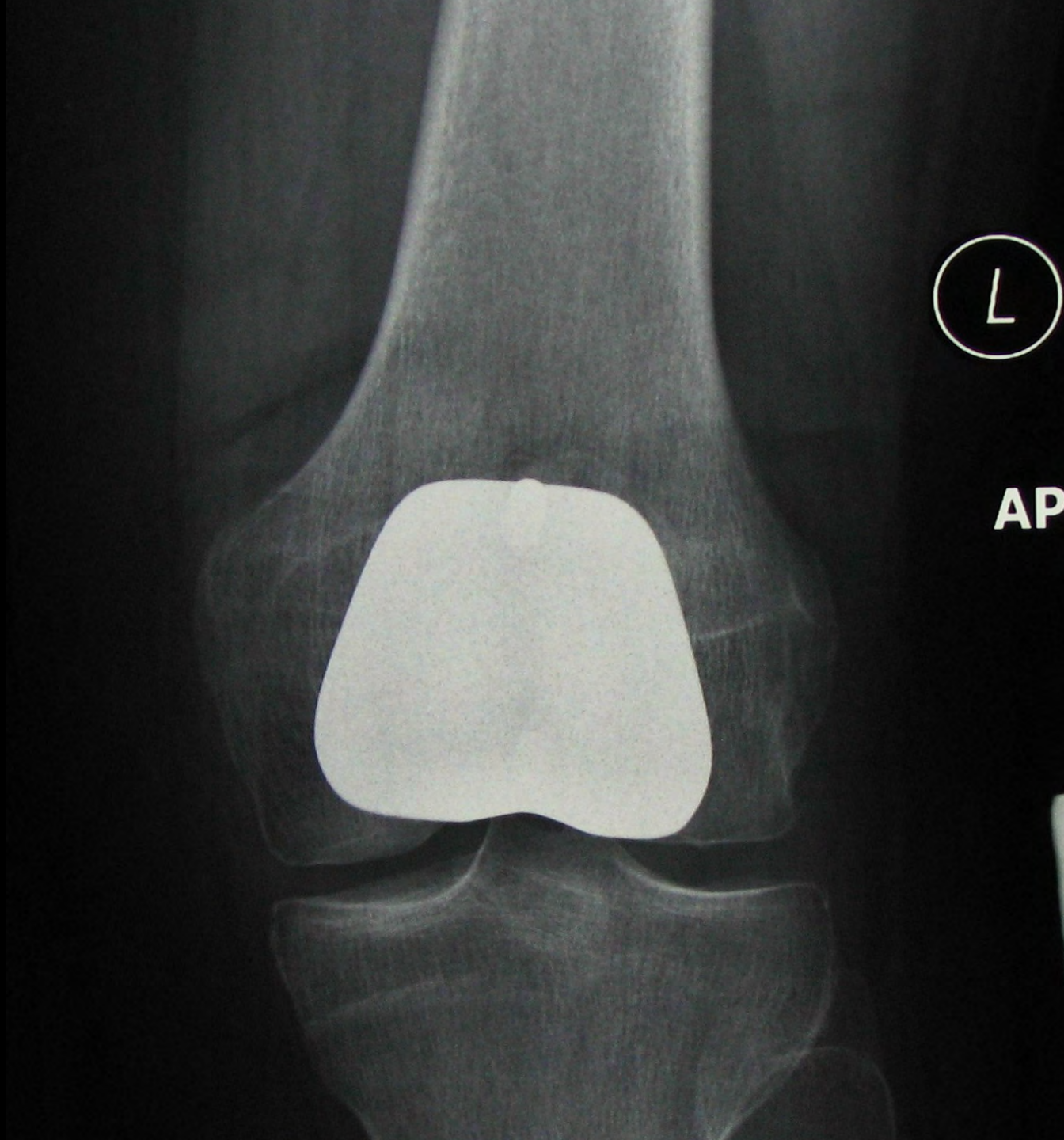






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