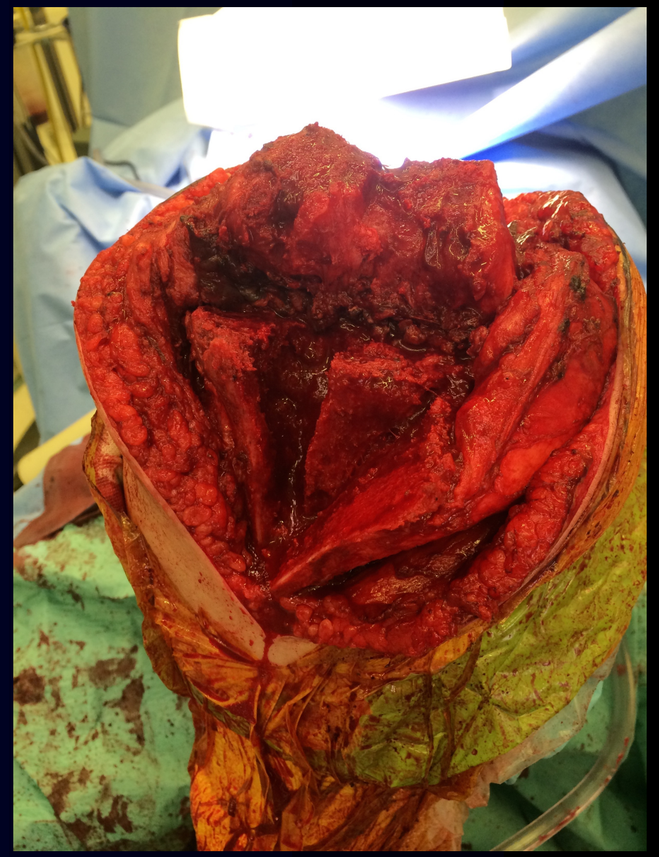
Advanced Knee Surgery 2025

Cone vs Sleeve:

How I choose



Sam Oussedik BSc MBBS FRCS(Tr&Orth)

Consultant Orthopaedic Surgeon & Clinical Lead, UCLH
Hon. Assoc. Prof., UCL

Fixation counts!

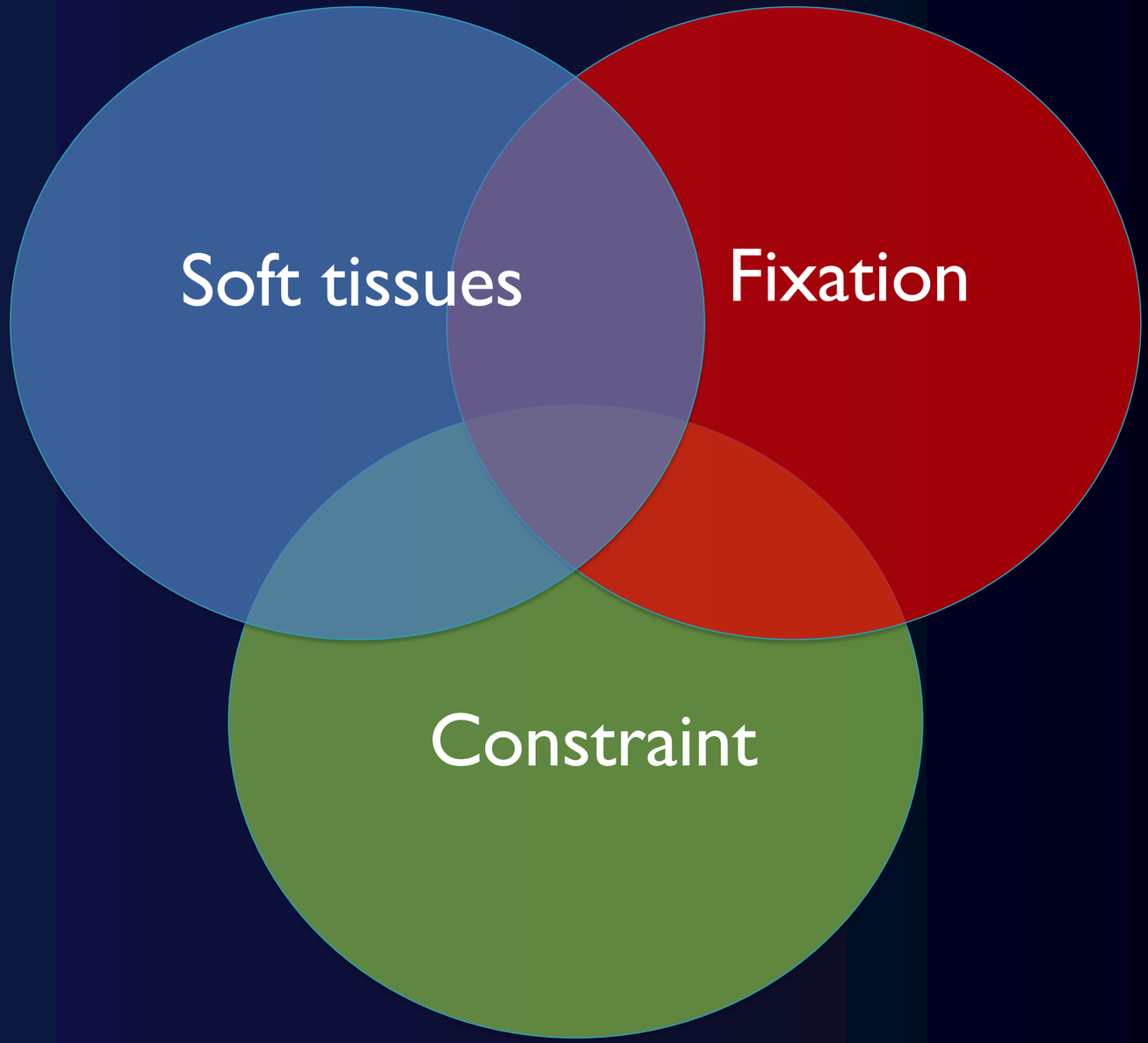
Reason for revision	All recorded revisions, N (%)
Aseptic loosening / Lysis	34,318 (32.7)
Infection	25,150 (24.0)
Instability	15,088 (14.4)
Implant wear	12,326 (11.8)
Pain	11,786 (11.2)
Malalignment	6,044 (5.8)
Periprosthetic fracture	4,679 (4.5)
Dislocation / Subluxation	3,720 (3.5)
Other indication	9,754 (9.3)
Stiffness*	4,932 (4.7)
Progressive arthritis**	12,565 (13.3)

