UCSF

Arthroplasty for the Modern Surgeon: Hip, Knee and Health Innovation Technology

FAIRMONT SONOMA MISSION INN
SONOMA, CA

Revision Total Knee Arthroplasty Cases

Moderator: Jeff Barry MD

September 2022

Arthroplasty for the Modern

R

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September 2022

Disclosures

- Lineage Medical – content editor, investor
- Depuy – course teaching
- Smith&Nephew – consulting

- All my cases so you feel free to get judgy…

Time for a deuce?

They said I have cancer

Metal allergy – pain (in my a**)

Don’t pick this unless you’re Dr Ries

My prior surgeon told me I have a skin condition

What happens when you pick the outpatient surgery center instead of Dr Ward

Time for a deuce?

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What happens when you pick the outpatient surgery center instead of Dr Ward

Patient GK

History

- 60M h/o L medial UKA 10yrs prior. 2 years worsening pain and “bowleggedness”

- PMHx:
  - Myeloma s/p transplant
  - Stroke

Exam: Ht: 5’9 Wt: 180lbs BMI: 27

Antalgic gait with cane

Varus deformity

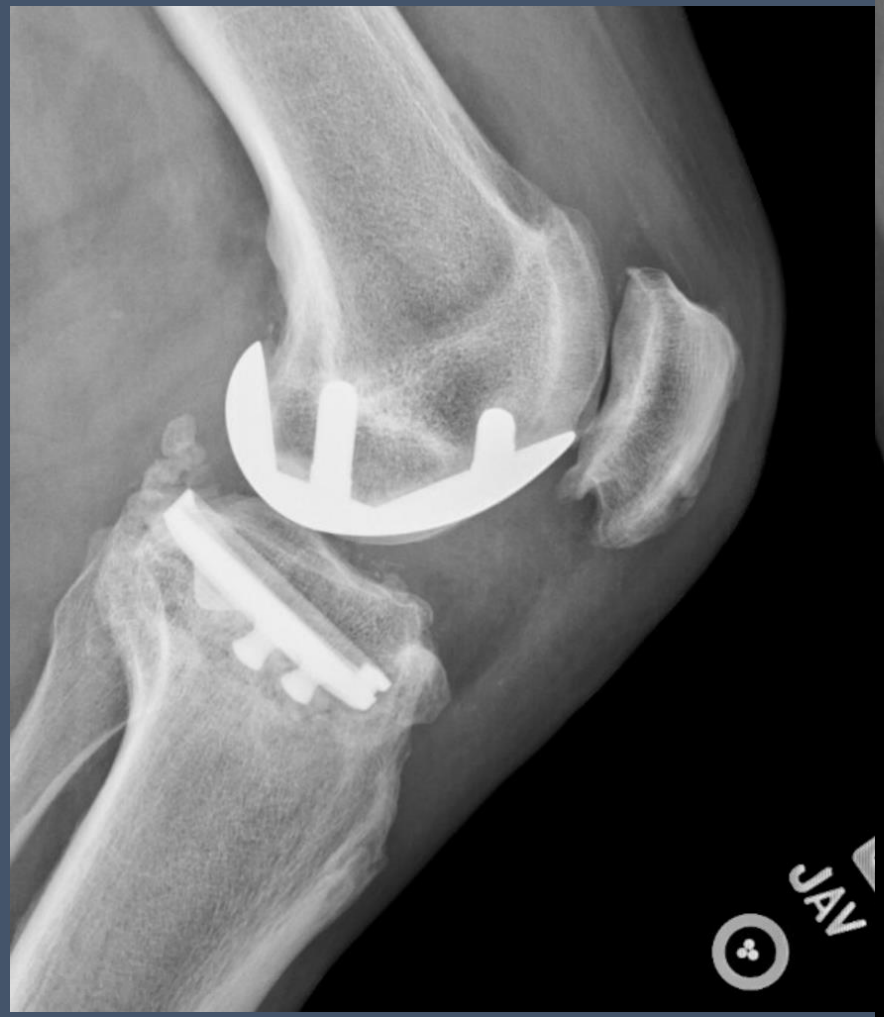
Well healed incision

ROM: 0-120

>10mm varus/valgus laxity throughout – medial endpoint to valgus stress

5/5 quad strength

DNVI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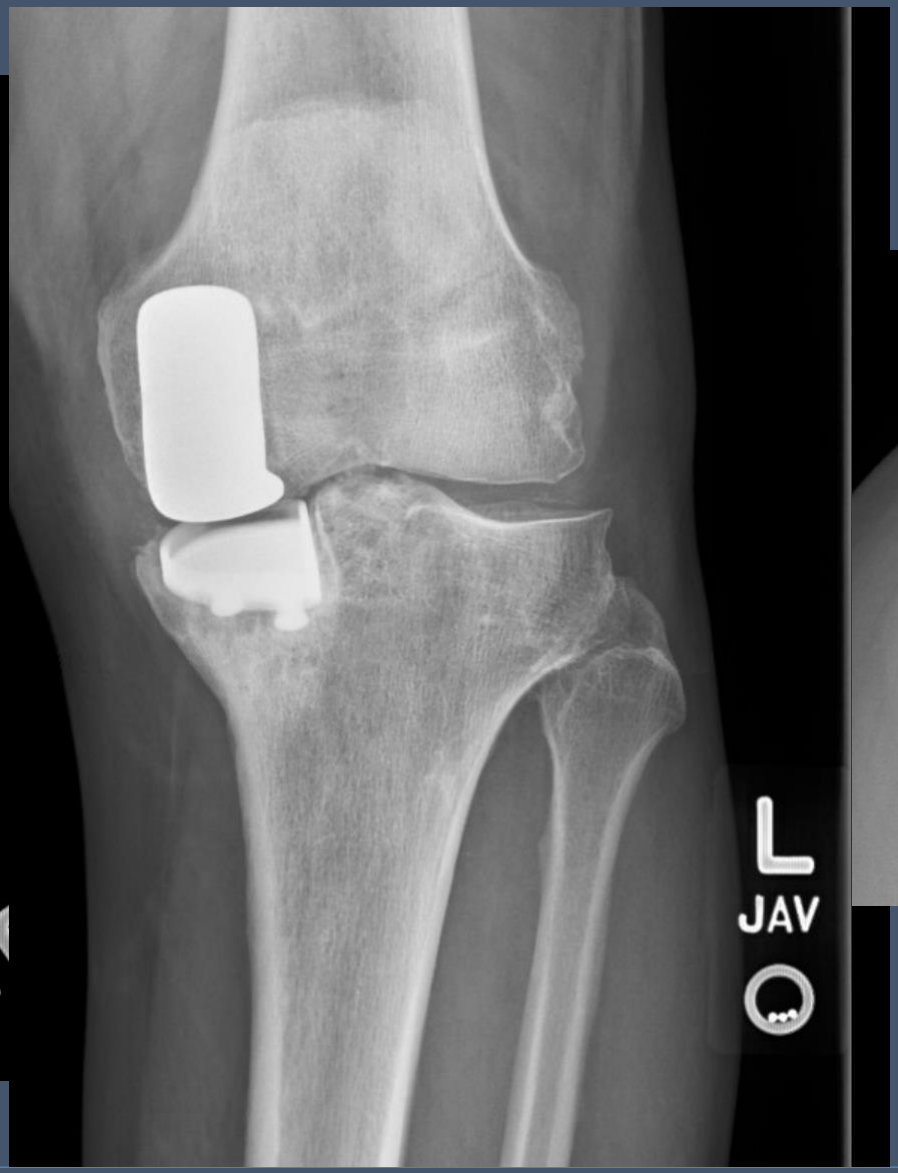
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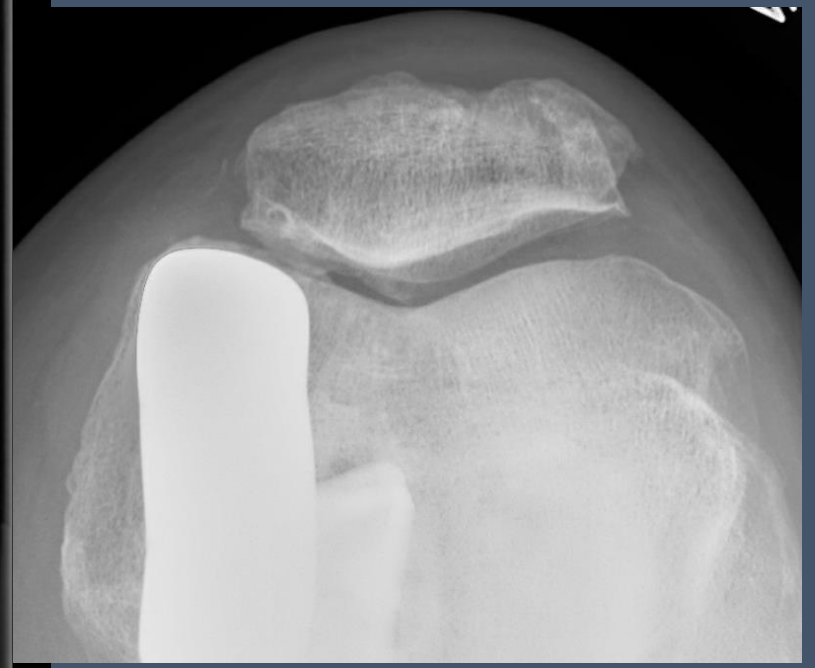
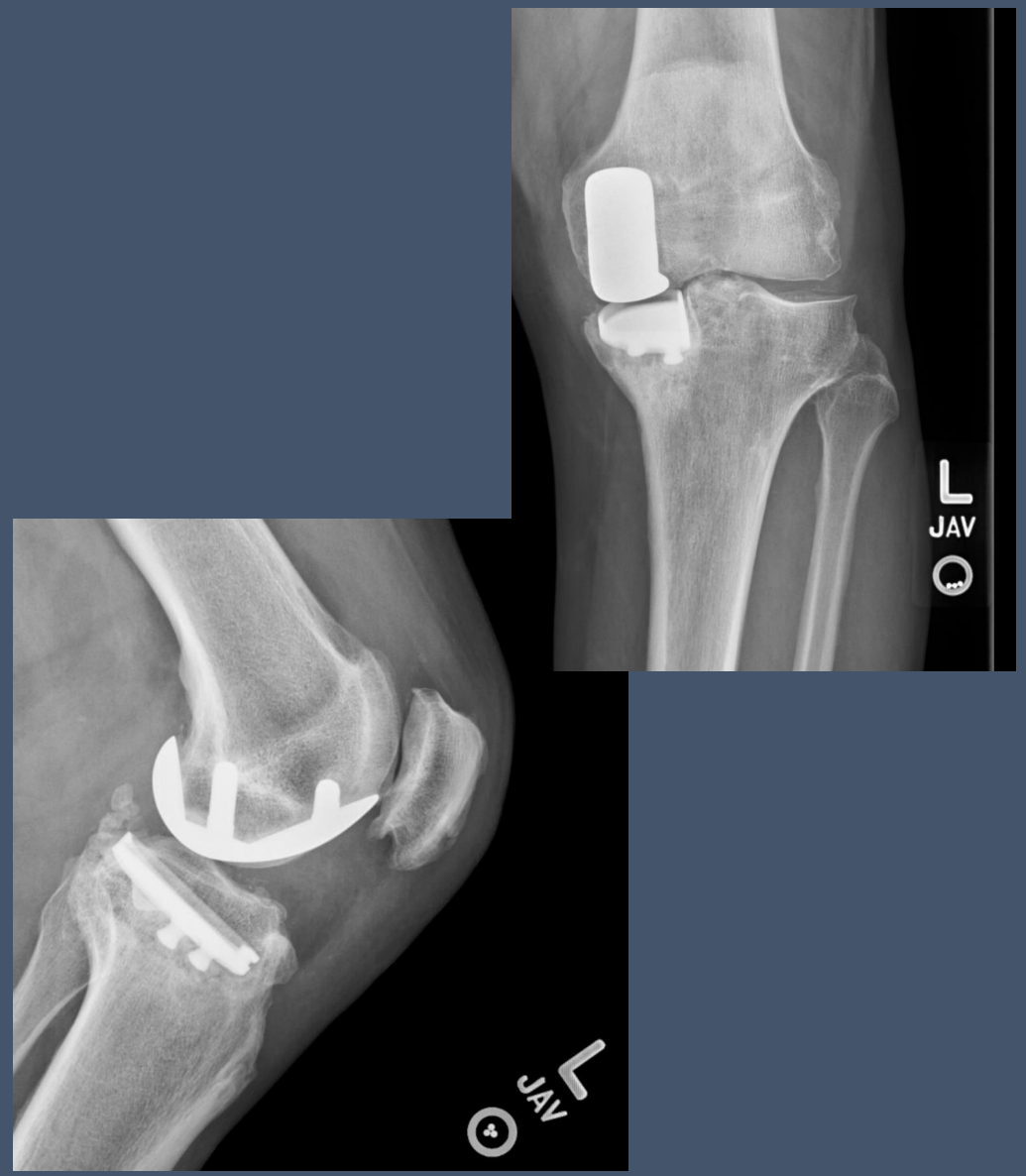
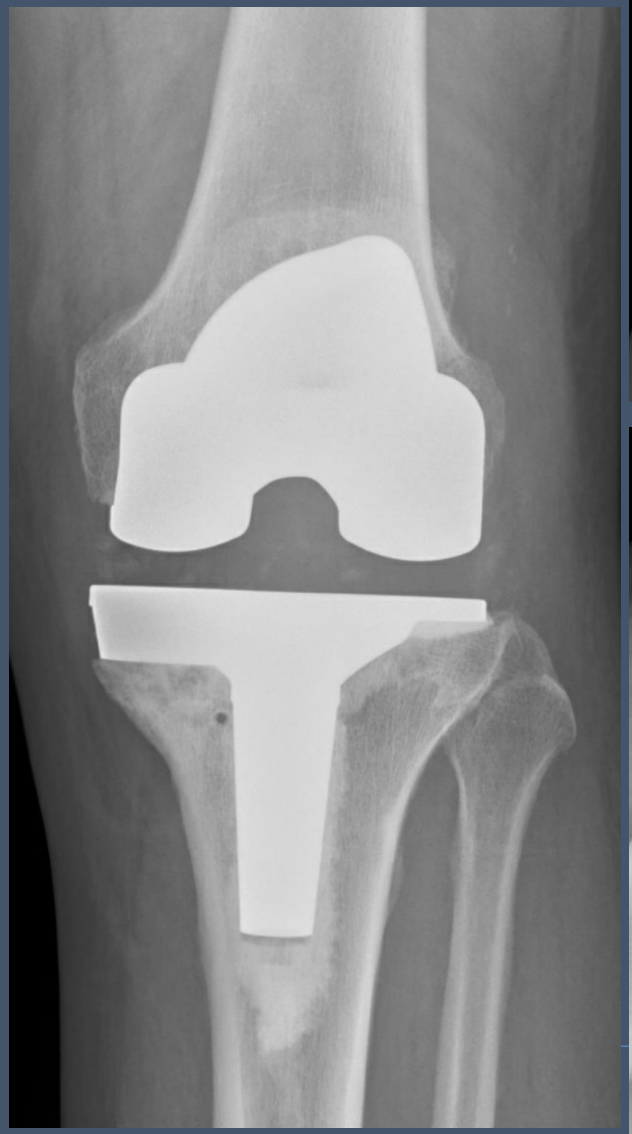