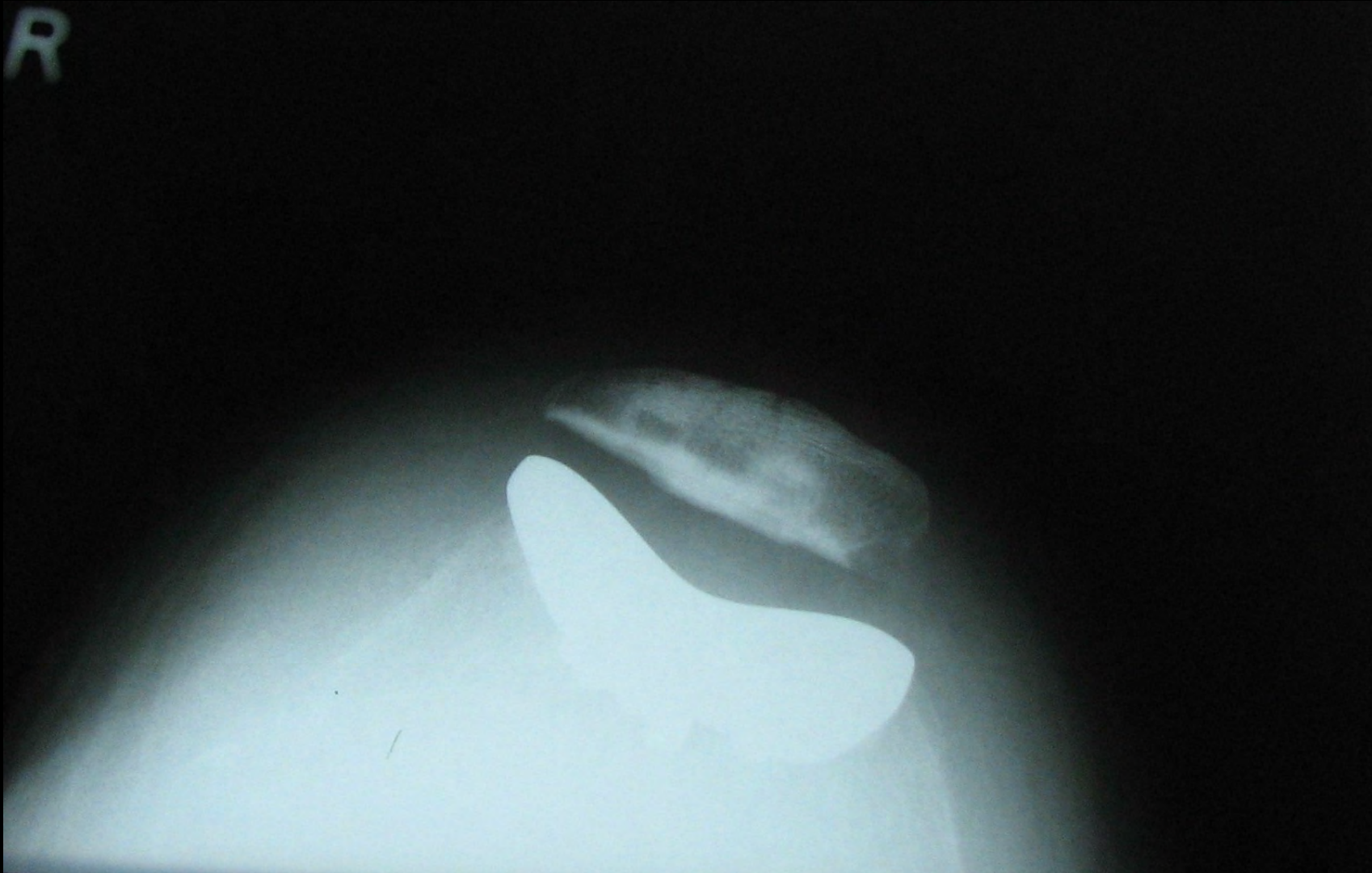
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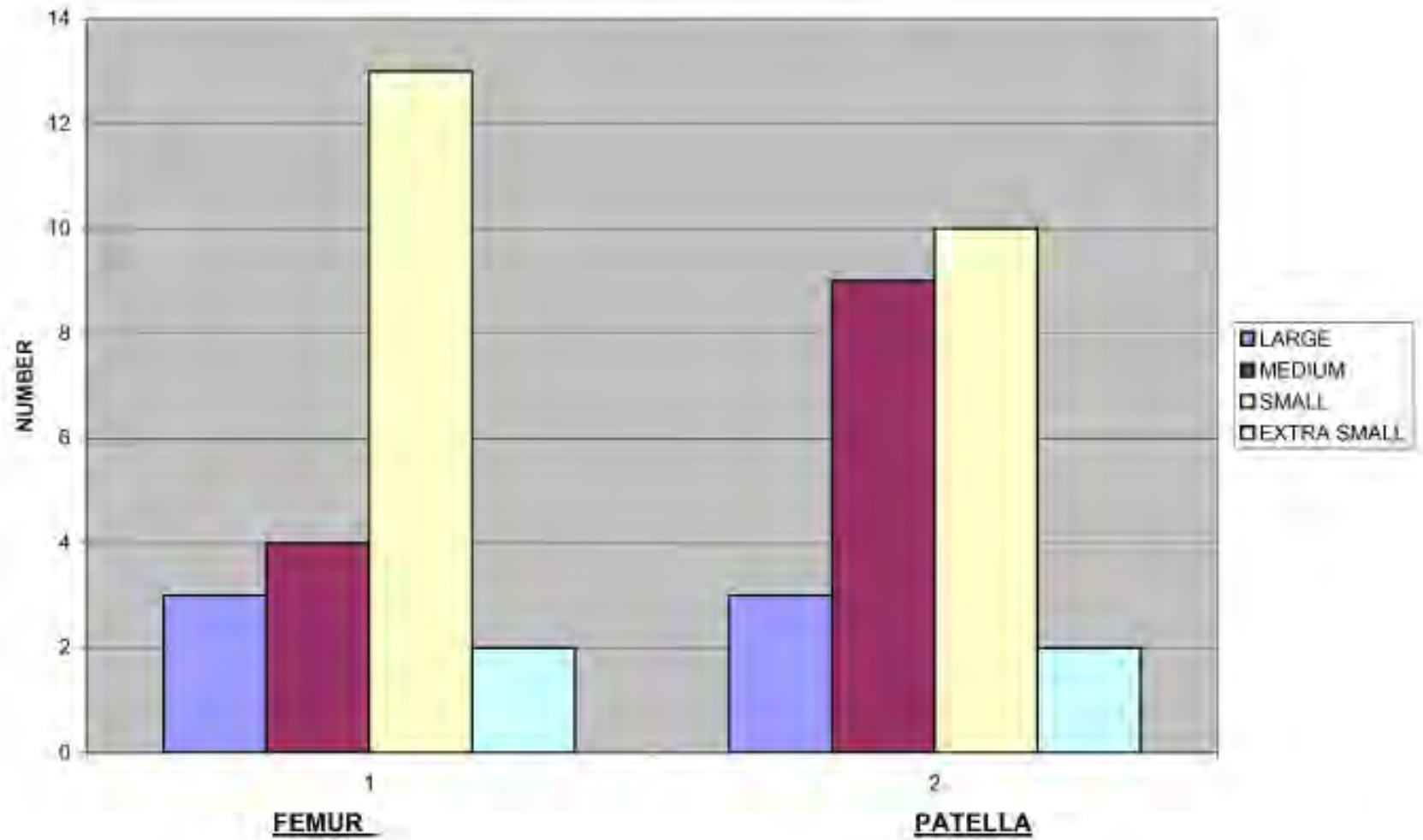




# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Same day bilaterals:
  - 4, all female
- Sequential bilaterals:
  - 3; 2 male 1 female

## AVON PFA SIZES USED



# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- 93 year old female
  - Still living alone
  - Still writing weekly column
  - MVA, Fracture of right patella.
  - Presents 1 year later with knee pain
  - Had been treated in a cast only











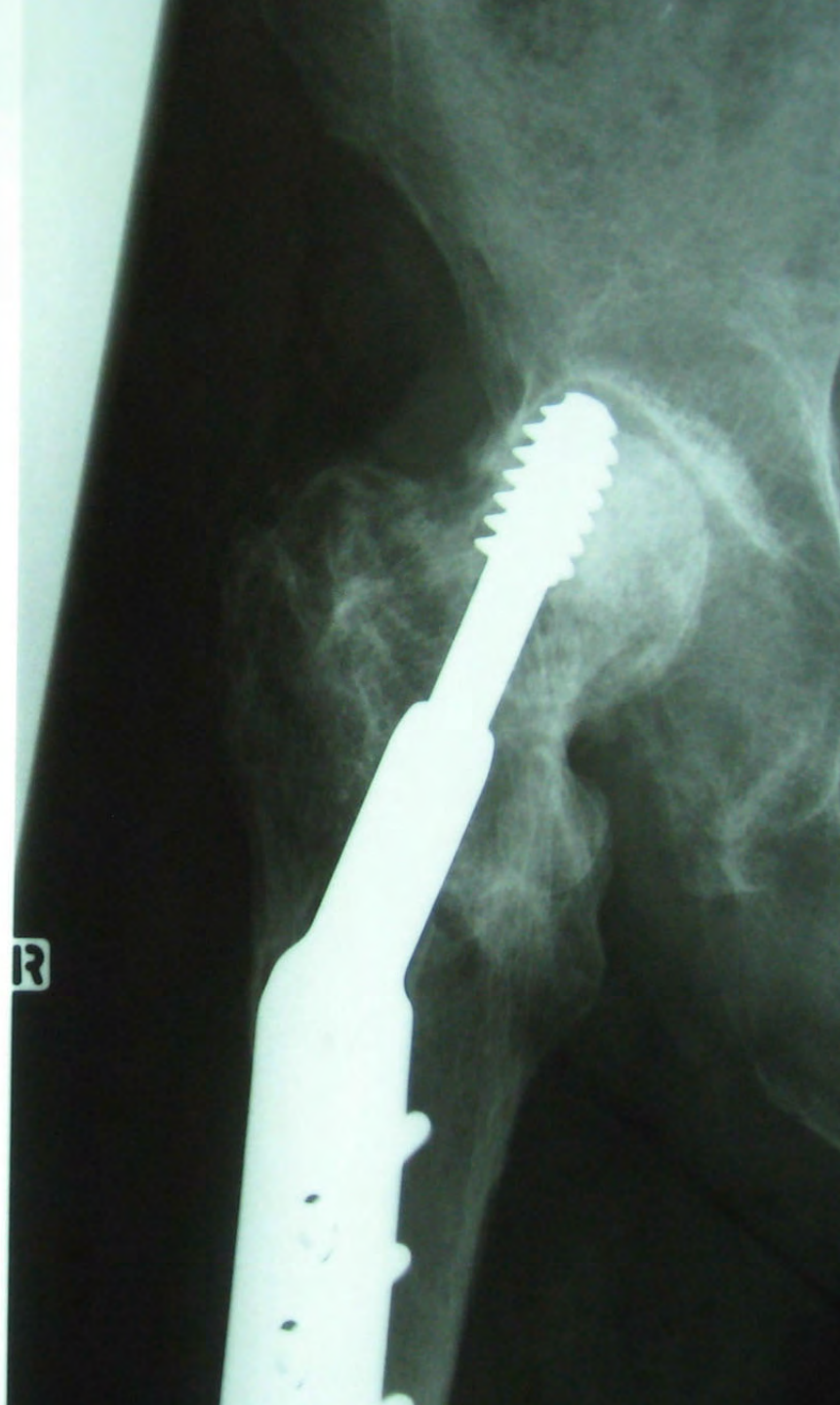




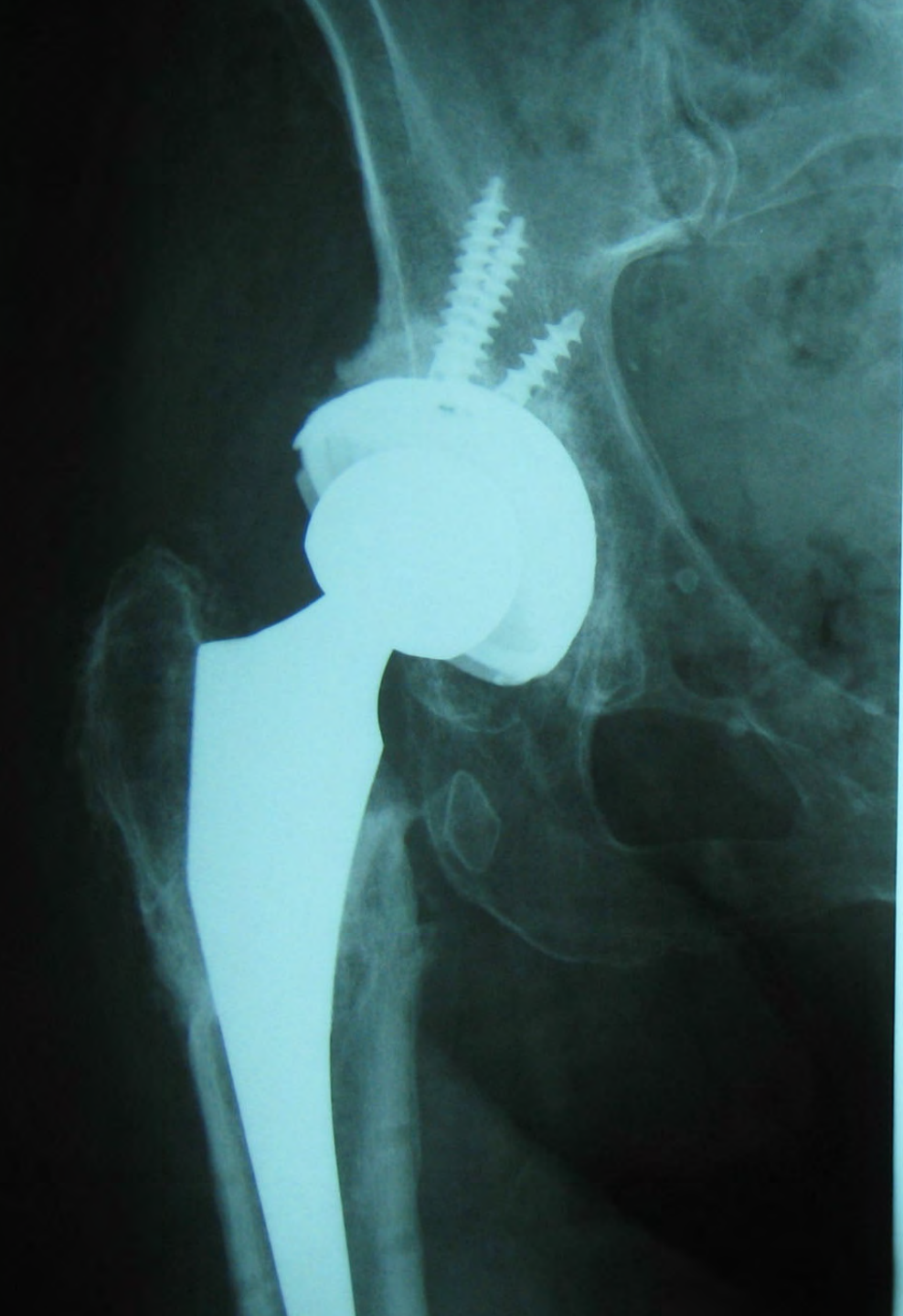
# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Complaints of pain after Avon P.F.A.
- No Patello-femoral crepitus
- Pain on rotation of hip