National Joint Registry

21st Annual Report

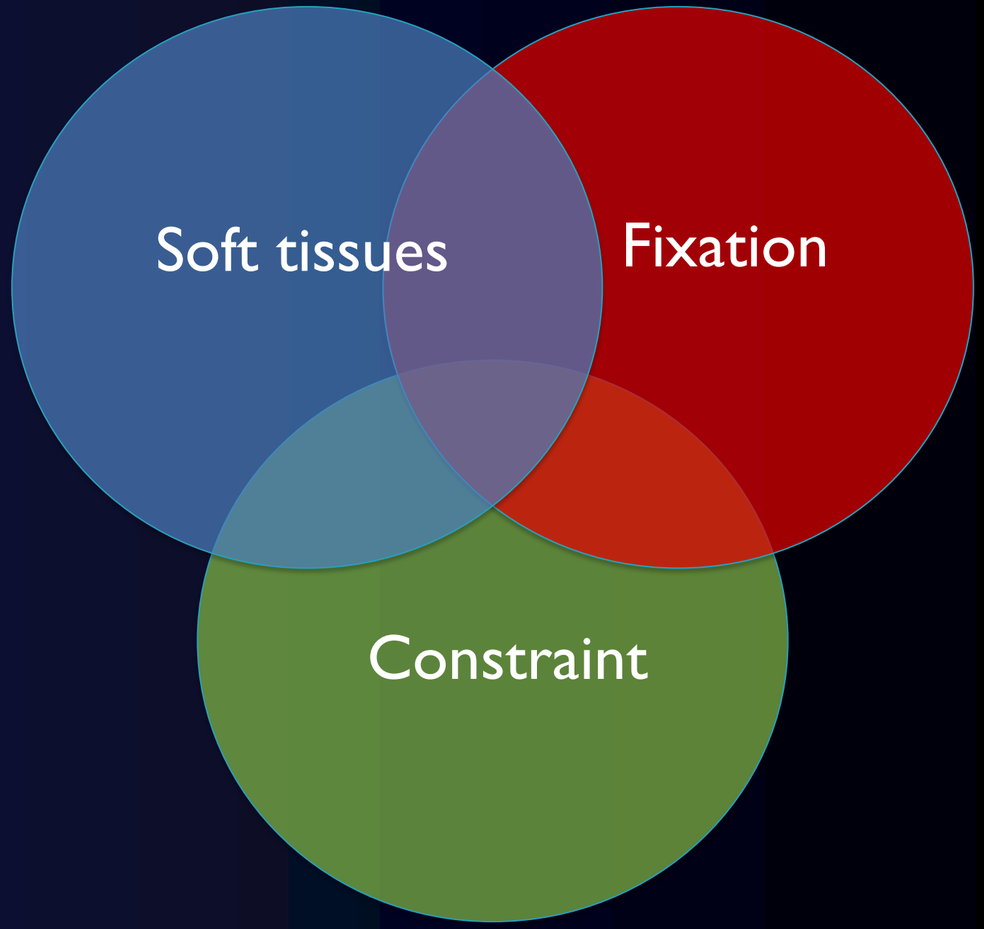
2024

Surgical data to 31 December 2023

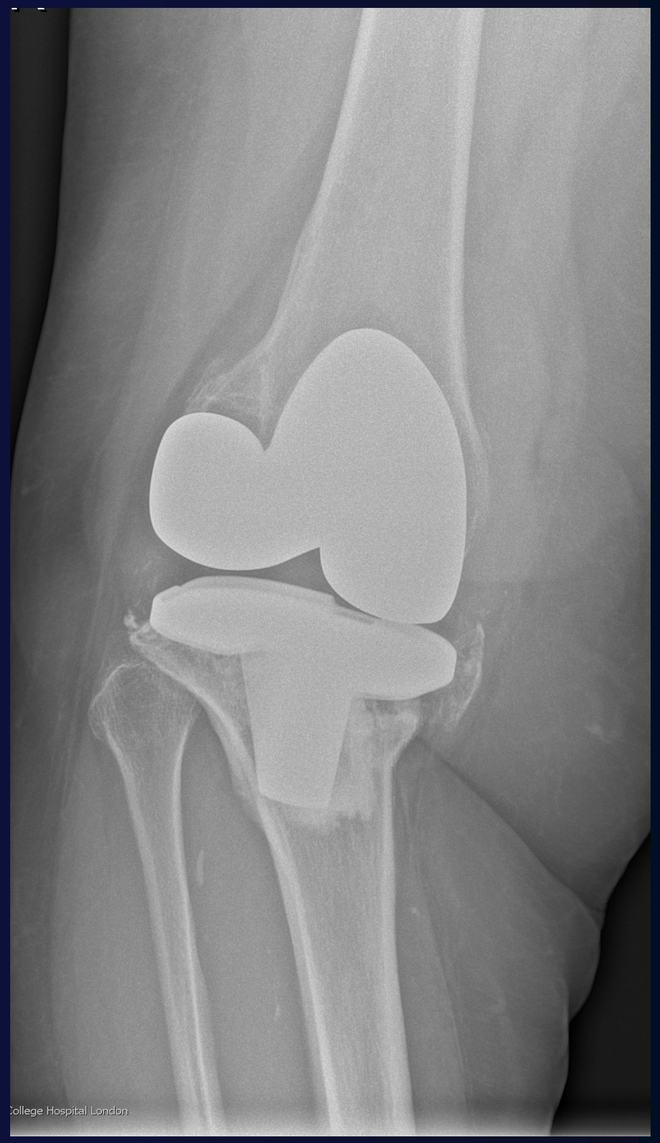

Soft tissues
Fixation
Constraint

Revision Total Knee

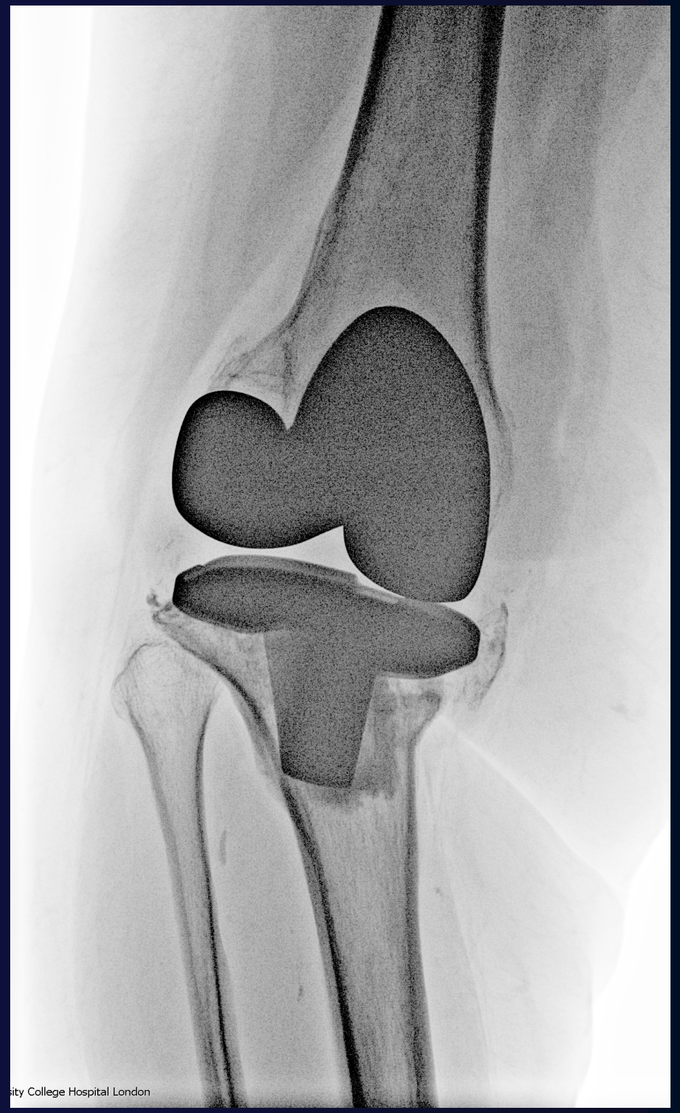
- Soft tissues:
  - Skin = incision
  - Access = approach
  - Laxity = constraint
- Fixation:
  - Bone loss
  - Constraint
  - Augments / sleeves / cones
- Constraint
  - Soft tissue / bone loss



Zonal fixation



Zonal fixation



Zonal fixation

THE BONE & JOINT JOURNAL

■ SPECIALTY UPDATE: KNEE

Zonal fixation in revision total knee arthroplasty

R. Morgan-Jones,
S. I. S. Oussedik,
H. Graichen,
F. S. Haddad

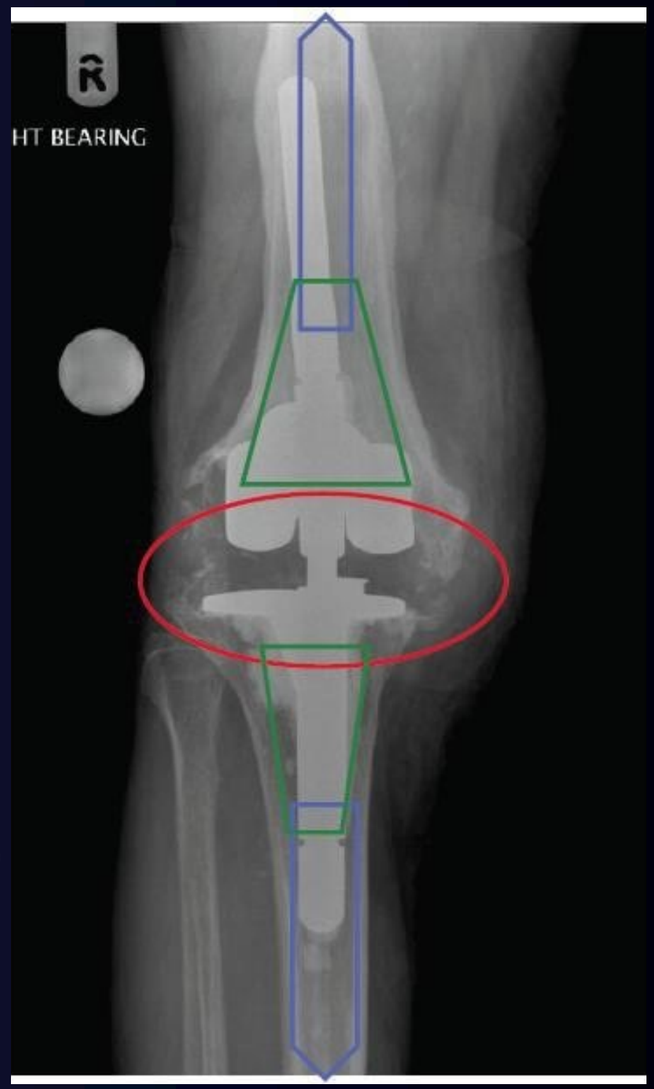
From University College London Hospitals, London, United Kingdom

Revision knee arthroplasty presents a number of challenges, not least of which is obtaining solid primary fixation of implants into host bone. Three anatomical zones exist within both femur and tibia which can be used to support revision implants. These consist of the joint surface or epiphysis, the metaphysis and the diaphysis. The methods by which fixation in each zone can be obtained are discussed. The authors suggest that solid fixation should be obtained in at least two of the three zones and emphasise the importance of pre-operative planning and implant selection.

Cite this article: *Bone Joint J* 2015;97-B:147–9.