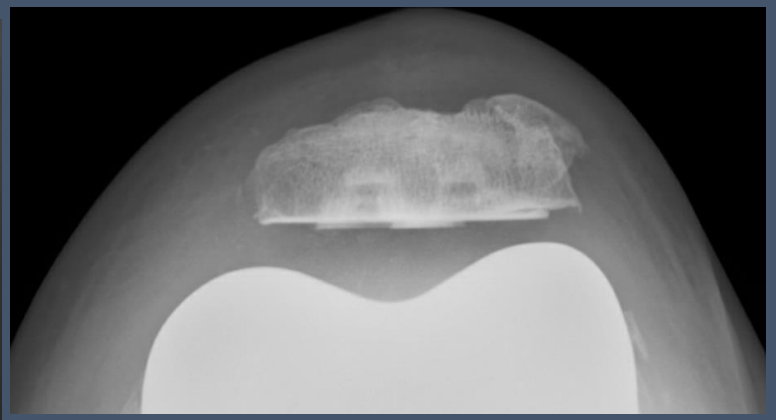
Revision of UKA

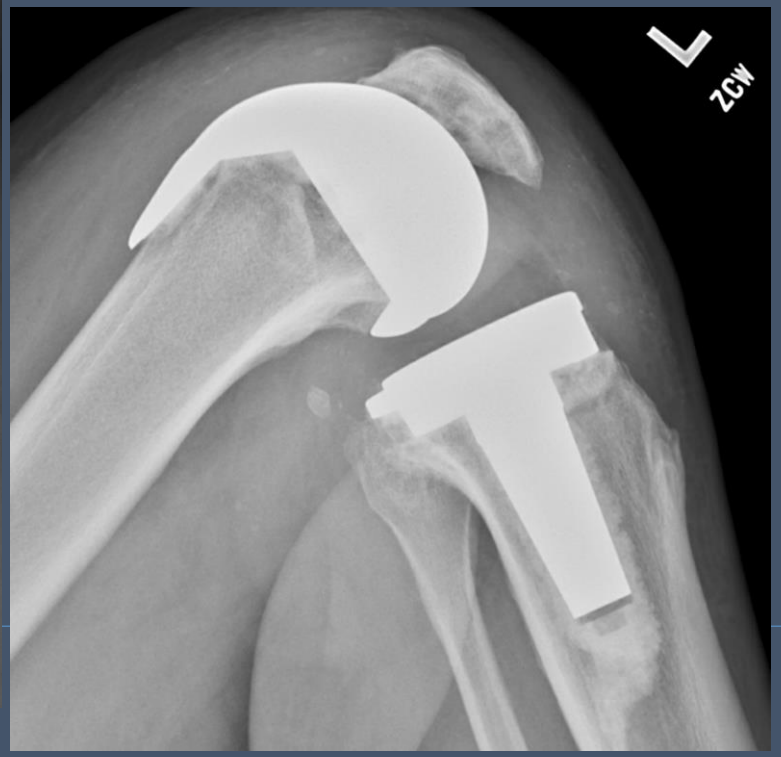
- Preop workup?
  - Say wasn't loose – anyone comfortable using steroid injection in a UKA?
- Antibiotics @ time of surgery different than primary for revisions?
- Are you comforable doing this at surgery center?
- What implants are plan A, B, C?



Revision of UKA

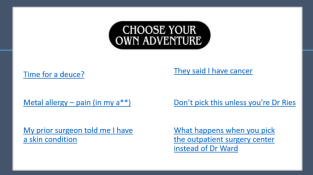






- Medial augment
- Revision baseplate

- Would anyone not resurface patella at a UKA revision?
- Always need revision tibia for these conversions or is primary ok?



