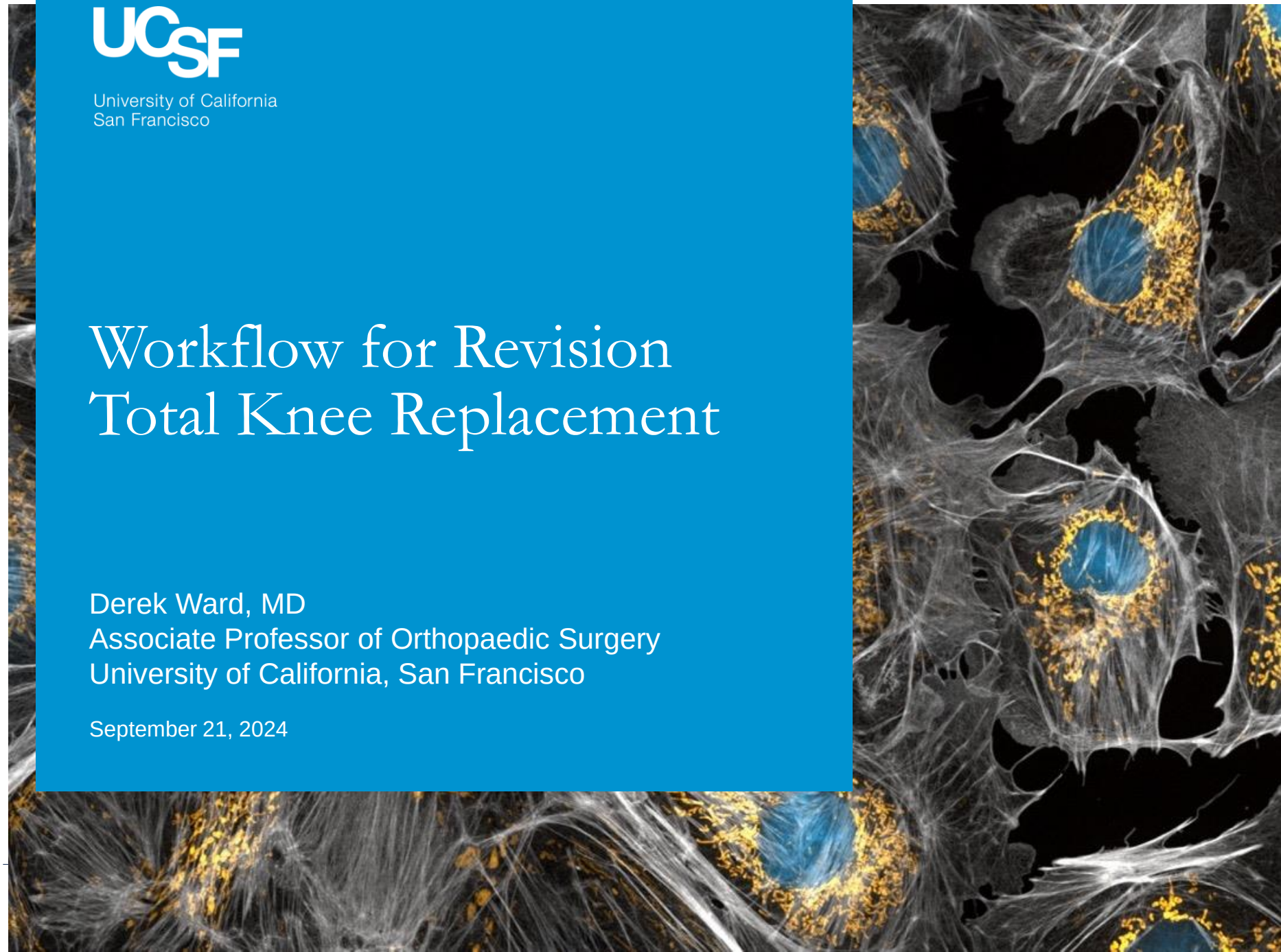

University of California
San Francisco

Workflow for Revision Total Knee Replacement

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Disclosures

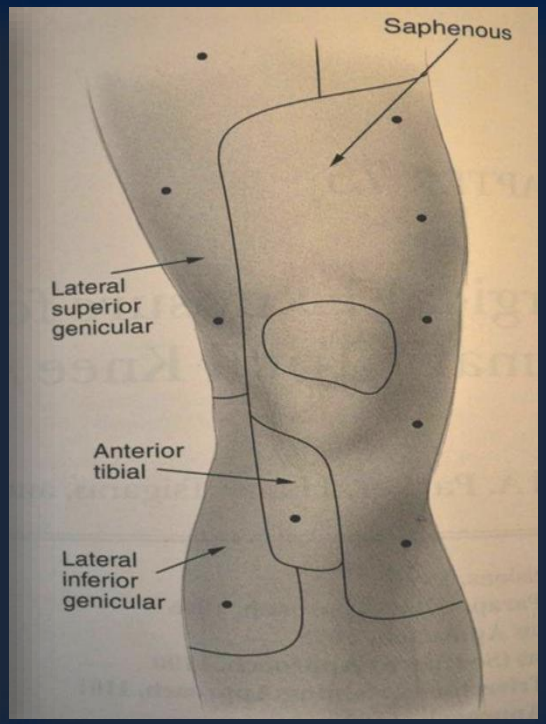
- Depuy – Consulting, royalties
- Smith & Nephew – Consulting
- Visie - Stock

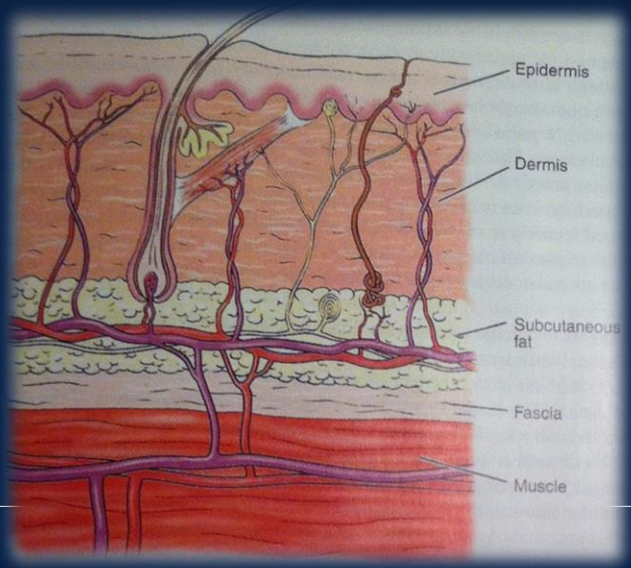
Outline

- Exposure
- Implant Extraction
- Reconstruction

Exposure - Skin

- Use prior incisions
  - Prioritize lateral incision if possible
  - Leave 4cm skin bridge
  - Cross prior incisions at wide angles if possible
- Make a large incision
- Don’t excise skin edges until closure
- Keep fat with the skin