Zonal fixation

- Zone 1: Epiphysis / Joint surface
- Zone 2: Metaphysis
- Zone 3: Diaphysis
- Gain fixation in at least 2 zones



Zone 2: Metaphysis

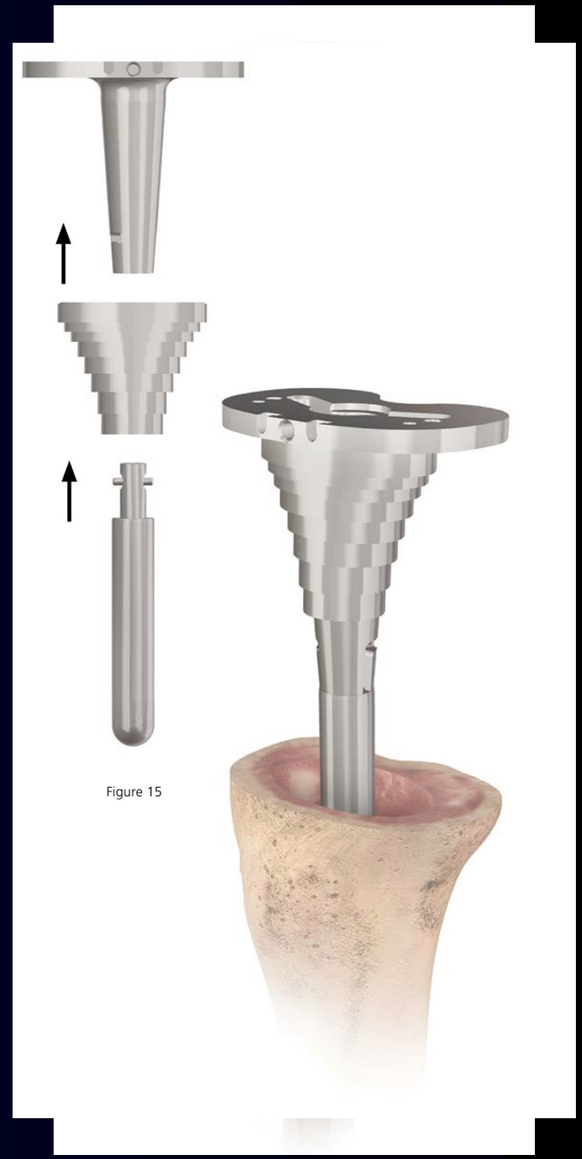
- Sleeve
  - Direct fixation
  - Immediate loading
  - Strong primary fixation

- But:
  - No independent prosthesis positioning
  - “Slave to the sleeve”
  - Longer, uncemented stems

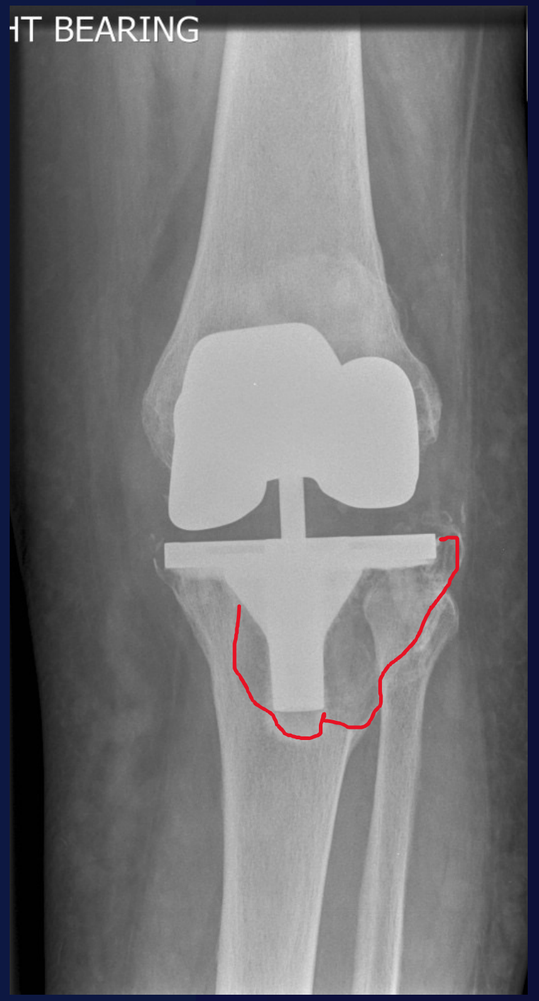
Zone 2: Metaphysis

- Sleeve
  - Direct fixation
  - Immediate loading
  - Strong primary fixation

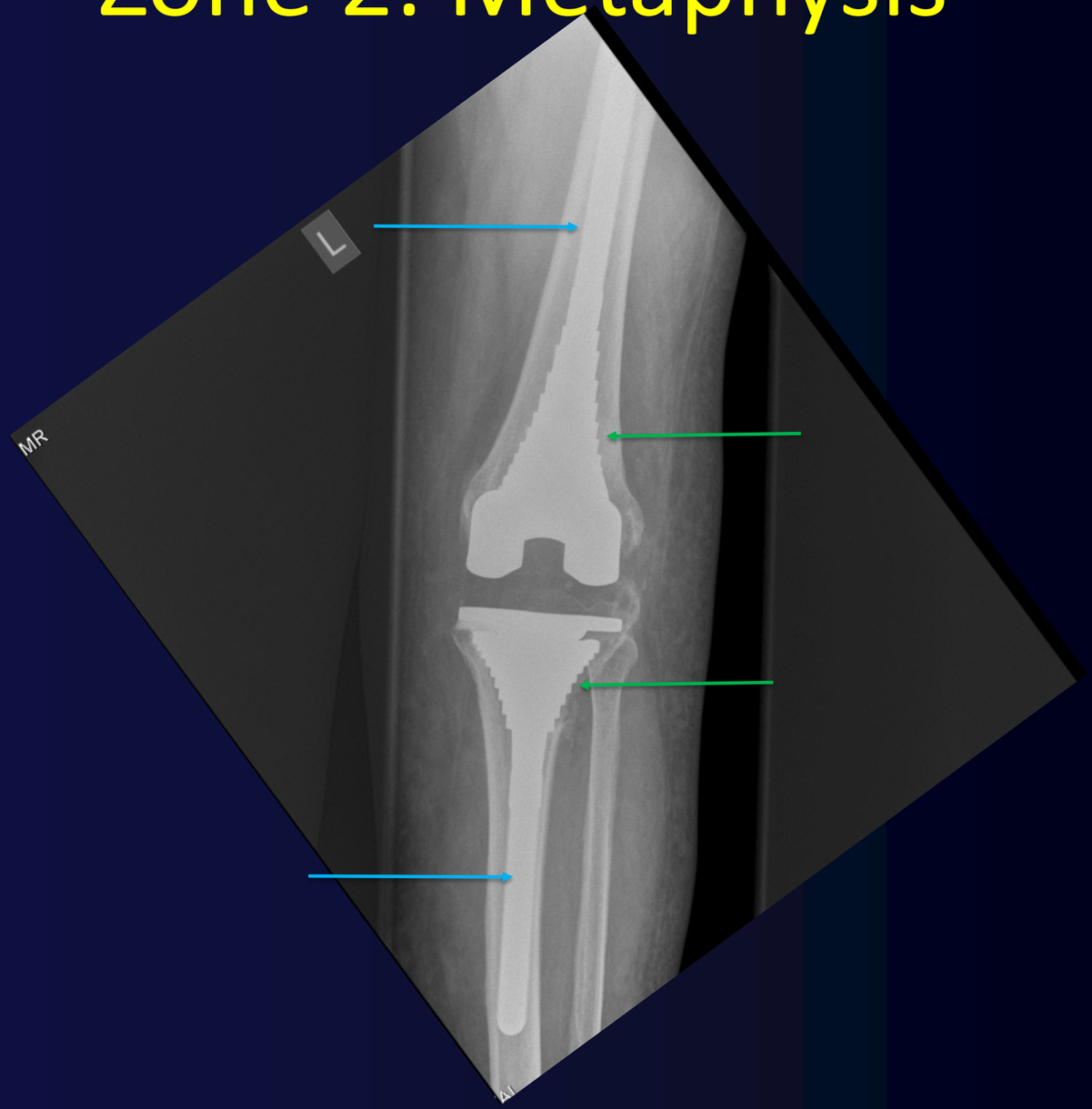
- But:
  - No independent prosthesis positioning
  - “Slave to the sleeve”
  - Longer, uncemented stems