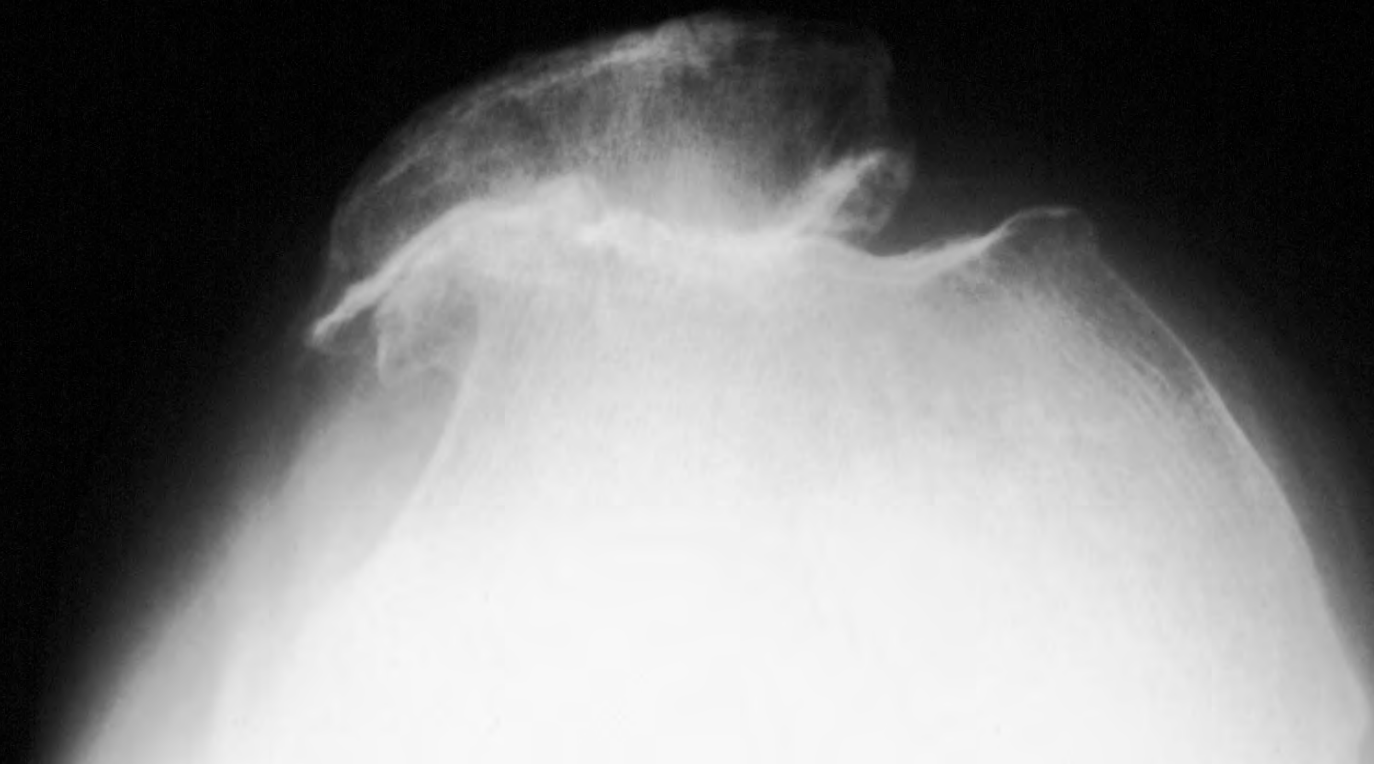
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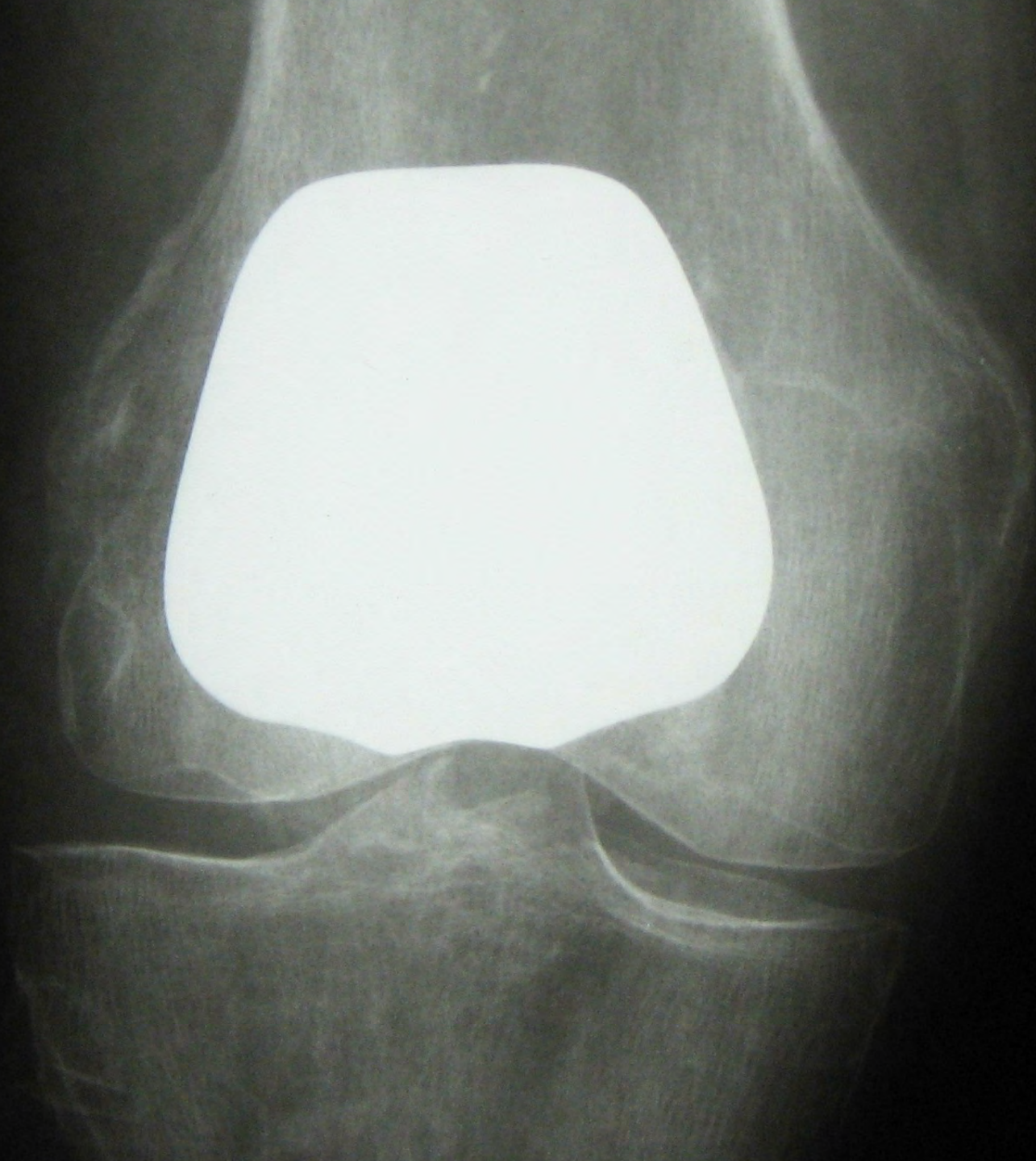
# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Back to writing her column
- Now 96
- Not Driving!