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Patient GH

History

- 71M h/o R TKA 9 years prior. Required MUA postop and always painful and stiff since. Worsening pain more recently. Previously walking 2 miles on ranch now difficulty with ADLs.

- Referred by PCP for tibial and femoral bone tumor

- PMHx:
  - Obesity s/p gastric bypass
  - Meningioma s/p resection
  - DVT after prior TKA
  - h/o Melanoma

Exam: Ht: 6'3" Wt: 315lbs BMI: 39

Antalgic gait

Well healed incision

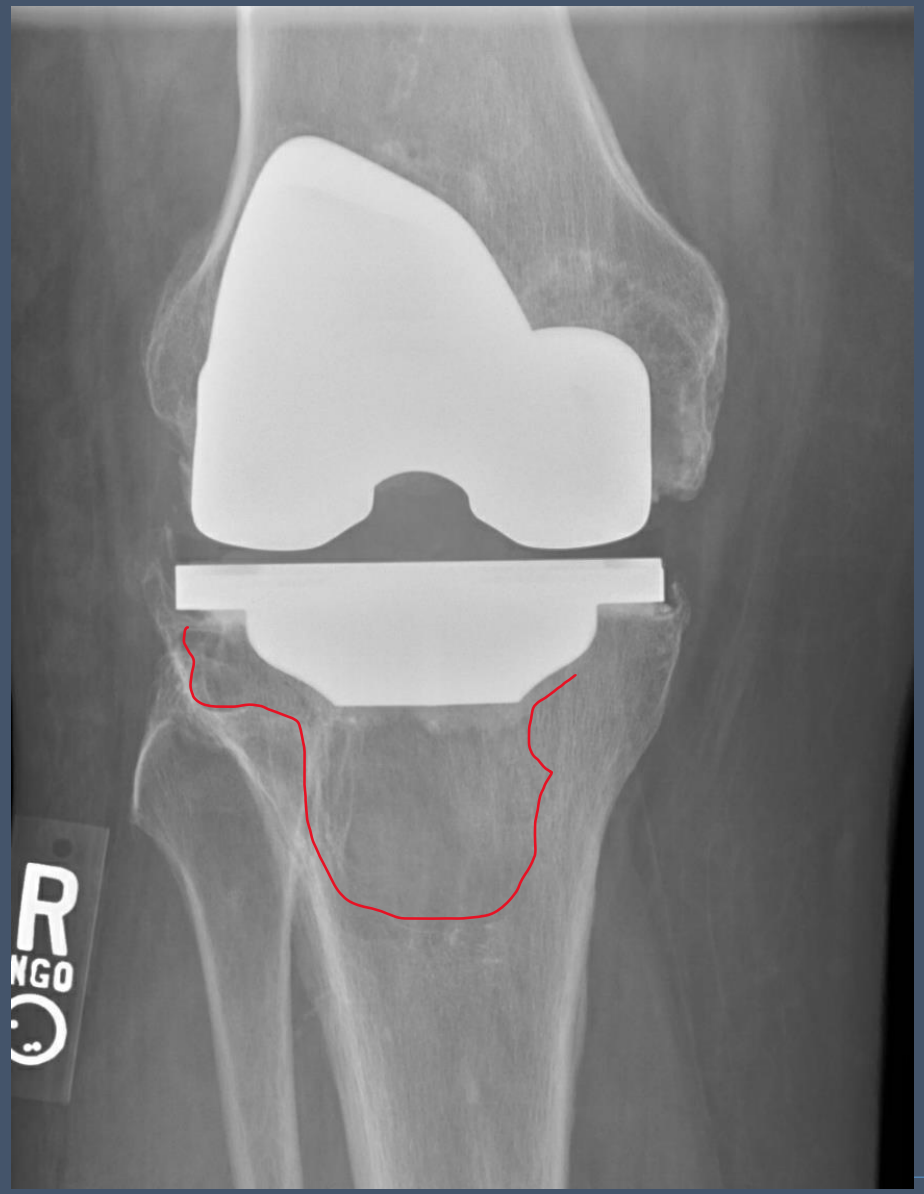
Pain across anterior tibial joint line

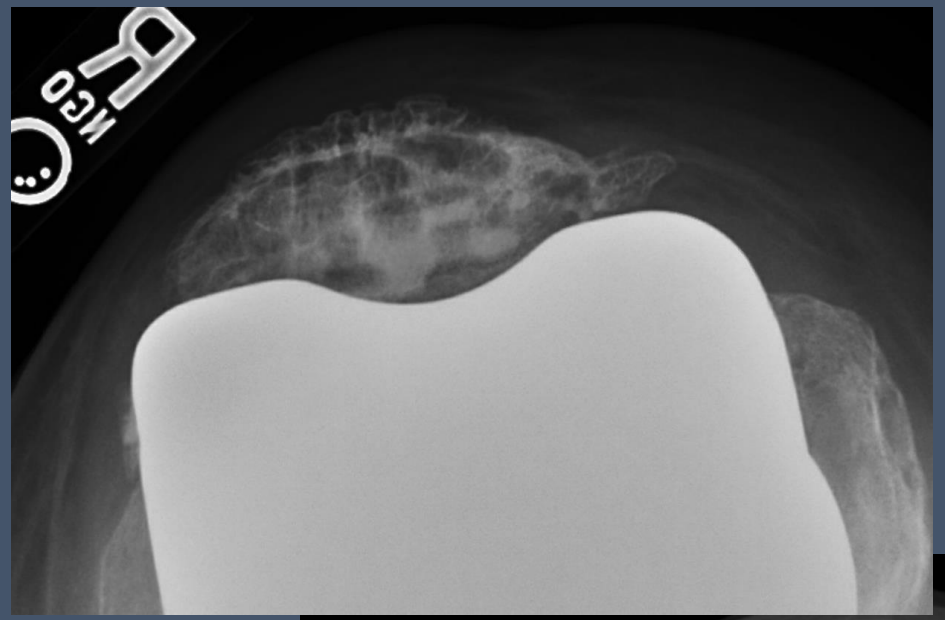
ROM: 0-70

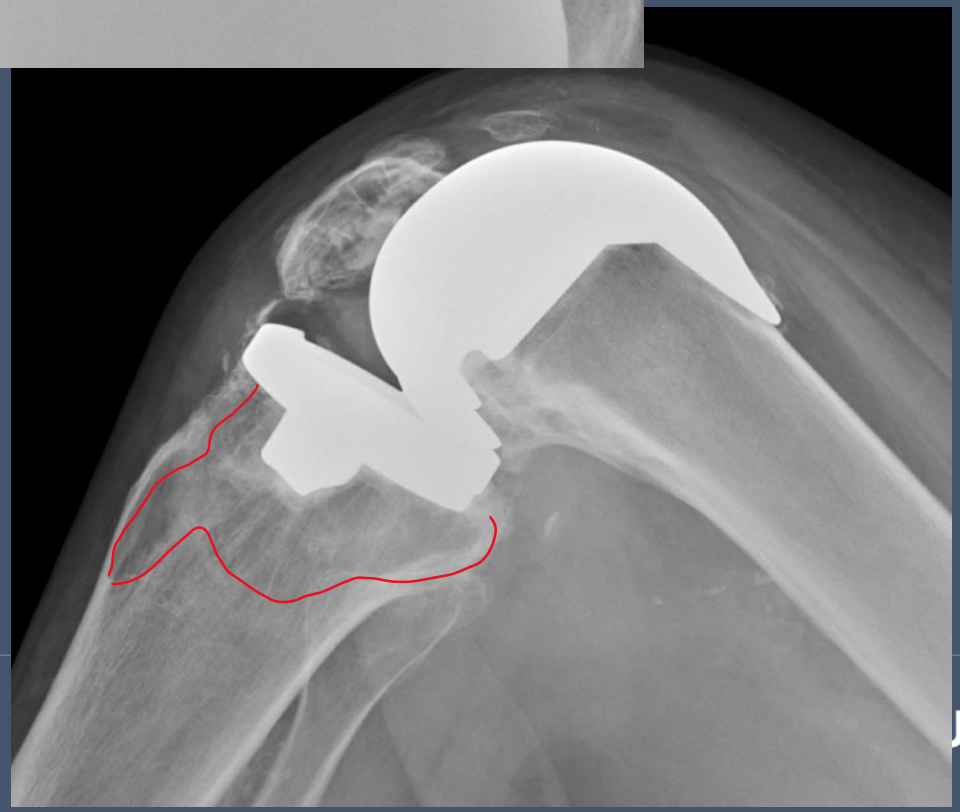