Zone 2: Metaphysis

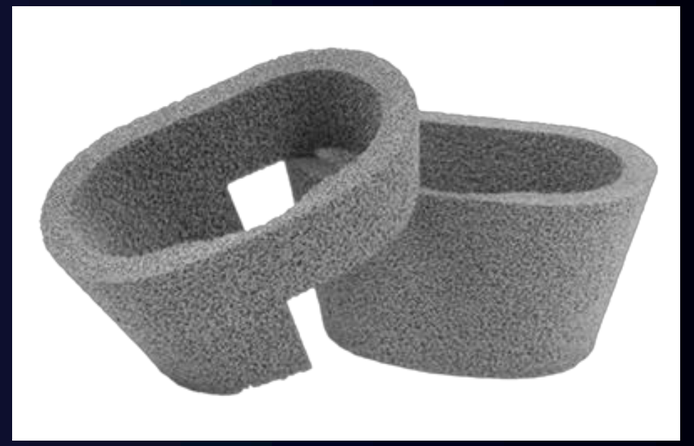


Zone 2: Metaphysis



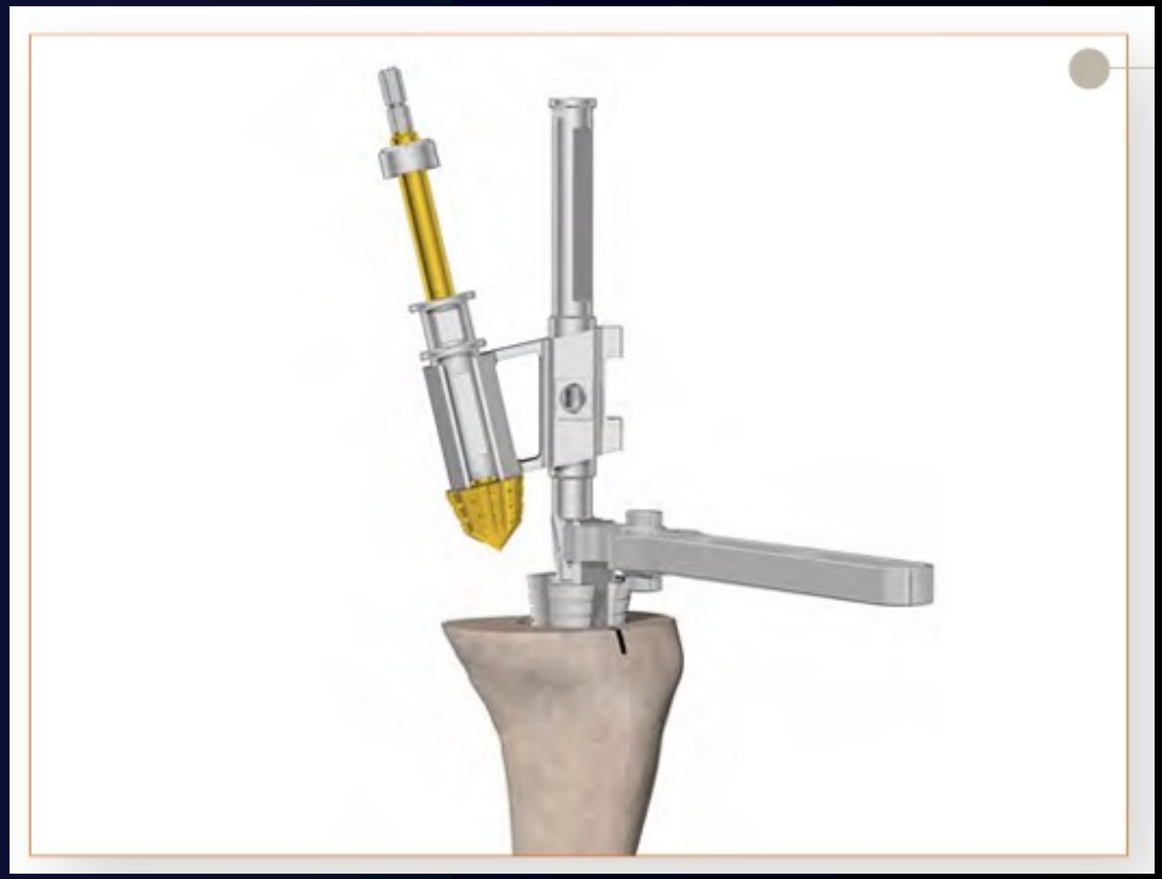
Zone 2: Metaphysis

- Cones
  - Metaphyseal augment
  - Uncemented bone/cone interface
  - Cemented Cone/implant interface
  - Independent implant positioning
  - Shorter stem



Zone 2: Metaphysis

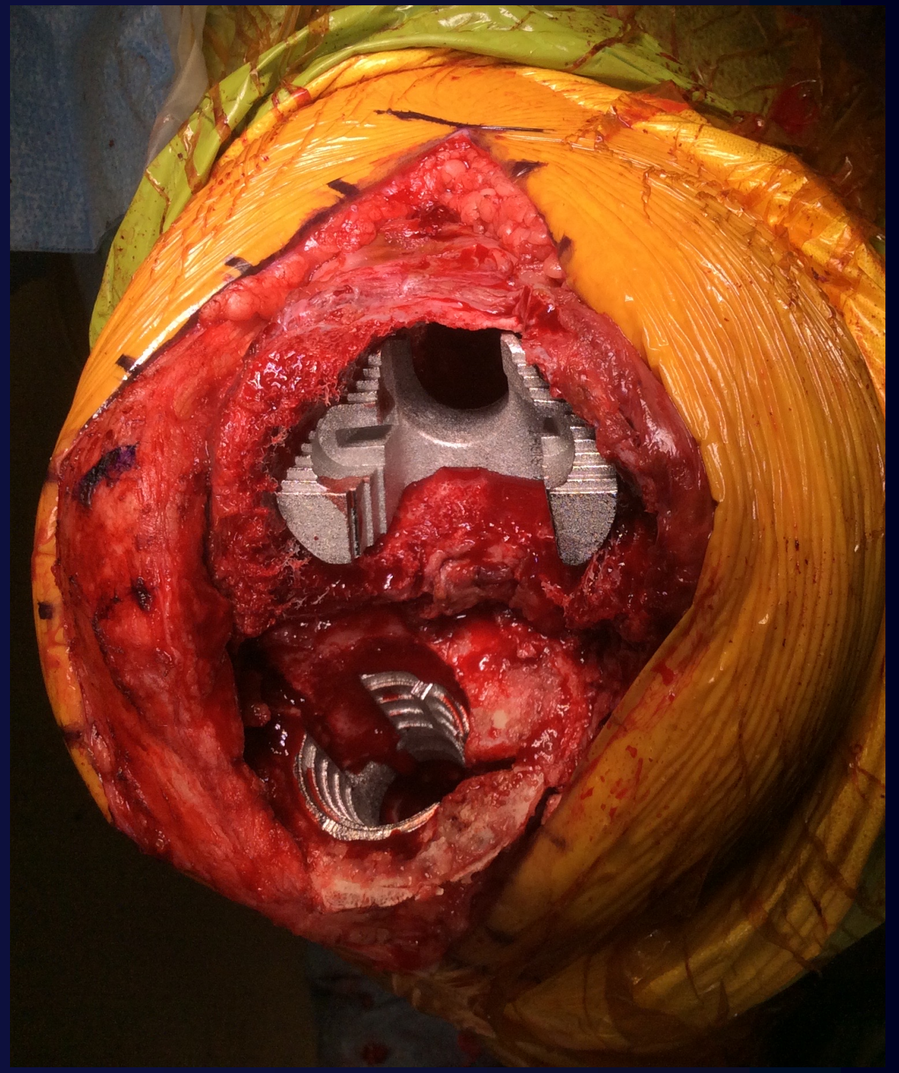
- Cones
  - Metaphyseal augment
  - Uncemented bone/cone interface
  - Cemented Cone/implant interface
  - Independent implant positioning
  - Shorter stem



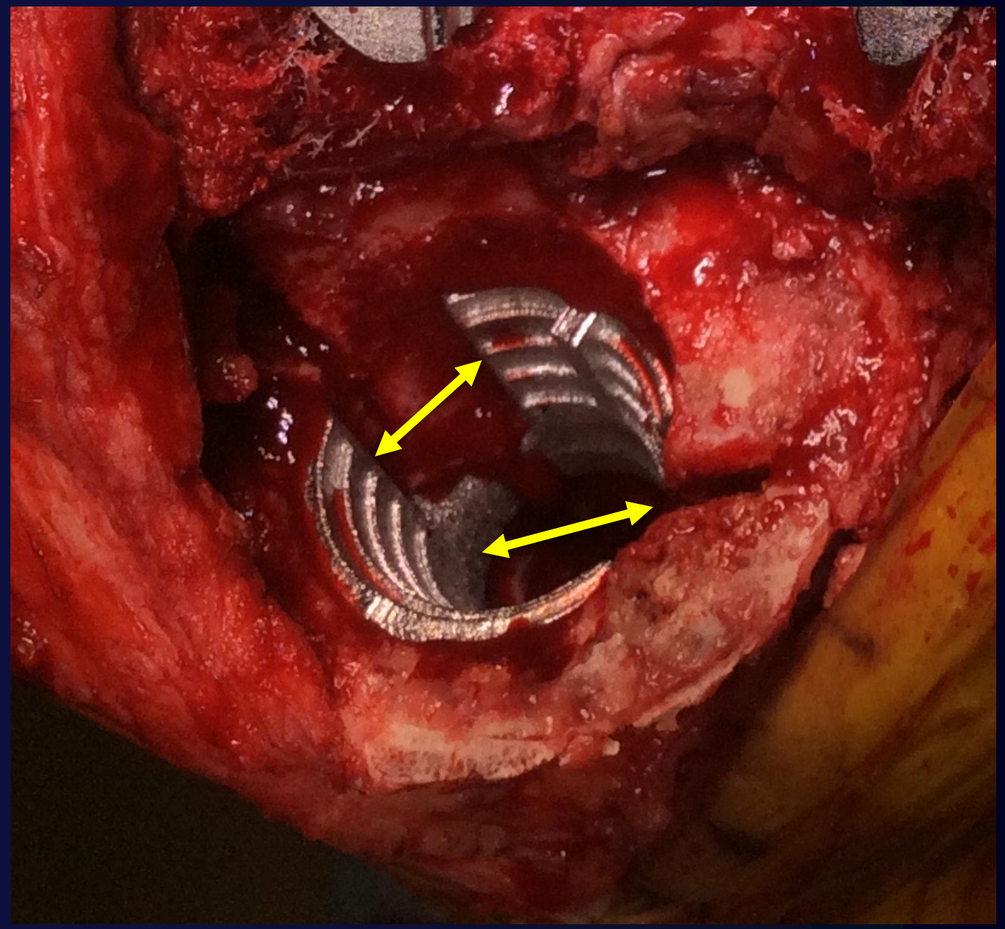
Zone 2: Metaphysis

- Cones
  - Jig-based preparation
  - Reproducible fit
  - Strong primary fixation
  - Easier to restore joint line