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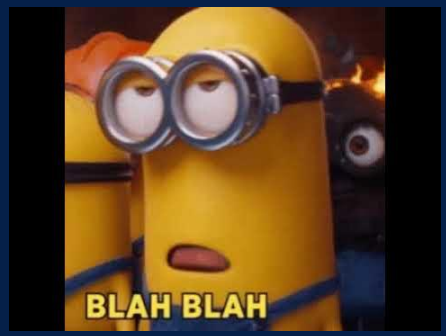
Exposure



1. Big Incision
2. Generous Arthrotomy
3. Exposure the anterior femur in extension
4. Release the lateral gutters in extension
5. Start Medial release in extension
6. Remove scar tissue behind patella
7. Flex knee to see where you are
    1. Larger arthrotomy – progress to quad snip – Progress to TTO
    2. Continue gutter and anterior/distal femur tissue release
    3. Continue medial release
    4. Flexion is Protection for the extensor mechanism when the patella is sub-luxed
8. Remove liner
9. Remove Femur
10. Sublux tibia and expose and finish postero-medial release
11. Remove tibia

Implant Removal

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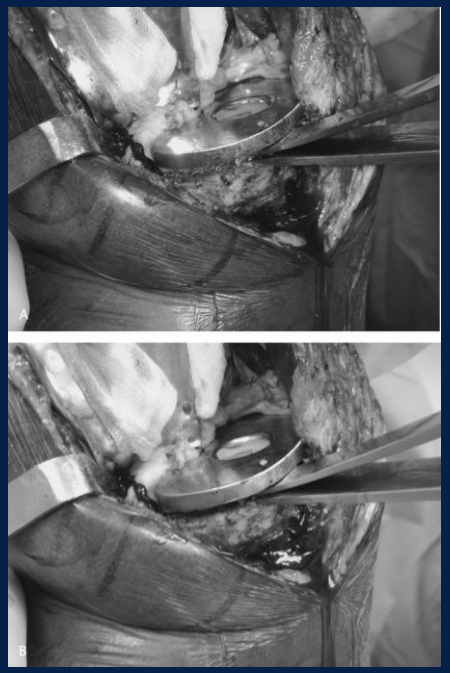
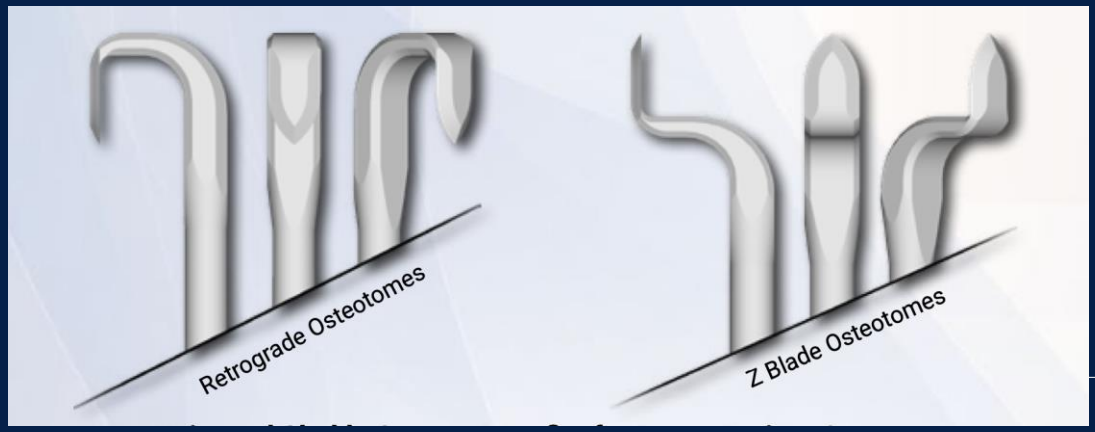
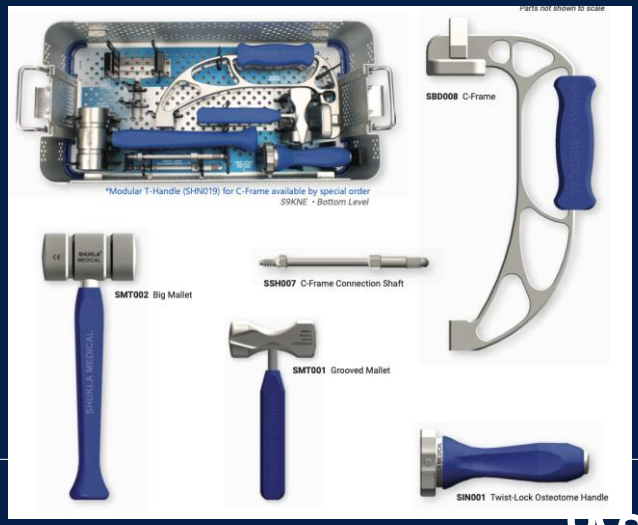
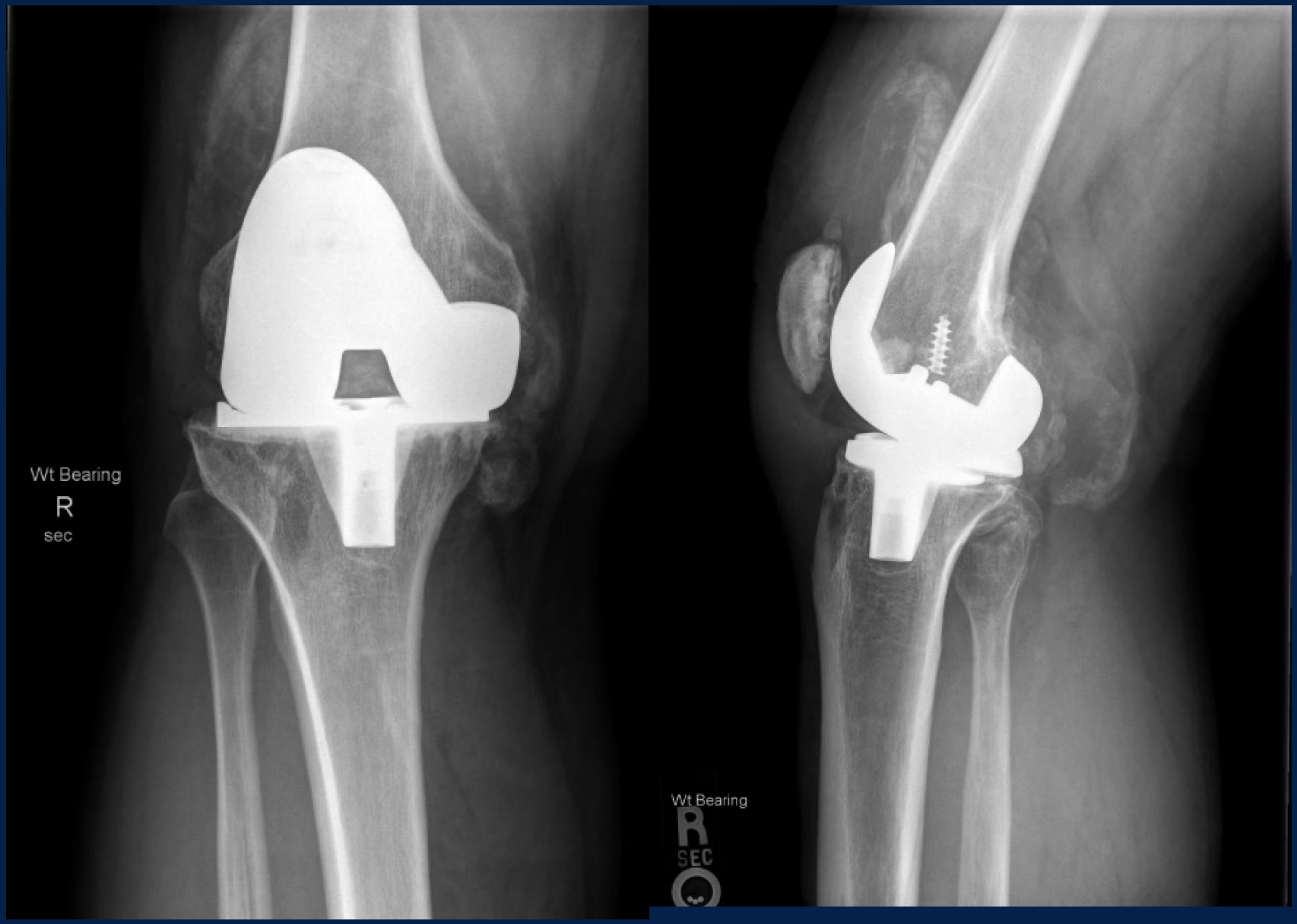
Implant Removal