5-10mm varus/valgus laxity

5/5 quad strength

DNVI







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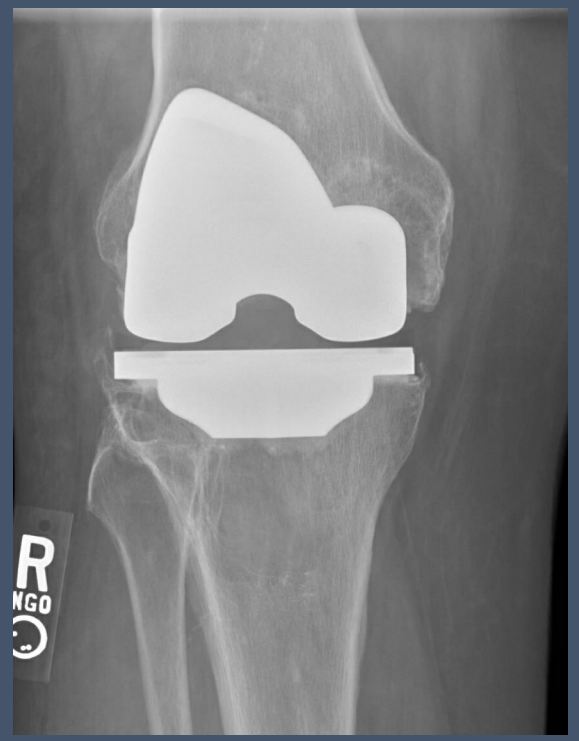
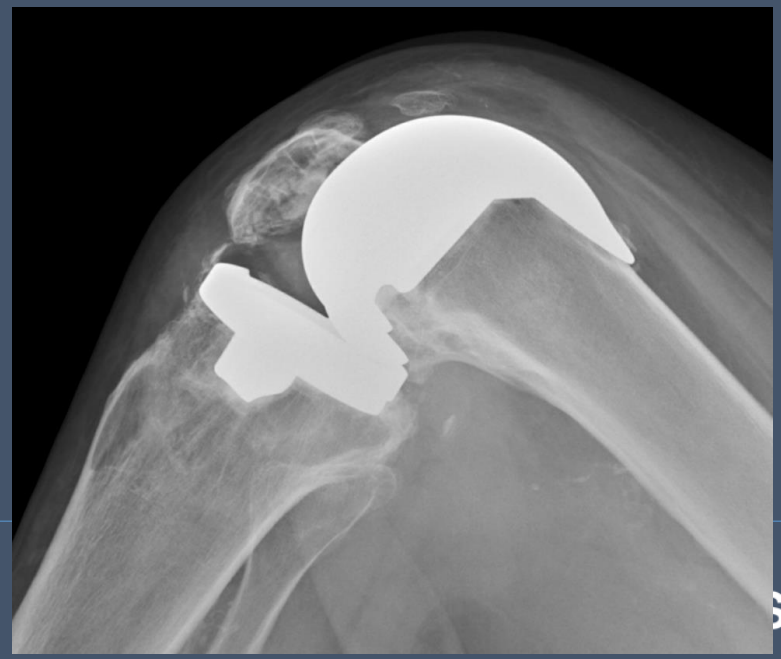
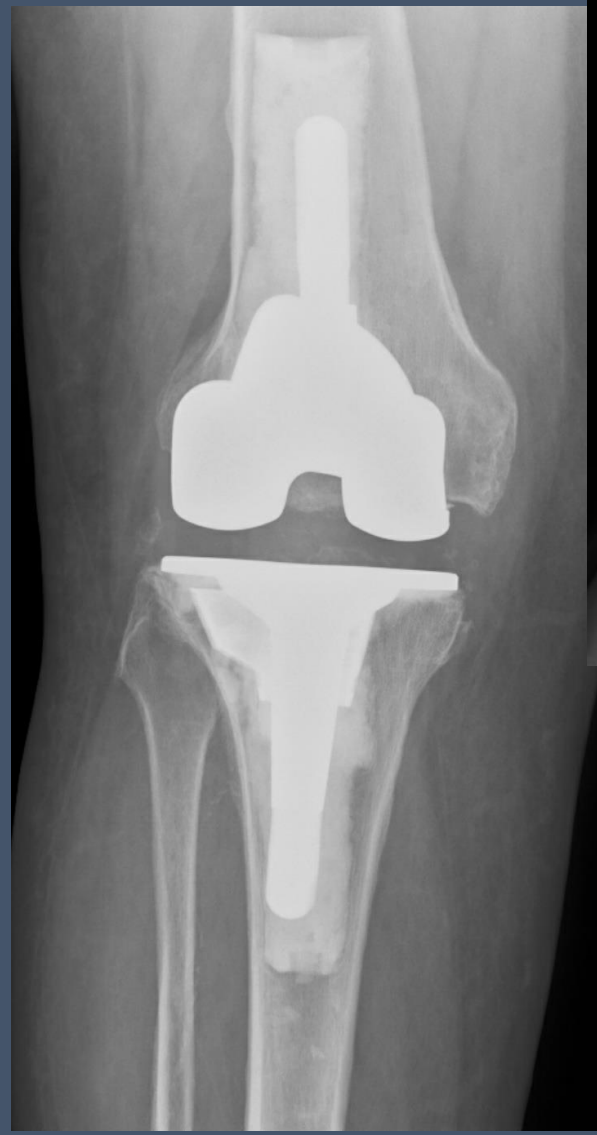
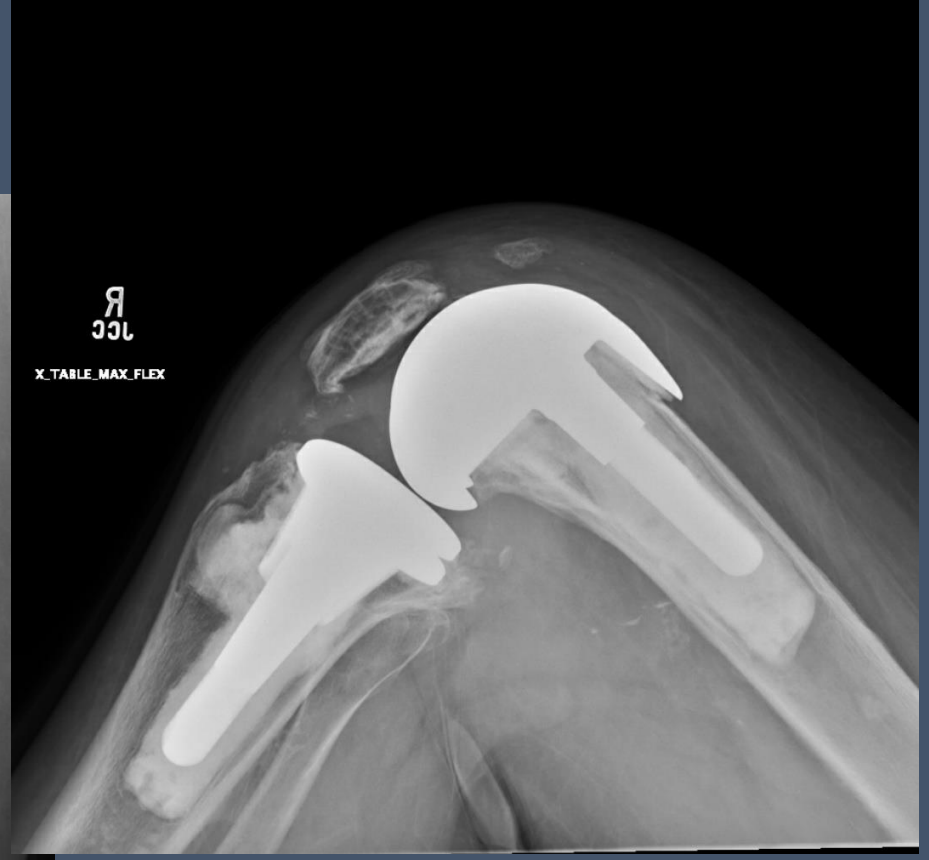
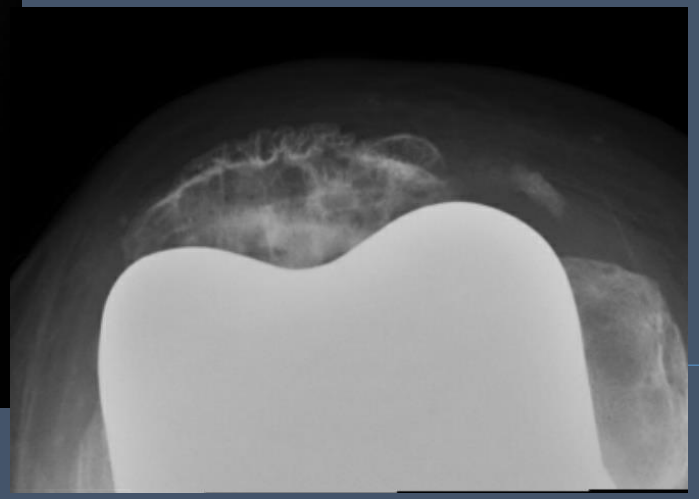
- Preop workup?
  - Tumor Concern?
- Anything in particular worried about concerning going into surgery
- Extensile exposure of choice
- Fixation plan?









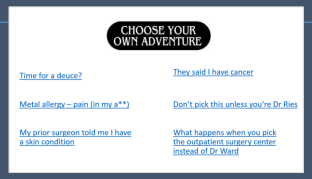


FINDINGS

- Poly wear post and posterior
- Bone loss lateral femur, central, lateral, anterior tibia
- Lobed cone and cemented stems
- Quad snip for exposure
- Lytic lesions to path - benign

- Tricks for protecting shell of a tibial tubercle?
- Intraop ROM 0-130 with quad off – 0-80 quad reduced and snip repaired. Do you do anything different for tight EM limiting motion?
- Arthrofibrotics – postop management?

OUTCOME: 1.5 yrs postop. ROM 0-110. No lag; full strength. Walking daily. Lost 40lbs. Complains of persistent lateral sided pain and weakness. Infection workup negative.



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RW

- 63M 5yrs s/p L TKA (2yrs s/p R TKA). 1 year worsening pain swelling. 6mo ago underwent open “cyst excision” on lateral side of the L knee for spontaneous drainage by original surgeon.