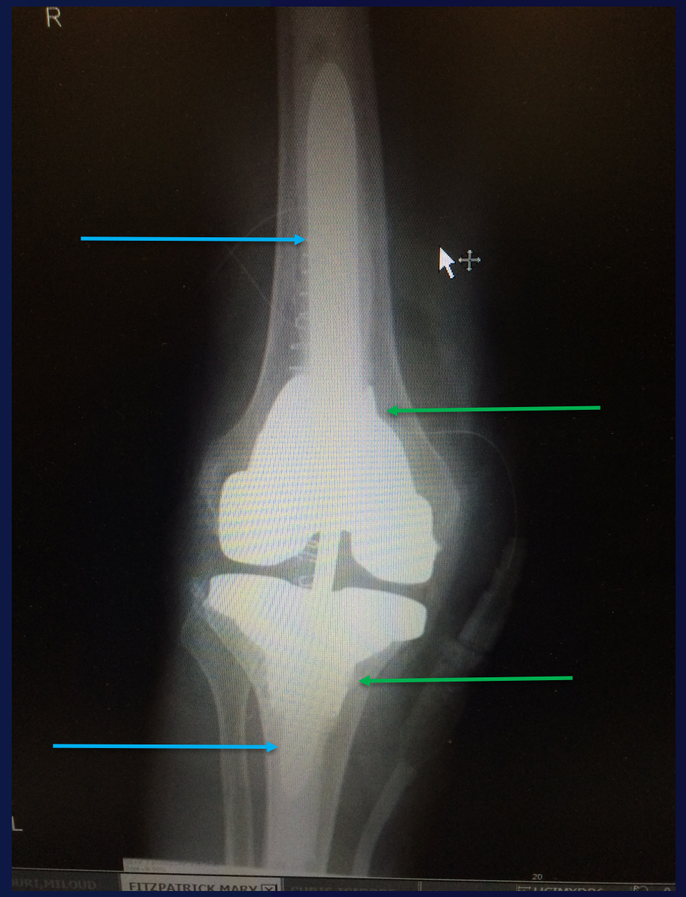
Zone 2: Metaphysis

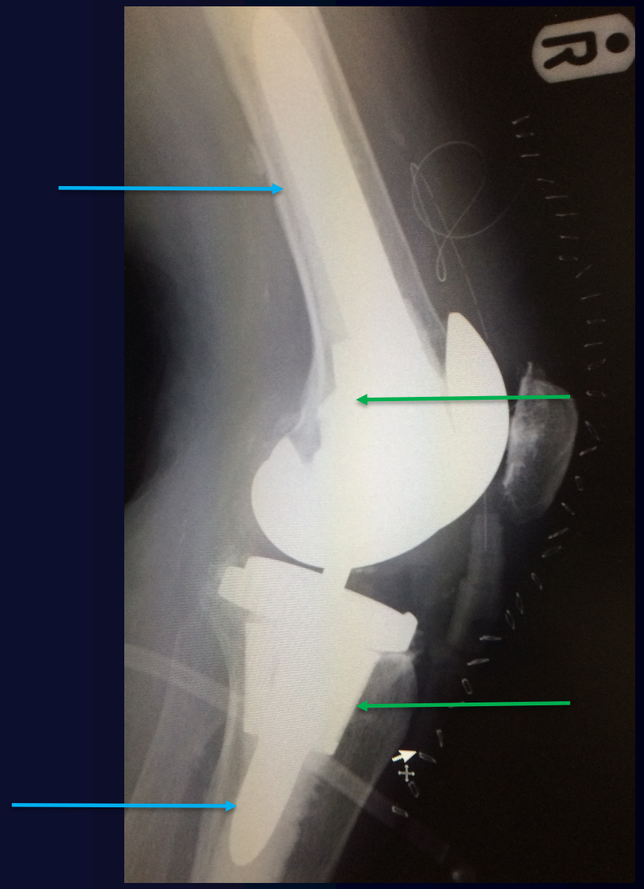


Zone 2: Metaphysis



Zone 2: Metaphysis





Cone vs Sleeve

Vs.

Cone vs Sleeve

Contents lists available at ScienceDirect

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org

Proceedings of The Knee Society 2021

Survivorship of Metaphyseal Cones and Sleeves in Revision Total Knee Arthroplasty

Mark J. Heidenreich, MD, Brent A. Lanting, MD, MSc, FRCSC,
Richard W. McCalden, MD, FRCSC, Douglas D. Naudie, MD, FRCSC,
James L. Howard, MD, MSc, FRCSC, Steven J. MacDonald, MD, FRCSC,
Edward M. Vasarhelyi, MD, MSc, FRCSC*

Division of Orthopaedic Surgery, Department of Surgery, Schulich School of Medicine & Dentistry, Western University, London, Ontario, Canada

Cone vs Sleeve

Metapl

74

65 patients wit

2 patients v

7 patients with b
cone in th

8
22 fem

eves

tibial sleeve

l sleeves

ral and tibial
l knee

bial

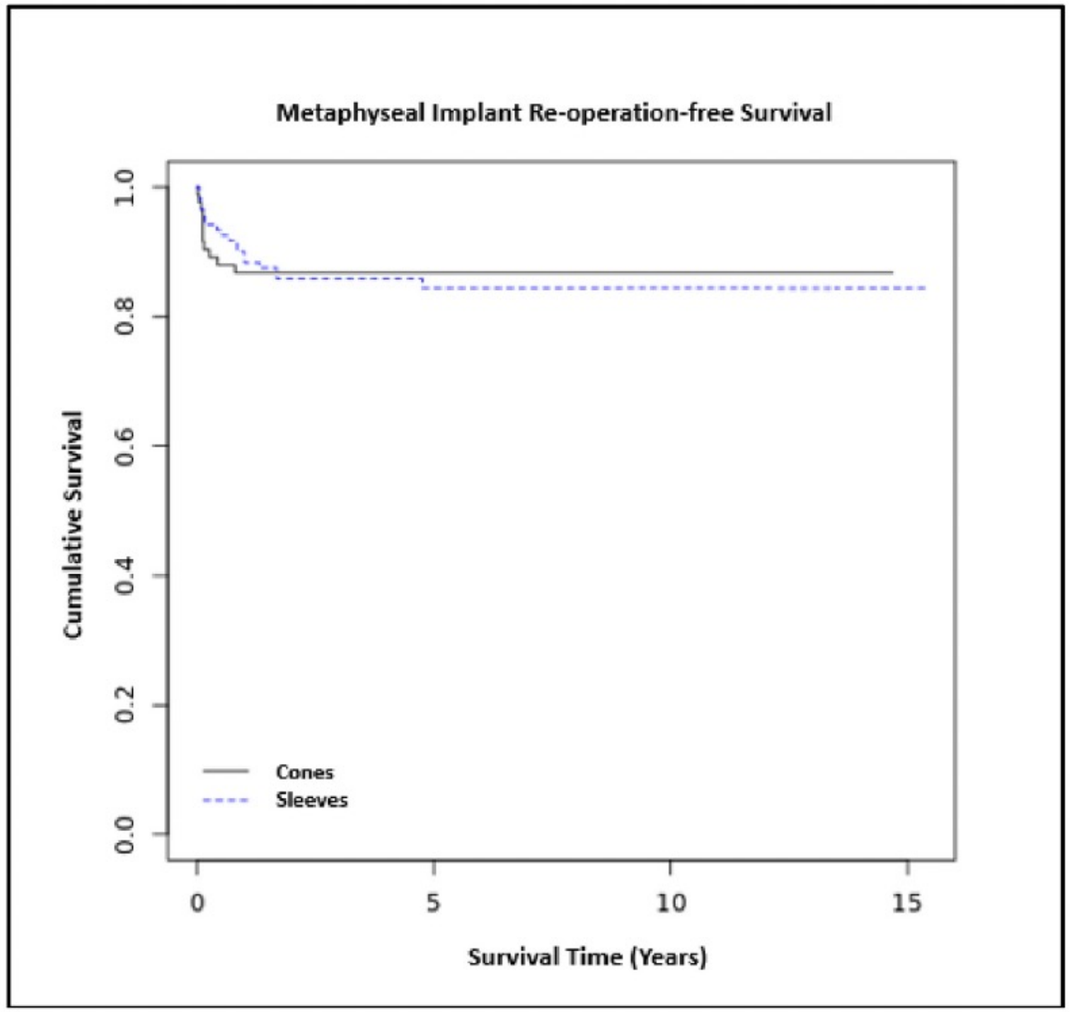


Fig. 3. No difference in Kaplan-Meier estimates for all-cause reoperation-free survival for cones and sleeves ($P = .84$).