- Patience
- Bunion blade (small saw blade)
- Thin flexible osteotomes
- Footed osteotomes
- Regular osteotomes
- Specialized Extraction Devices
  - Implant Agnostic
  - Implant Specific








Wt Bearing
R
sec
Wt Bearing
R
SEC

Implant Removal - Exposure is Critical

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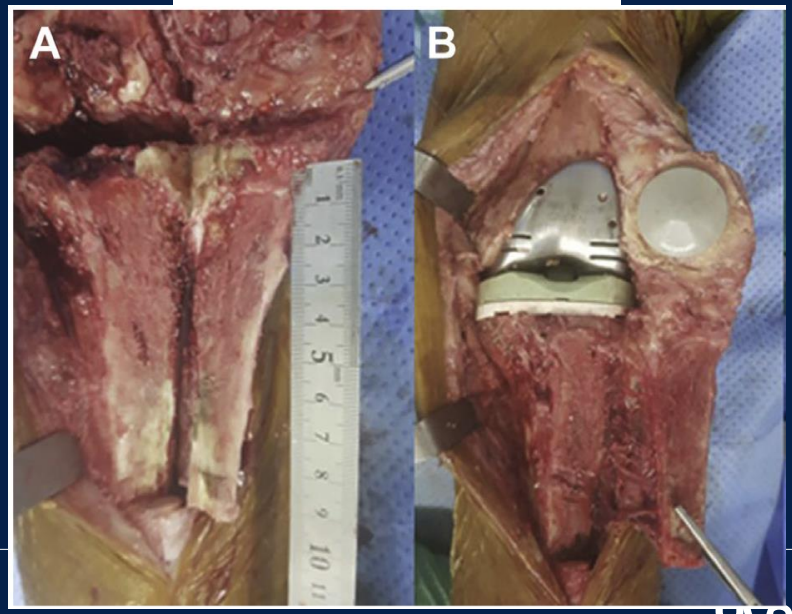