930004 01 THOMAS J. QUANTA RAPID B











# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

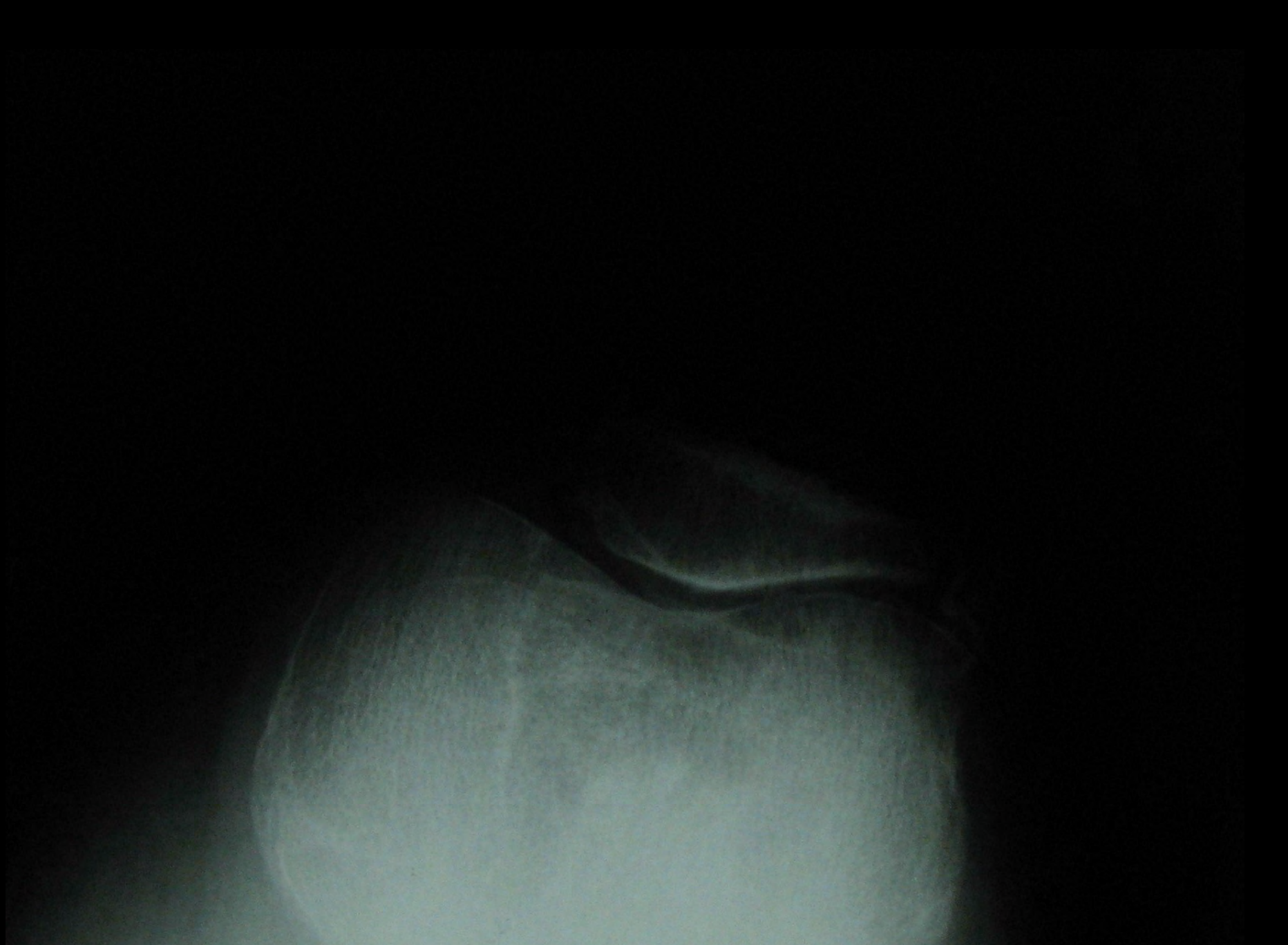
- Median follow up 22 months
- Range 7-55 months
- Age 44-95
- Mean 66.5 years