Contents lists available at ScienceDirect

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org

The Knee Society 2021

ip of Metaphyseal Cones and Sleeves in Revision Total
oplasty

nreich, MD, Brent A. Lanting, MD, MSc, FRCSC,
cCalden, MD, FRCSC, Douglas D. Naudie, MD, FRCSC,
ard, MD, MSc, FRCSC, Steven J. MacDonald, MD, FRCSC,
sarhelyi, MD, MSc, FRCSC*

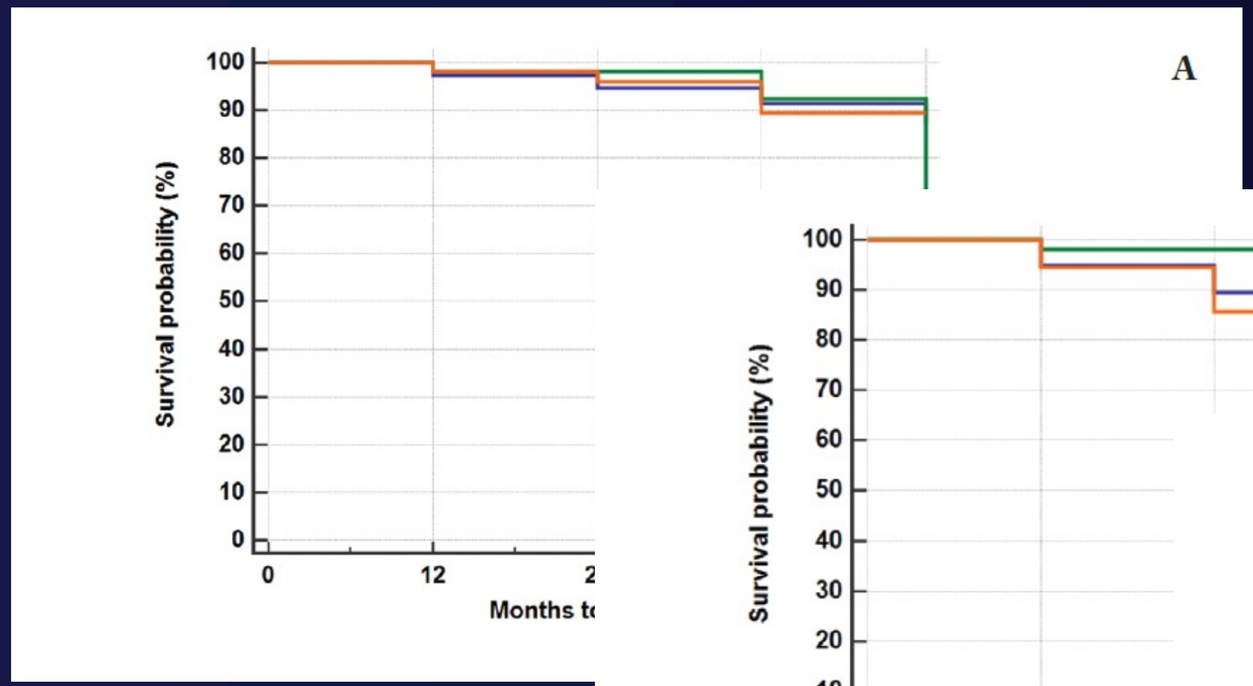
Surgery, Department of Surgery, Schulich School of Medicine & Dentistry, Western University, London, Ontario, Canada

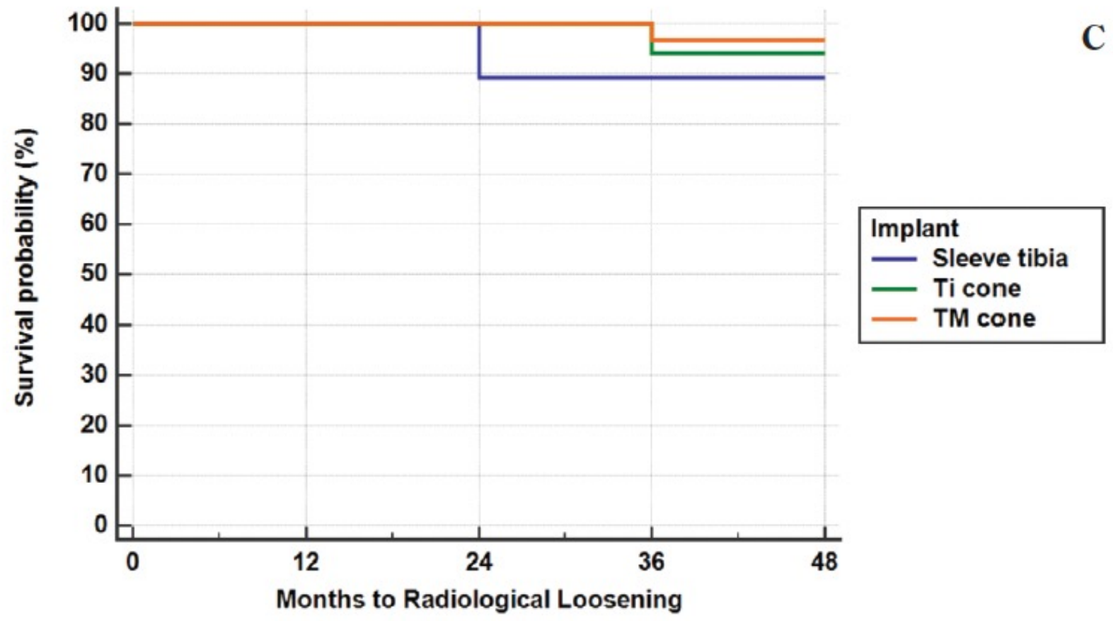
Cone vs Sleeve

SURGICAL MANAGEMENT OF TIBIAL BONE LOSS IN REVISION TOTAL KNEE ARTHROPLASTY: CLINICAL OUTCOMES AND RADIOGRAPHIC ANALYSIS OF TANTALUM CONES, TITANIUM CONES AND TITANIUM SLEEVES

Emmanuel Gibon, MD, PhD[1]; Terrie Vasilopoulos, PhD[2]; Edvinas Sipavicius, BS[1]; Justin T. Deen, MD[1]; Hernan A. Prieto, MD[1]; Chancellor F. Gray, MD[1]; Hari K. Parvataneni, MD[1]; Luis Pulido, MD[1]