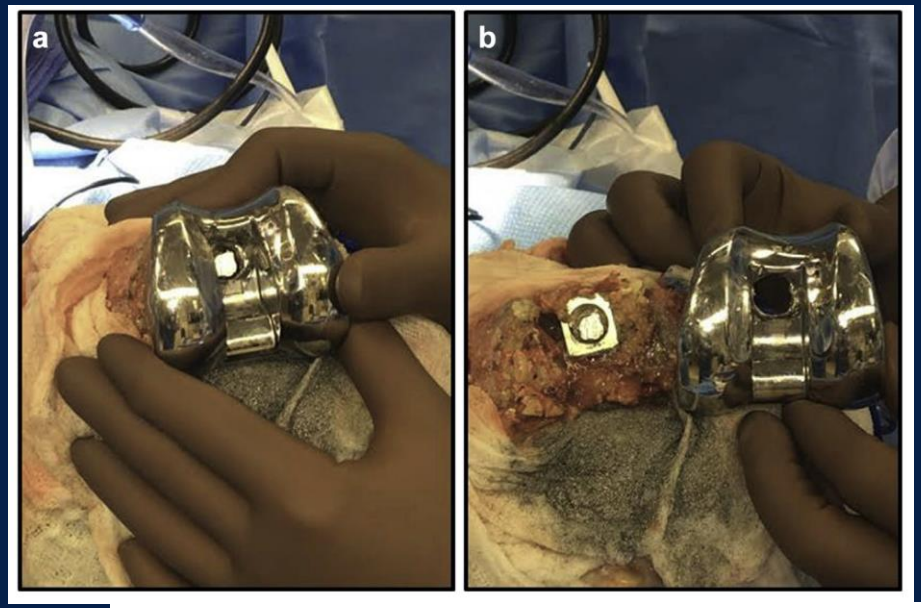
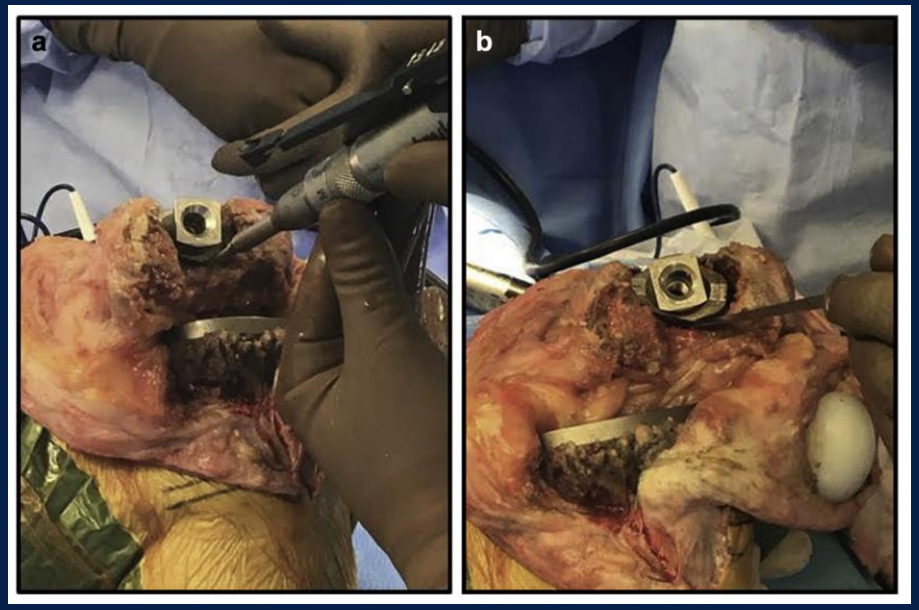
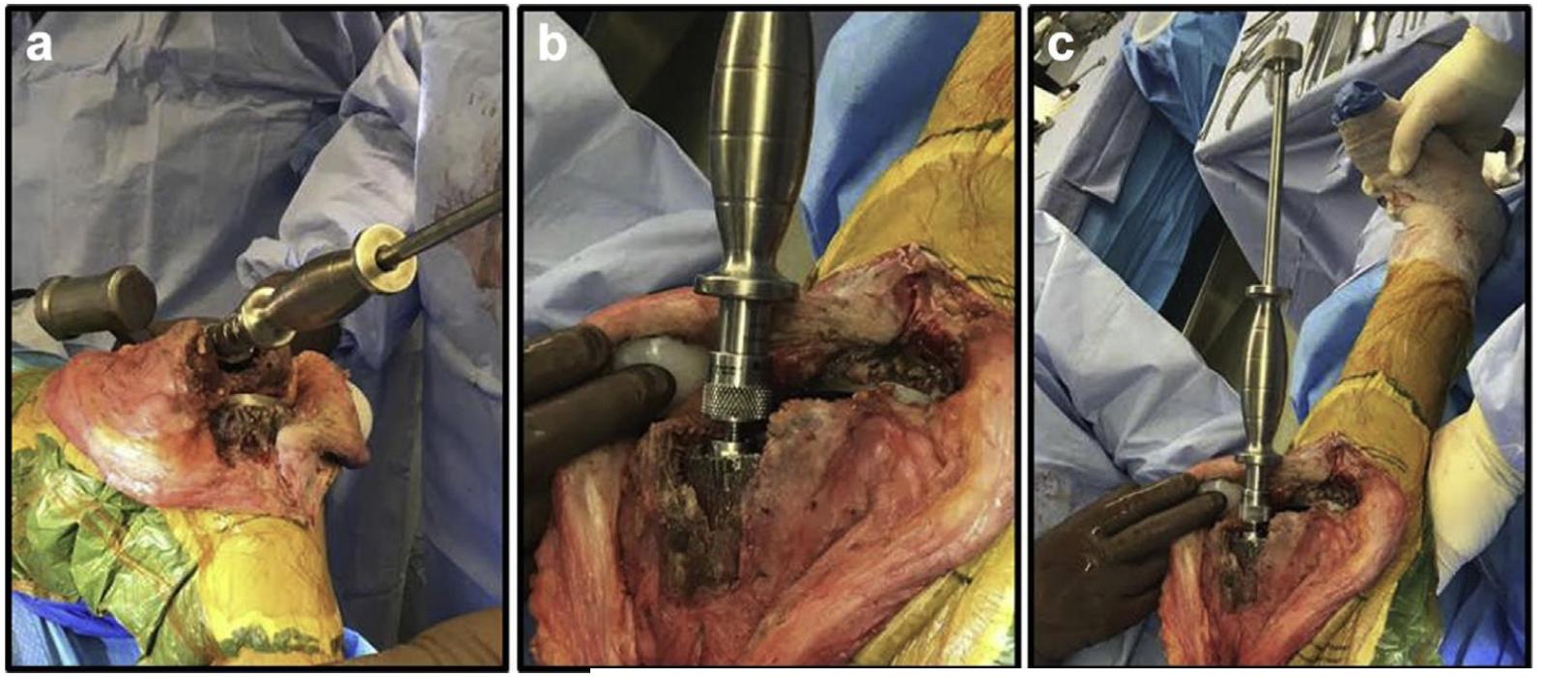
Implant Removal – Extensive Cement, Cones, Sleeves

- Long Cement Mantles – Ultradrive, burr and patience, C-arm
- Sleeves can often be removed without osteotomies
- Cones almost always require osteotomies
  - Femur – Anterior Bone Window
  - Tibia - Tibial Tubercle Osteotomy