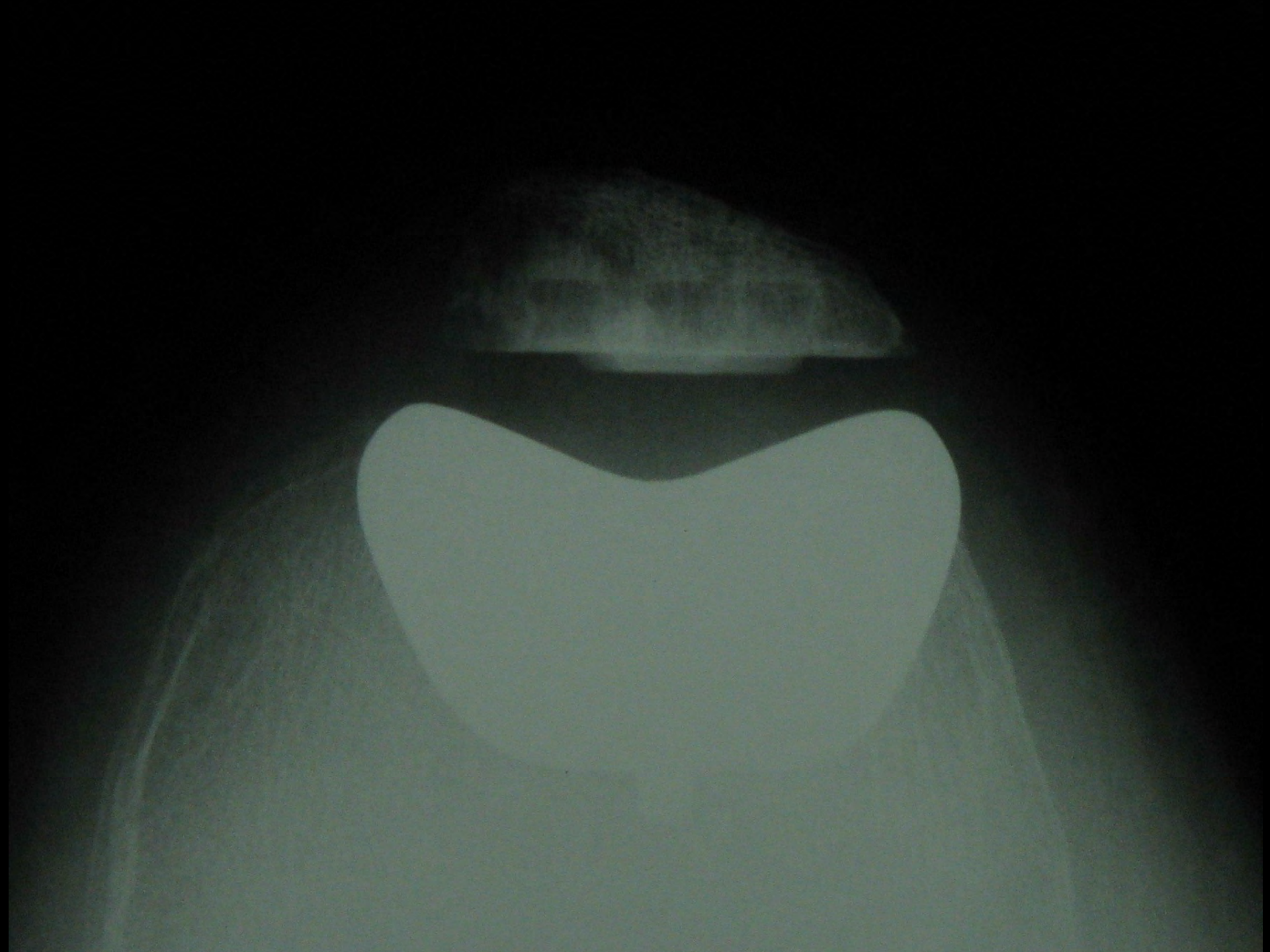




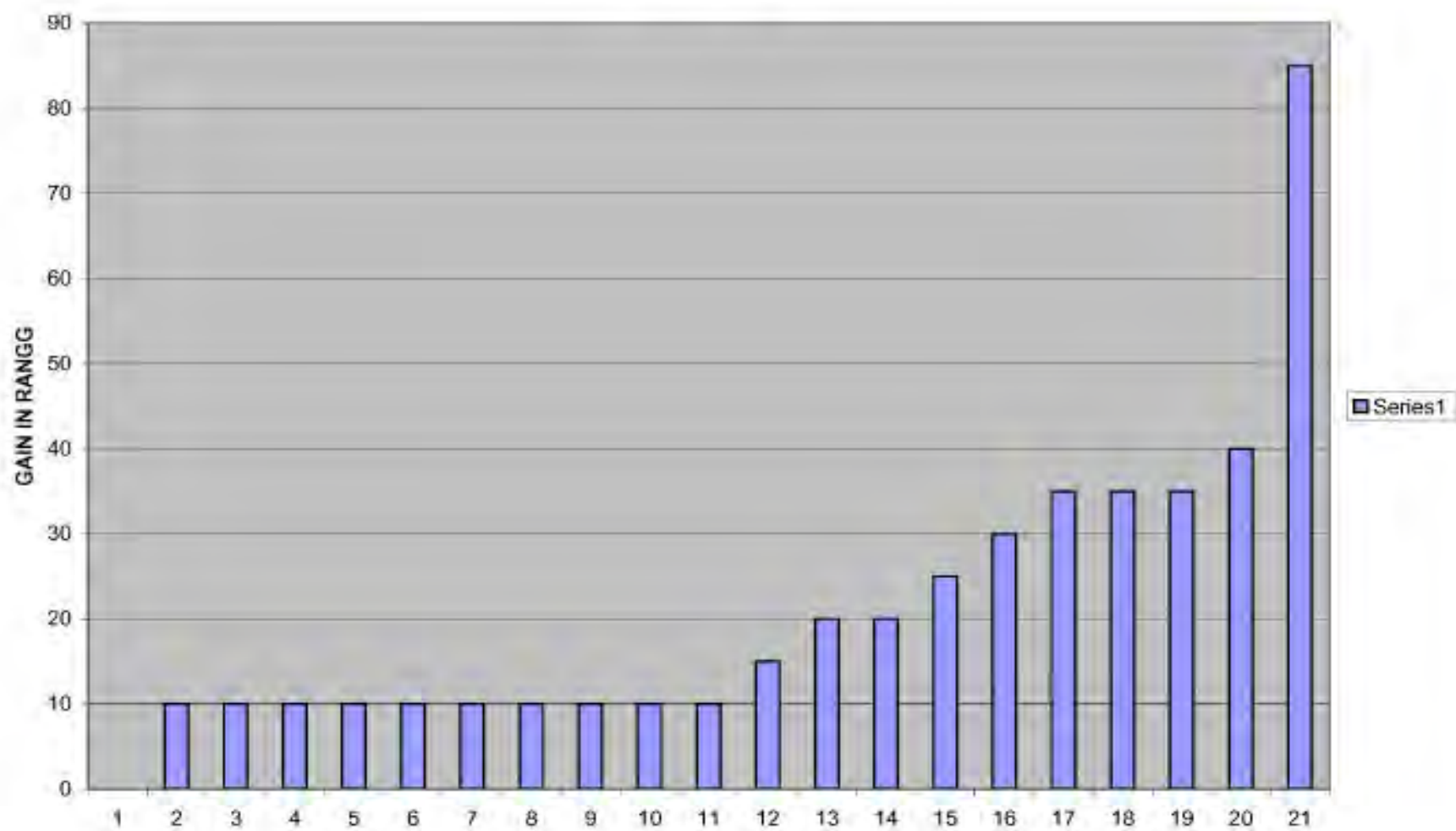




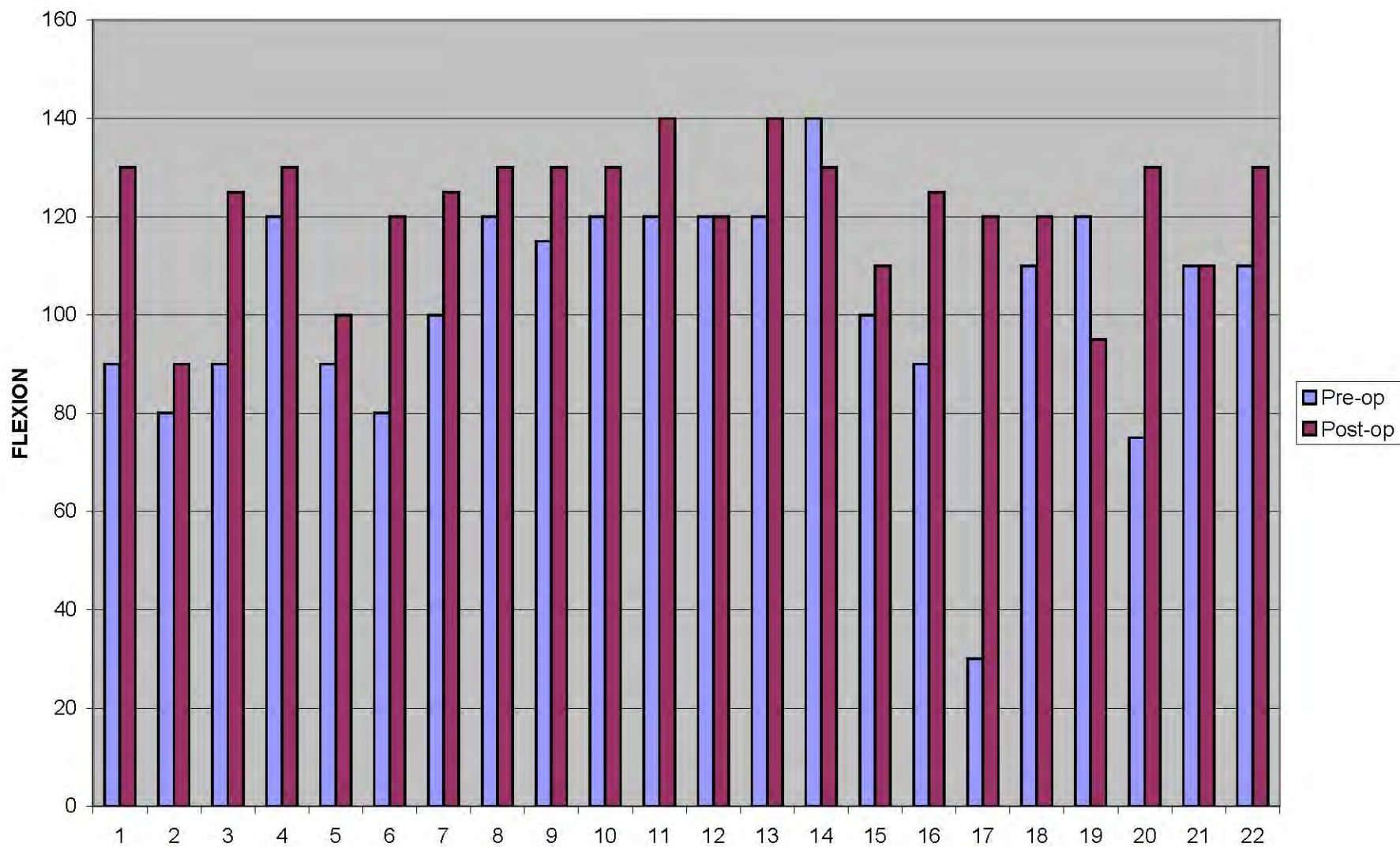




# AVON PFA



## AVON PFA



# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Four re-operations
  1. Developed generalised R.A. 18 months post op. Converted to TKA
  2. WSIB patient constant ache on stairs, remained same after TKA
  3. Late severe aseptic swelling, Nickel allergy; custom femoral component, Titanium. Fully recovered.
  4. After Aggressive Physio, supra patellar impingement. Cleaned up per scope, 0-140

# ISOLATED PATELLO-FEMORAL ARTHROPLASTY

- Good to excellent 18
- Fair 2; same patient; WSIB
- Poor 2; Revised to TKR
- 15 patients would repeat the operation.



# Avon™ Patellofemoral Arthroplasty



The ONLY PFJ  
Replacement system  
with 5 years of  
published clinical  
results from over 200  
knees!!!!





# **ISOLATED PATELLO- FEMORAL ARTHROPLASTY**

**Thank you.**