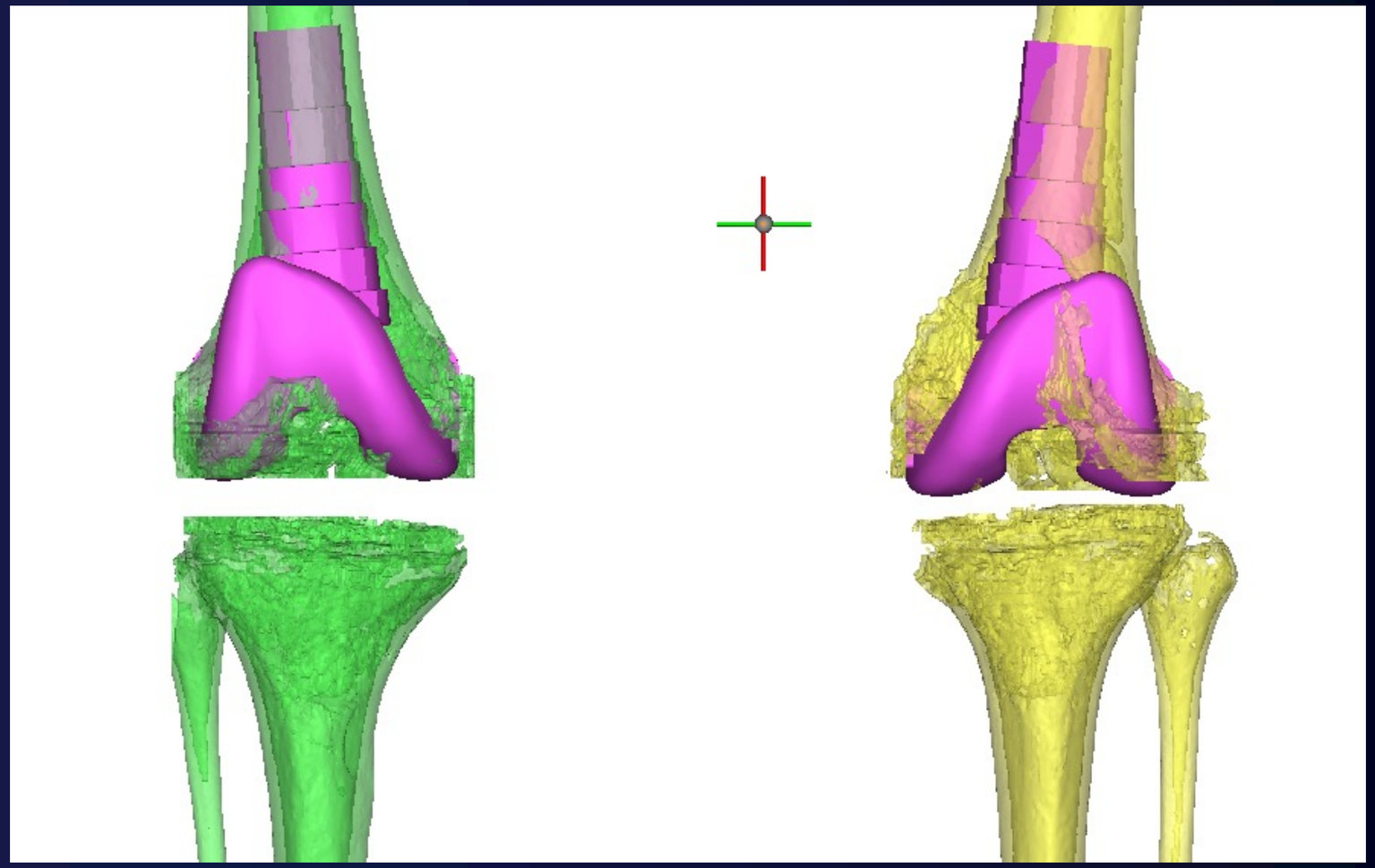
Cone vs Sleeve

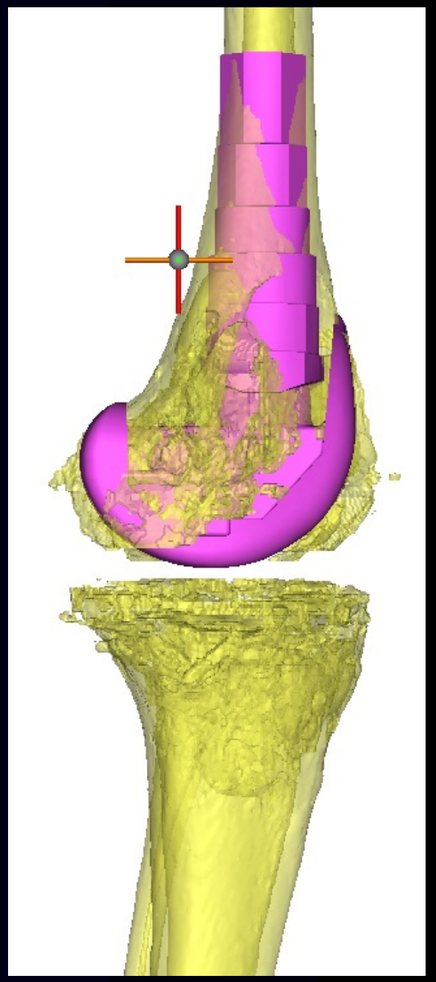


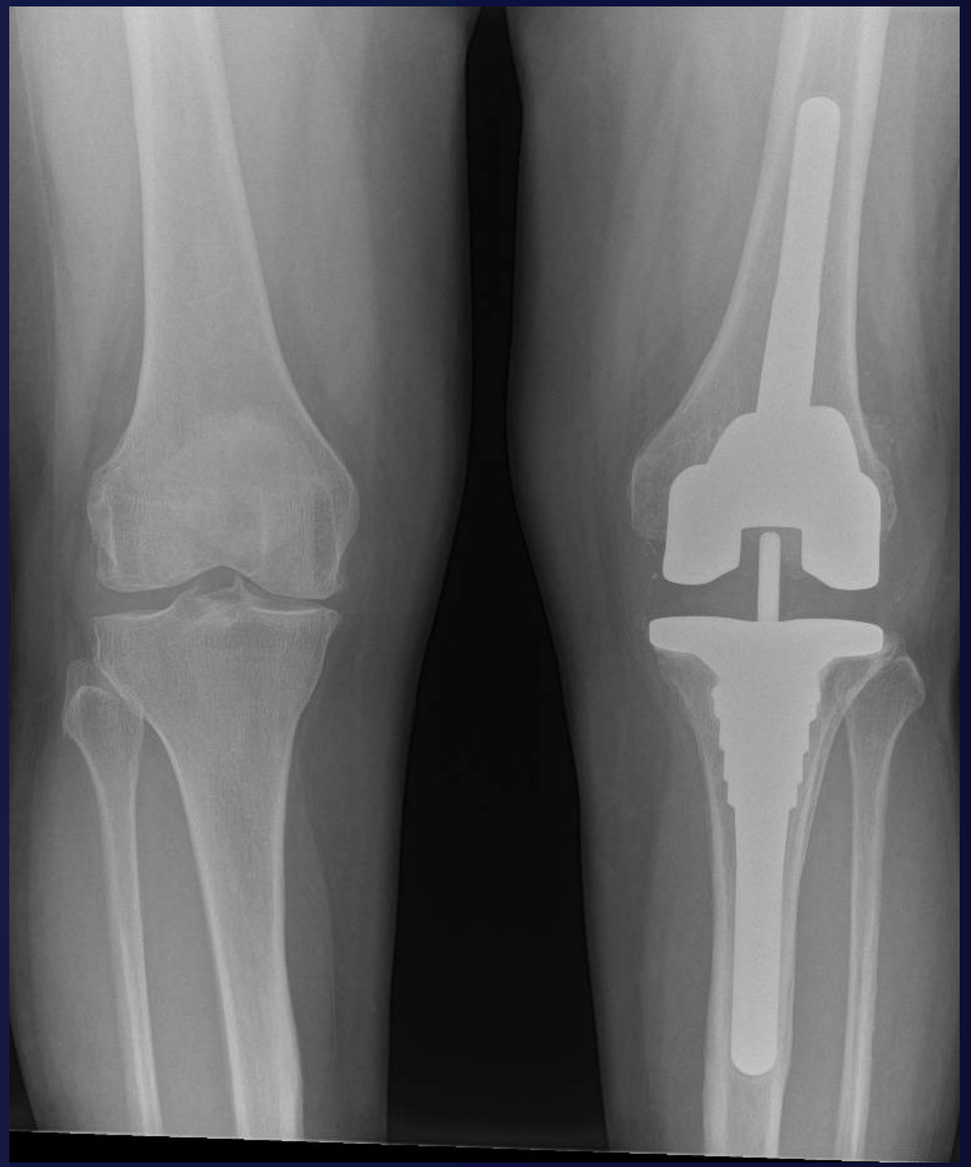


Hernan A. Prieto, MD[1]; Chancellor F. Gray, MD[1]; Hari K. Parvataneni, MD[1]; Luis Pulido, MD[1]