- PMH: DM (A1C 7.8); Anxiety/Depressin; HTN; HLD

- 6’4” 235lbs BMI 29

Video visit so exam limited*

No open wounds noted – healed midline and lateral 5cm incision

Mild swelling

ROM 0-105

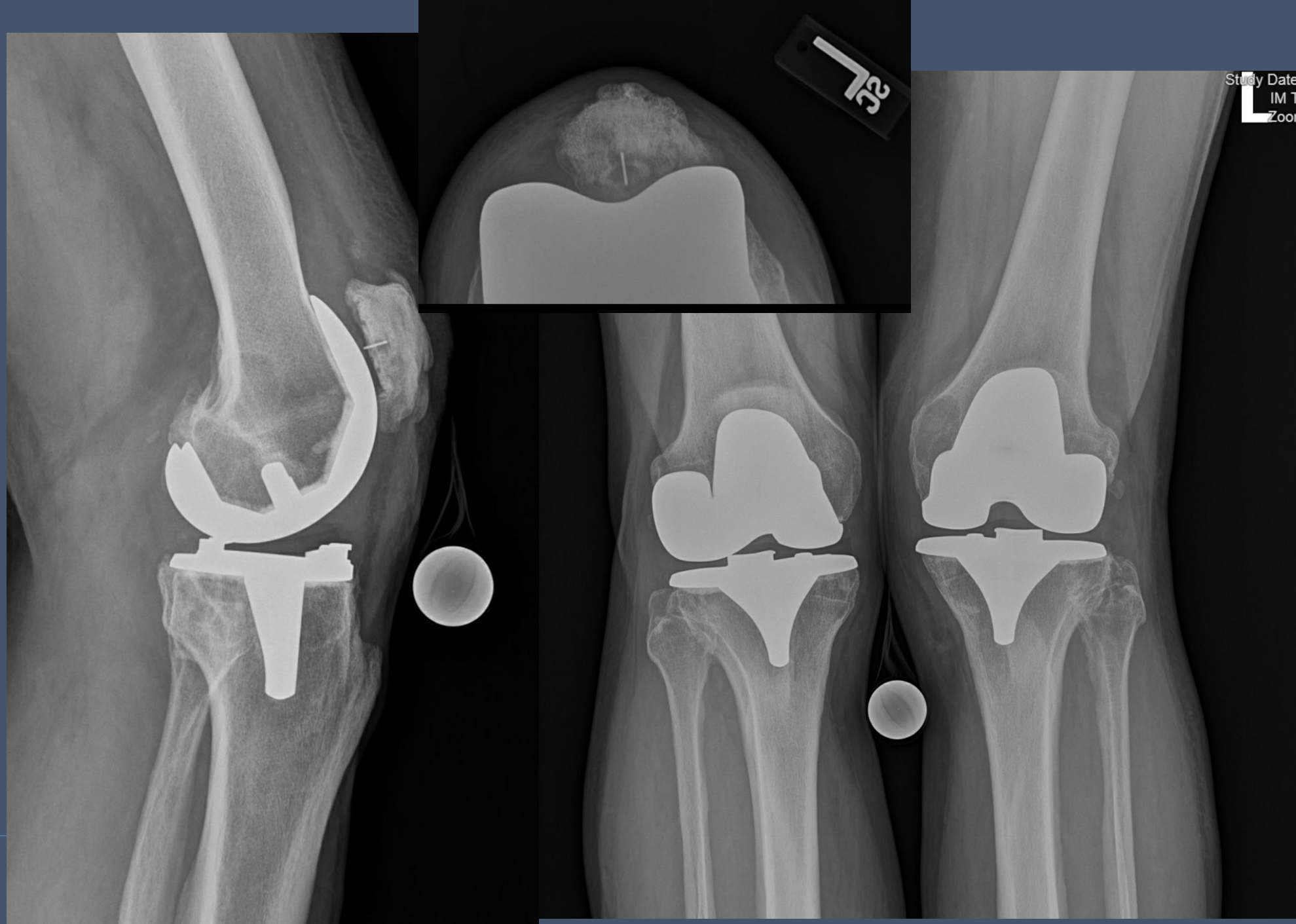
Grossly NVI

- CRP 11.8H mg/L
- ESR 30H (nl <20)

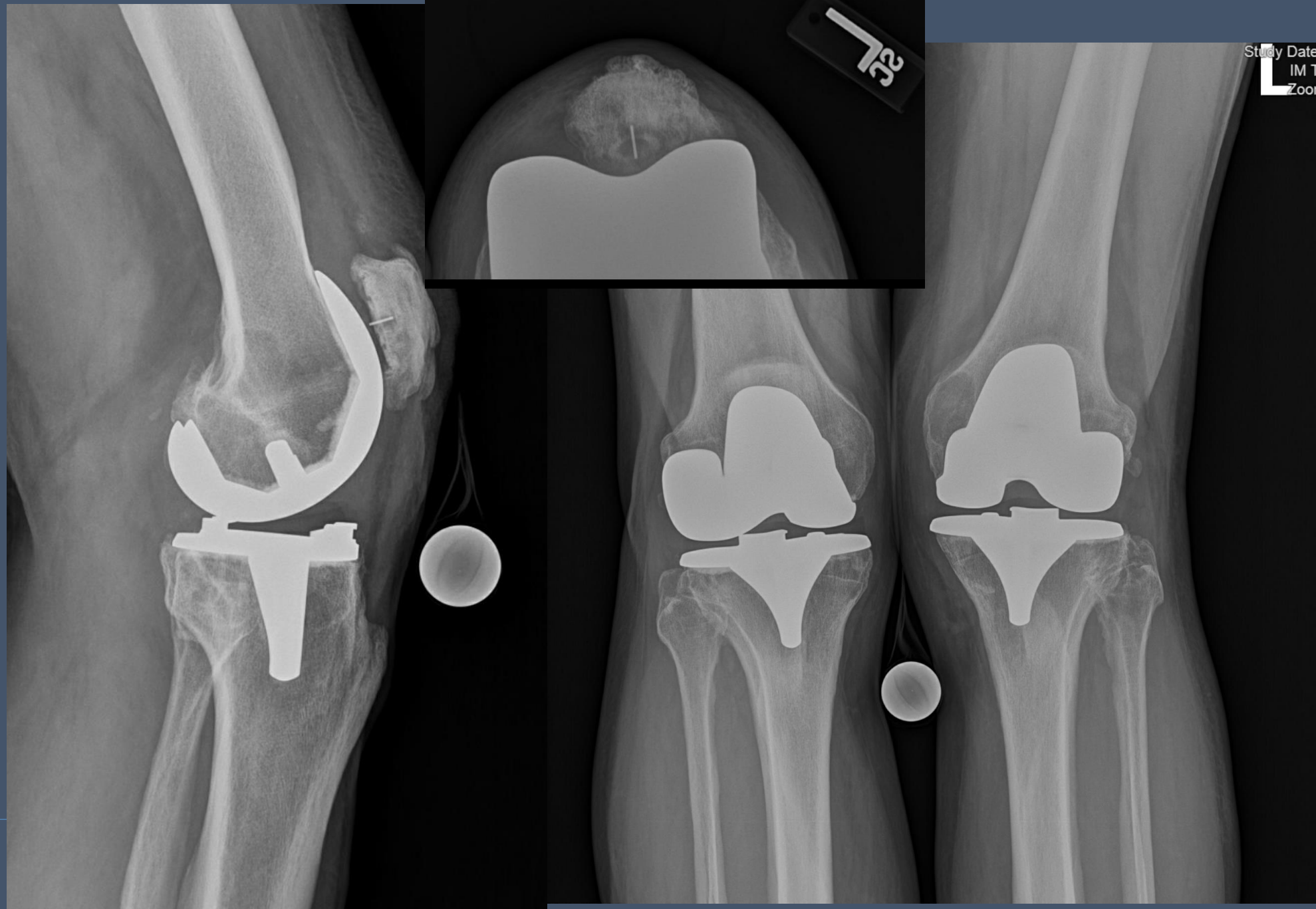
- Initial thoughts?