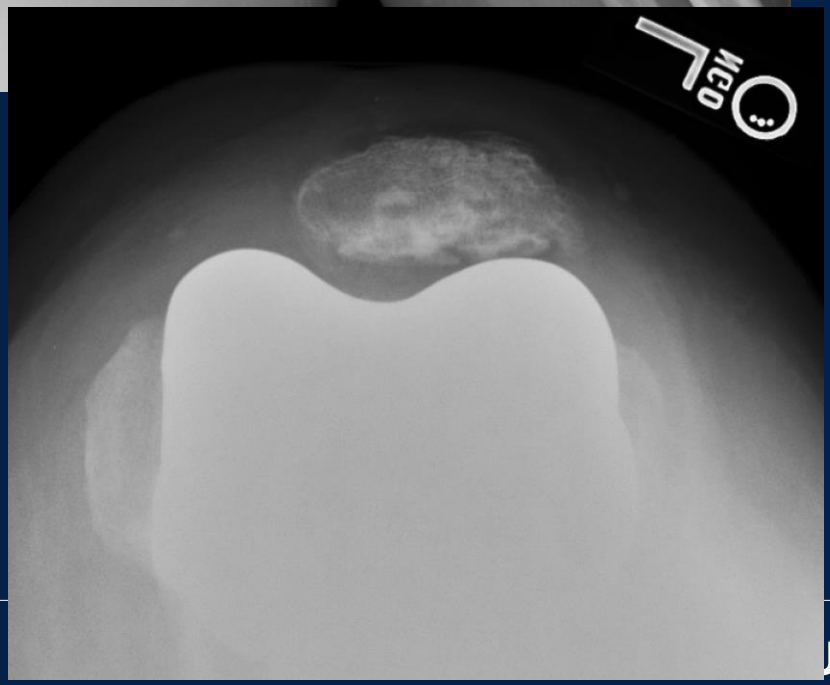








J.R. Martin et al. / Arthroplasty Today 2 (2016) 171–175



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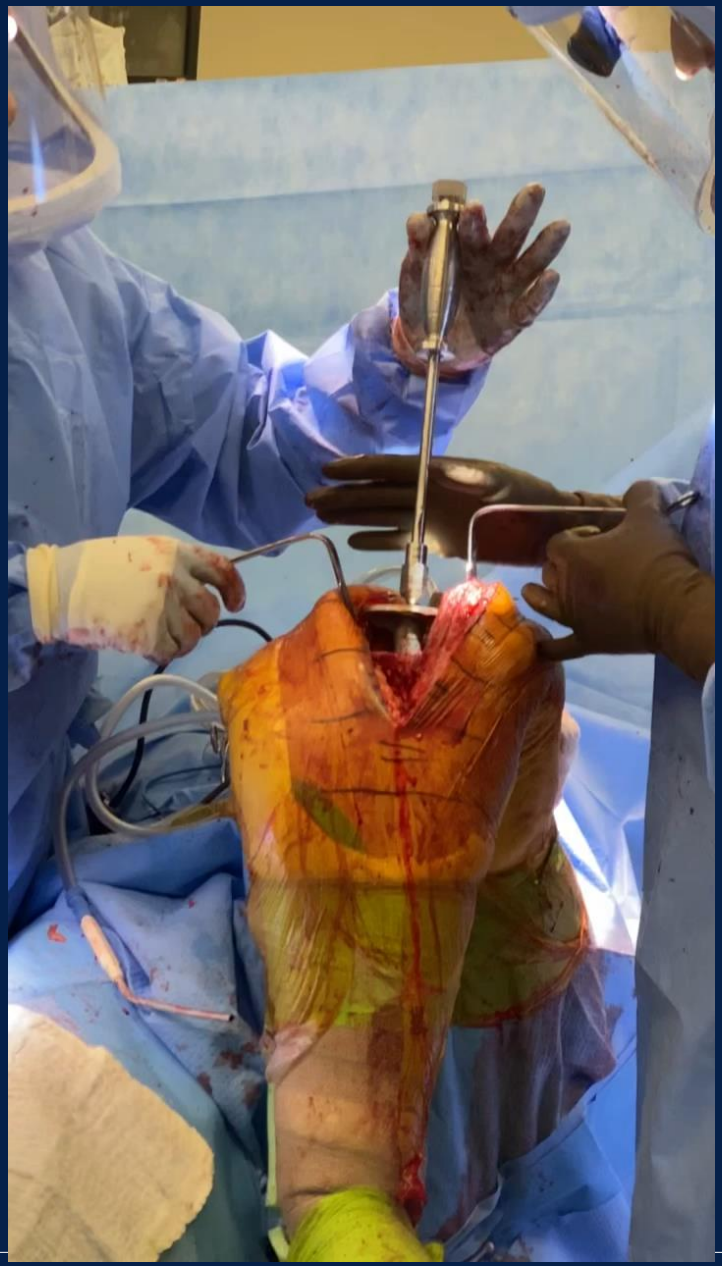
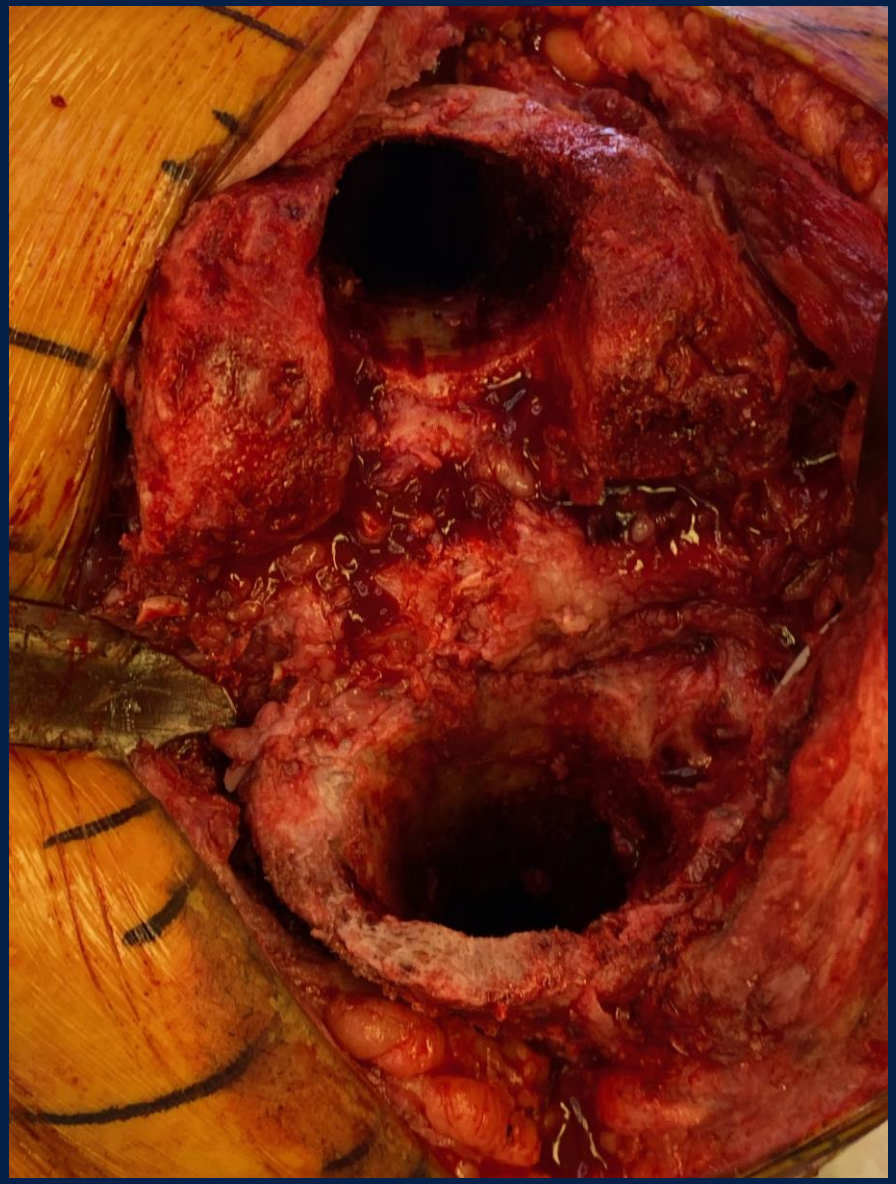