Clinical Case

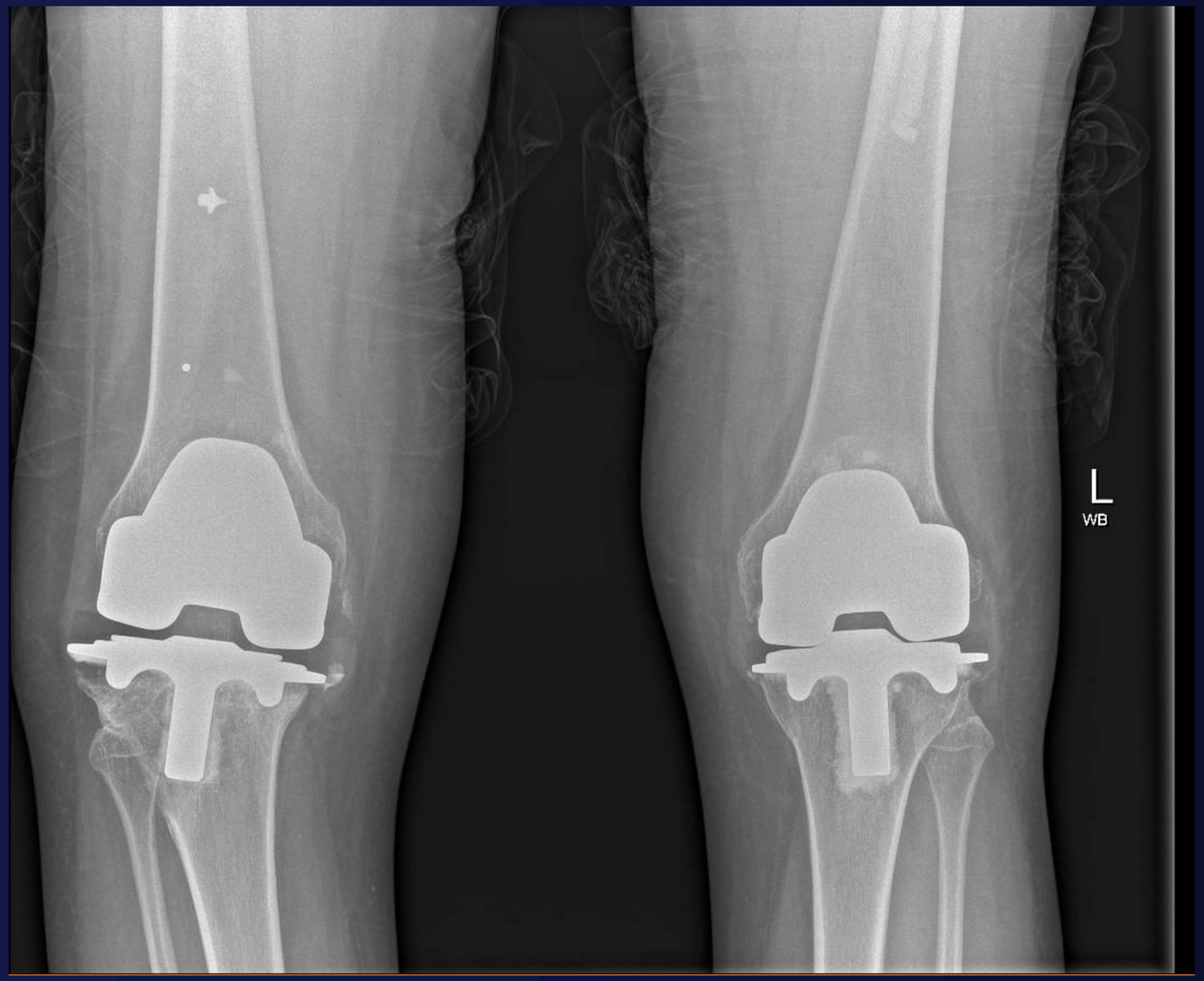




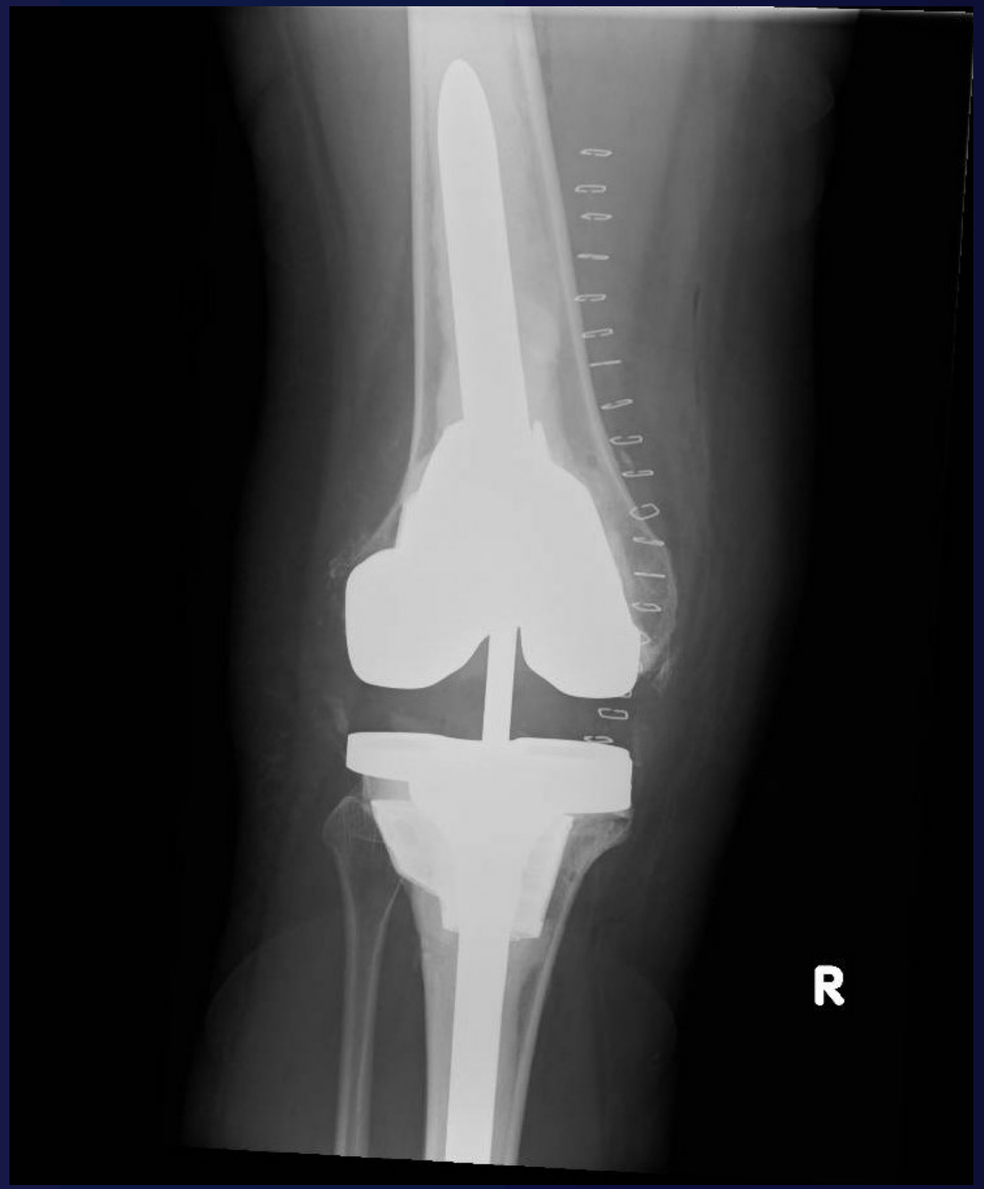


24 months post-op

24 months post-op


L
WB


R
WB

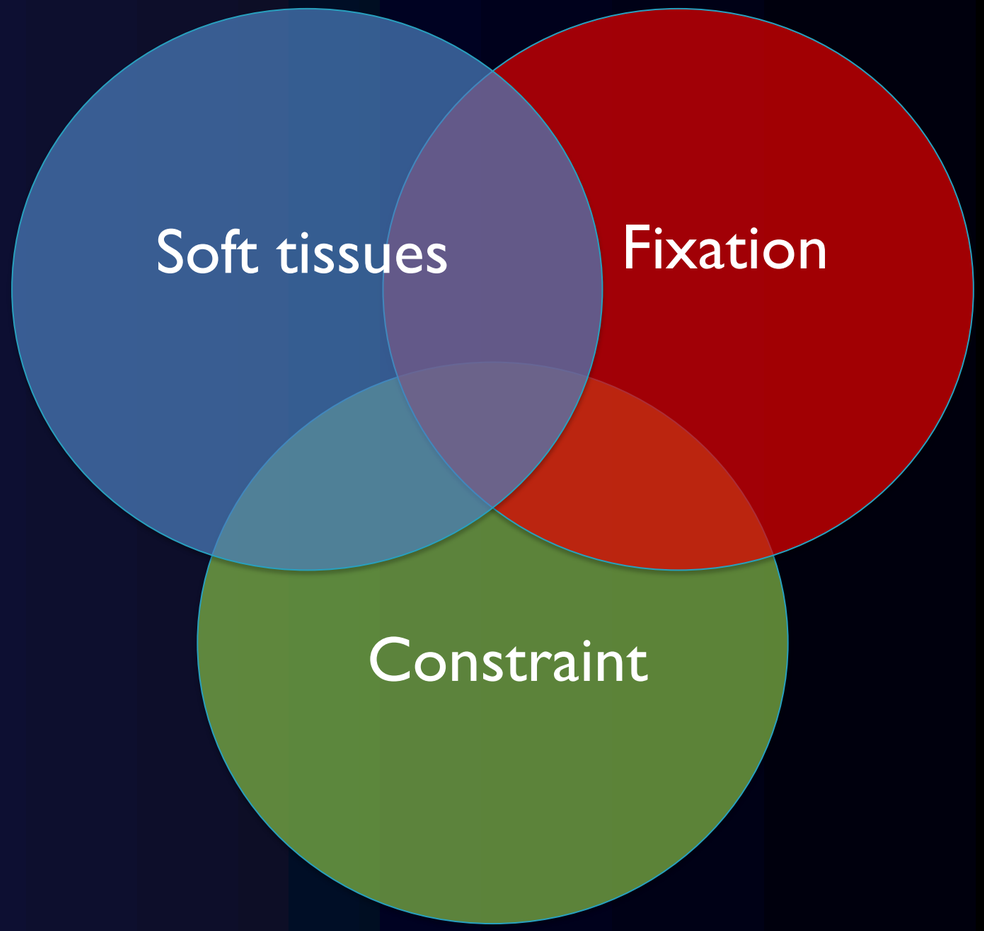

R


R


R
HBL

Conclusion

- Use zone 2
- Sleeves and cones offer good solutions to zone 2 fixation
- Choice may be driven by system/supplier
- Meticulous technique required regardless
- Cones offer the flexibility I prefer



Thank you

Elective Orthopaedic Centre @ Grafton Way Building, UCLH