L
PACU


L
PACU

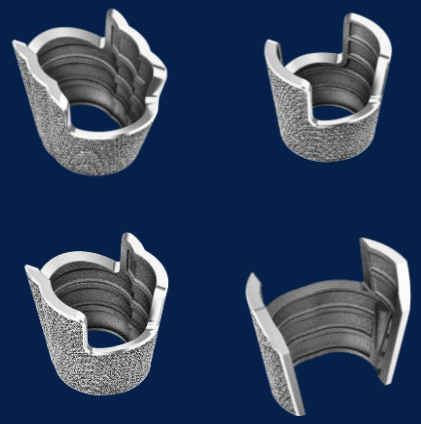

L
BLT

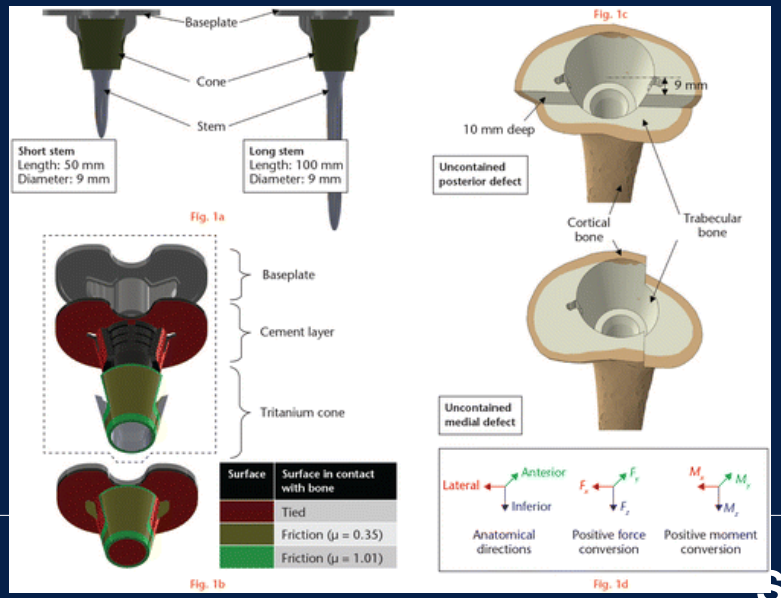
Reconstruction

1. Look at extension gap
    1. Recut to achieve extension
        1. Minimize femur recut if you can
2. Look at Flexion gap
    1. Decision point for constraint
3. Prep Tibia
    1. Thick tibial tray or raise tibia with cone/sleeve
4. Prep femur
    1. Upsize, offset, flex to close down flexion gap

Managing Bone Loss

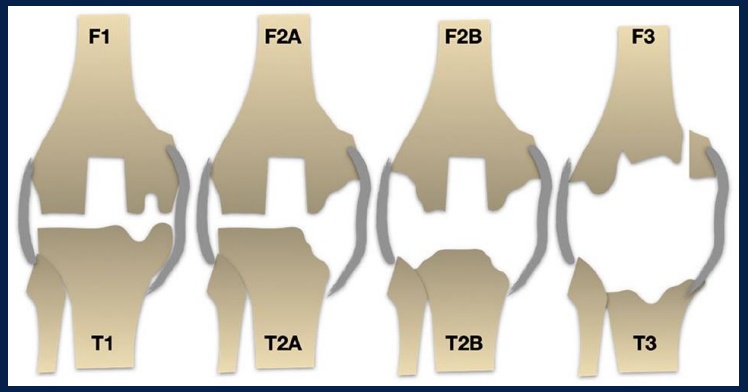
- Sleeves
- Cones
- Stems
  - Short are fine
  - Consider longer stems for uncontained defects
- Augments – Rarely use
- Thick tibial trays
- *<u>You should be looking for a reason to NOT use a sleeve or cone especially on the tibia</u>*

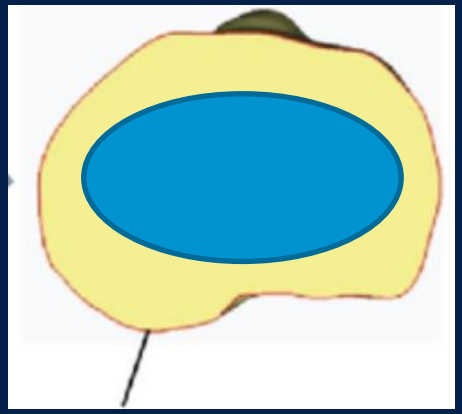


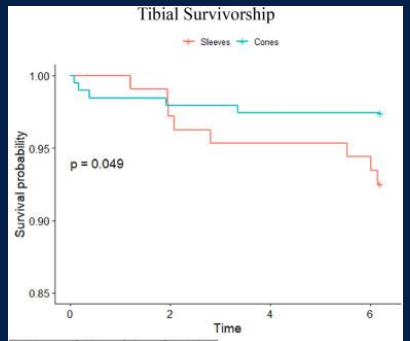


Sleeves versus Cones

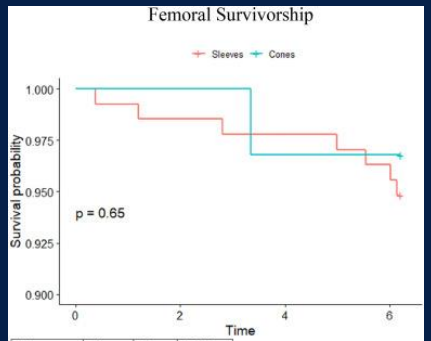
- Sleeves are awesome
  - More technique dependent
  - Work better on femur
- Cones are great too
  - Can mal-position a stem on the femur
- Specific situations where sleeves don't work
  - Large uncontained defects
  - Can't make sleeve stable







Time Point	Sleeve	Cone	P Value
1	1.000	0.985	0.195
2	0.972	0.979	0.689
5	0.953	0.974	0.335



Time Point	Sleeve	Cone	P Value
1	0.993	1.000	0.627
2	0.985	1.000	0.490
5	0.970	0.968	0.956

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Case

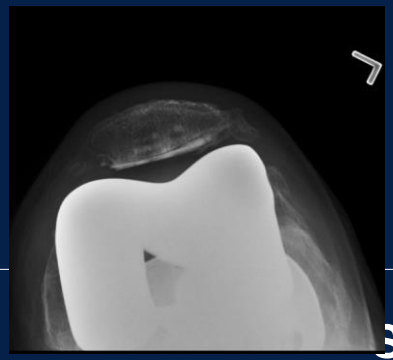
- 81M s/p L TKA 15 years ago
- HPI: never hurt ‘too much’ but now very limiting
- PMH: Stroke, HTN
- PSH: L TKA, R THA

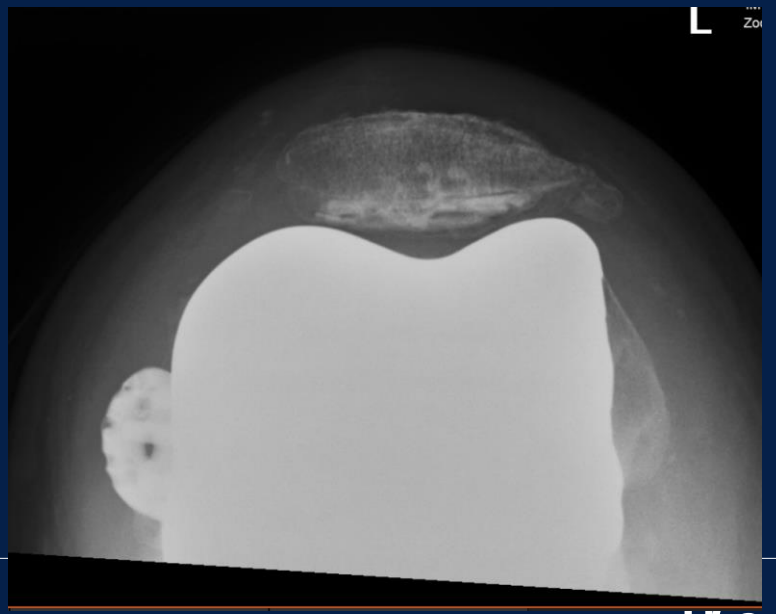
- PE: 6’6”, BMI 24, ROM 0-115

- Not infected


L


X-TBL MAX-FLEX
L
JLS





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Desc: C-ARM F

Case

- 74w/L painful knee
- HPI: H/o primary knee surgery, no infections, progressive pain
- PMH: CAD, HLD
- PSH: R medial/lateral UKA

- PE: BMI 30, Neutral alignment, ROM 10-120

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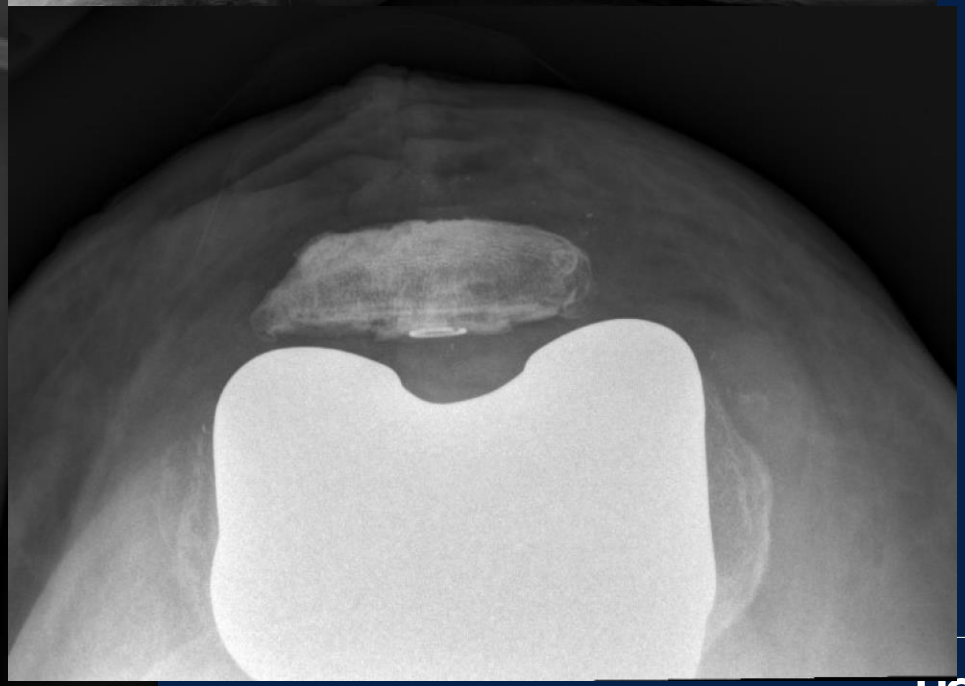
R
PORTABLE
PACU


R
PORTABLE
PACU
X-TABLE LAT

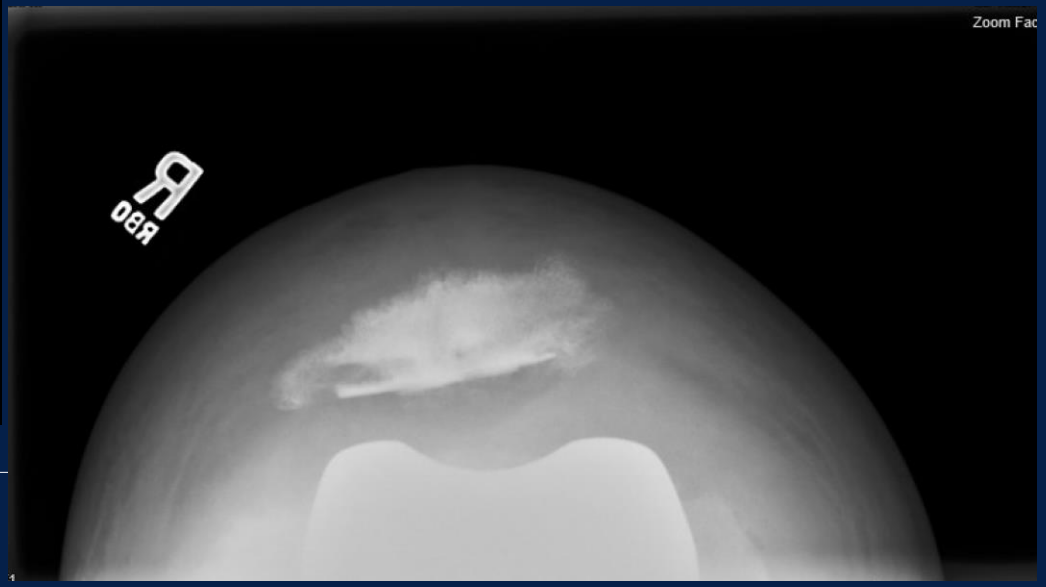


Case

- 57 M referred for 2nd opinion regarding amputation
- HPI: R TKA 2016 c/b early infection s/p I&D x 2 then 2 stage exchange now with recurrent infection. Prior surgeon recommending amputation. Patient wishes to save his leg.
- Currently on Bactrim
- PMH: DM, HTN, HLD, OSA
- PSH: as above
- Non-smoker, employed and currently working as a counselor
- PE: BMI 30, R leg swollen, valgus alignment, ROM 20-110, NVI
- Labs from OSH: CRP 40, ESR 80, Micro = staph?


R
RBO


R
RBO
X-TBL MAX-FLEX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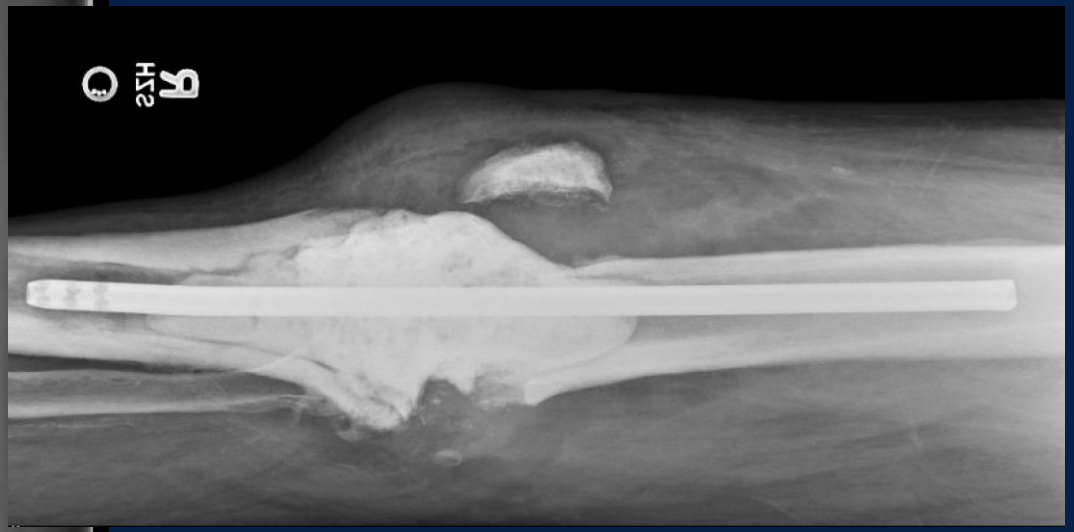
Labs and Aspirate

- 2 weeks off Bactrim
  - Hgb A1c 6.4
  - CRP 50, ESR 87
    - WBC 6200
    - PMN 92%
      - Micro:

susceptibility

	Corynebacterium striatum group MIC	
Ciprofloxacin	>4	Resistant
Clindamycin	>2	Resistant
Daptomycin	<=0.5	Susceptible
Erythromycin	>4	Resistant
Gentamicin	<=4	Susceptible
Linezolid	<=1	Susceptible
Penicillin G	>8	Resistant
Tetracycline	>8	Resistant
Trimethoprim Sulfamethoxazole Bactrim	>4	Resistant
Vancomycin	0.5	Susceptible
_Comment	1	



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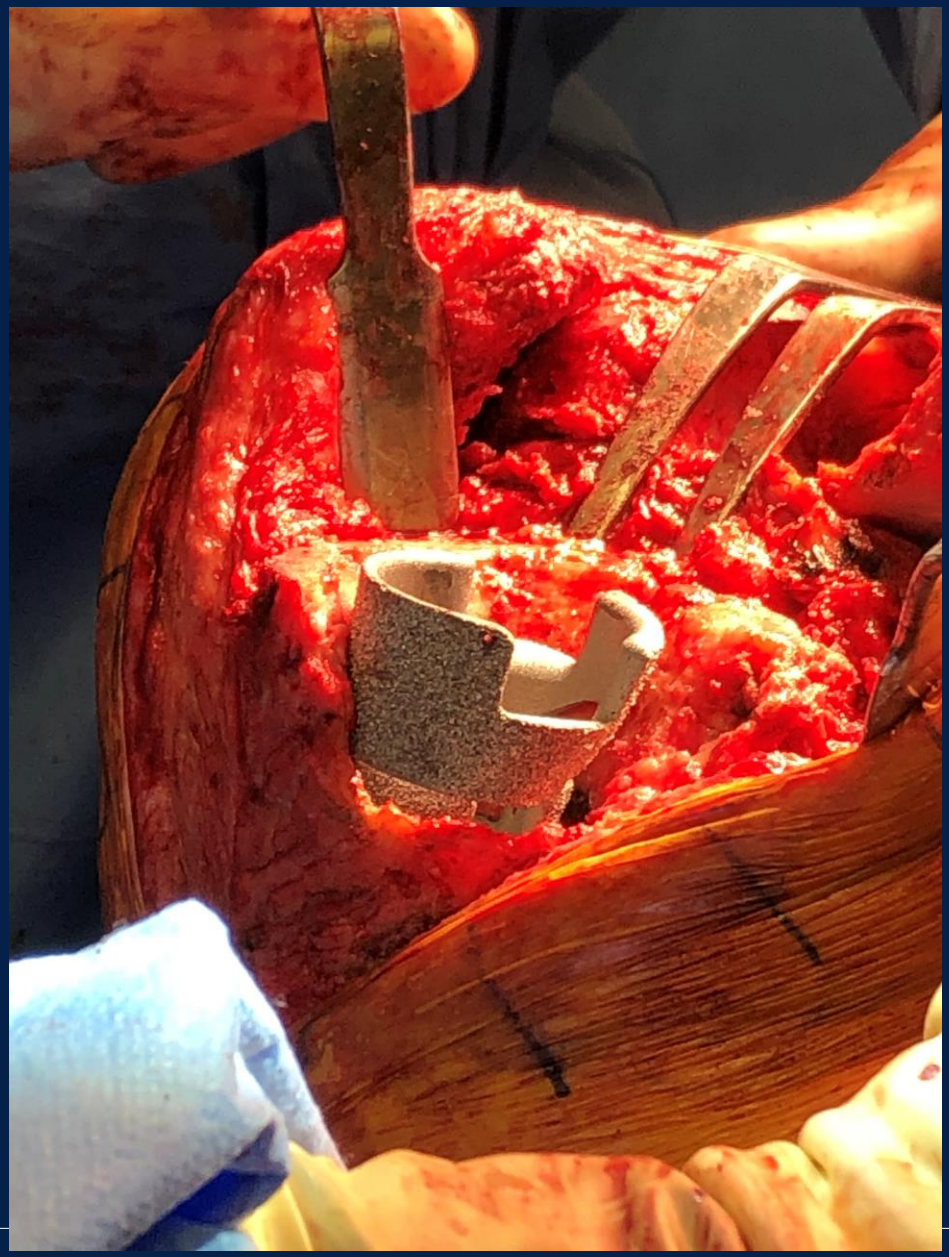


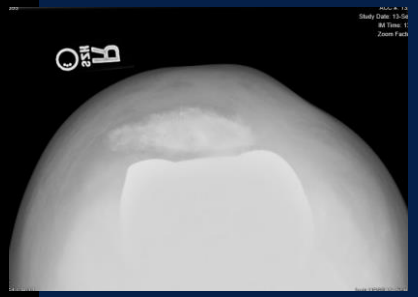


6 months postop (now 2+ years)
Lifelong oral abx suppression
No pain
Very happy with outcome

Case

- 62 M
- HPI: H/o multiple knee hip and leg surgeries after MVA in Mexico many years ago. Has prior gastric flap for grade 3 open tibia and adherent skin. Walks with walker.
- PMH: HTN

- PE: BMI 29 ROM 10-115, Complex LLE deformity


Desc:
L
IPO


Desc: XR
L
IPO


714.7 mm* (2D)
810.4 mm* (2D)


L
LTR


IM Time: 12:5
Zoom Factor
X-TBL MAX-FLEX

Thank you