- Video visit. 5hr drive. How you playing this one?

- Aspiration sending anything besides cell count culture routinely? If so when?



- Comes for inperson visit
- Aspiration MRSE, 25kWBC, 85% PMNs
- What are you offering him in your practice?



- 2stage exchange initiation

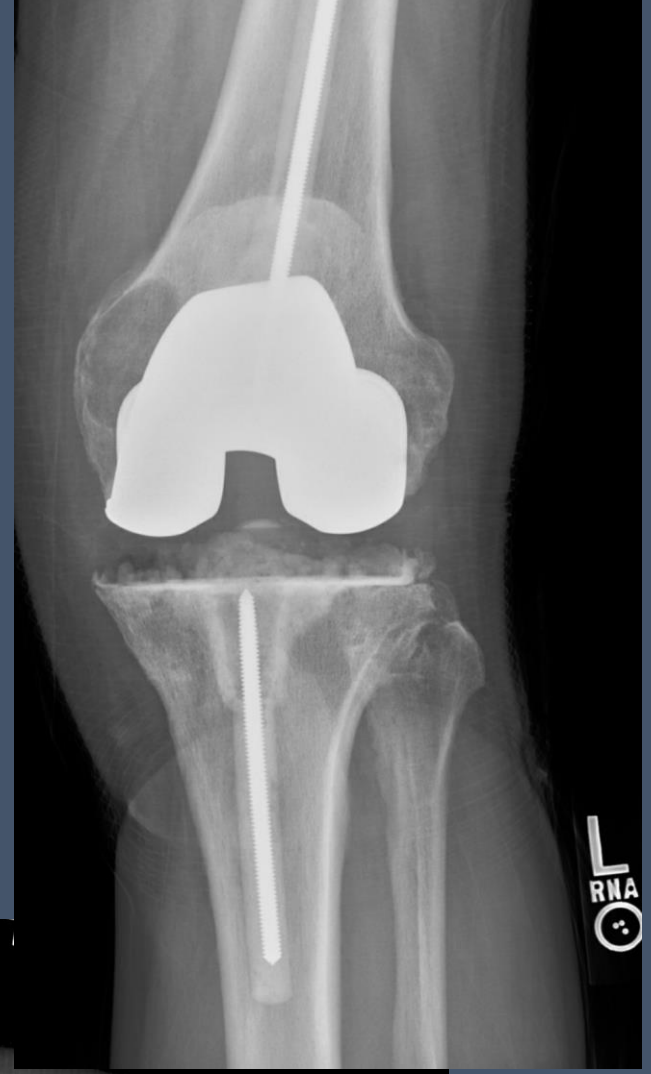
- Articulating antibiotic spacer “squirrel spacer”
- High dose antibiotic cement (3g vanc 1.2g tobra per pack of plain palacos)
  - If known bug ahead shift my normal 2vanc 2.4 tobra one way or the other
- WBAT, brace locked extension while walking x2 weeks then wean.

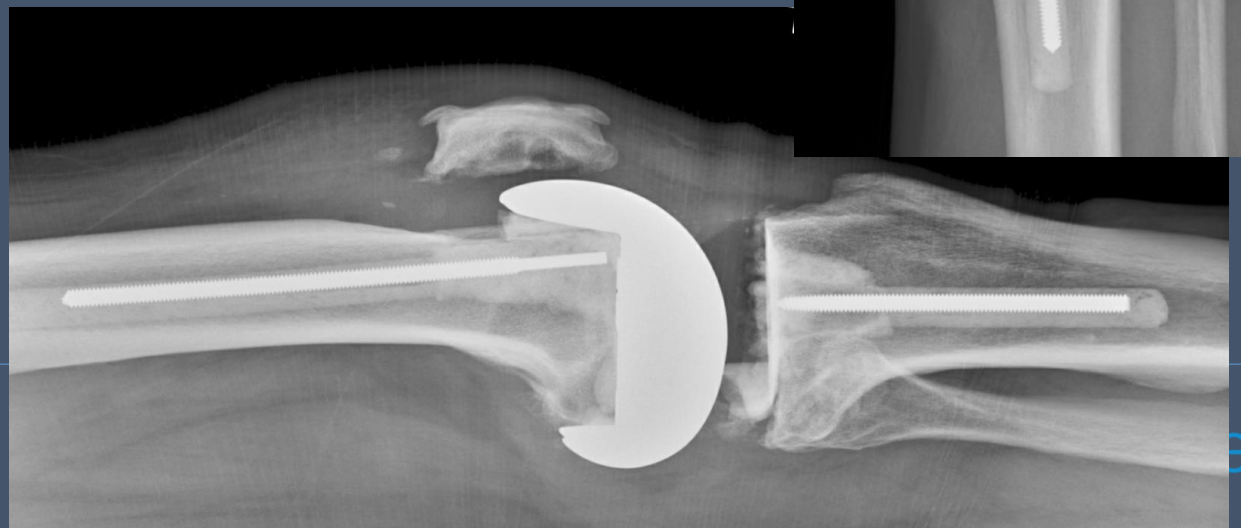
- 6 weeks IV abx
- 2 week abx holiday – repeat ESR/CRP

- Aspiration for all – cell count and culture (synovasure if was culture negative for more data points)

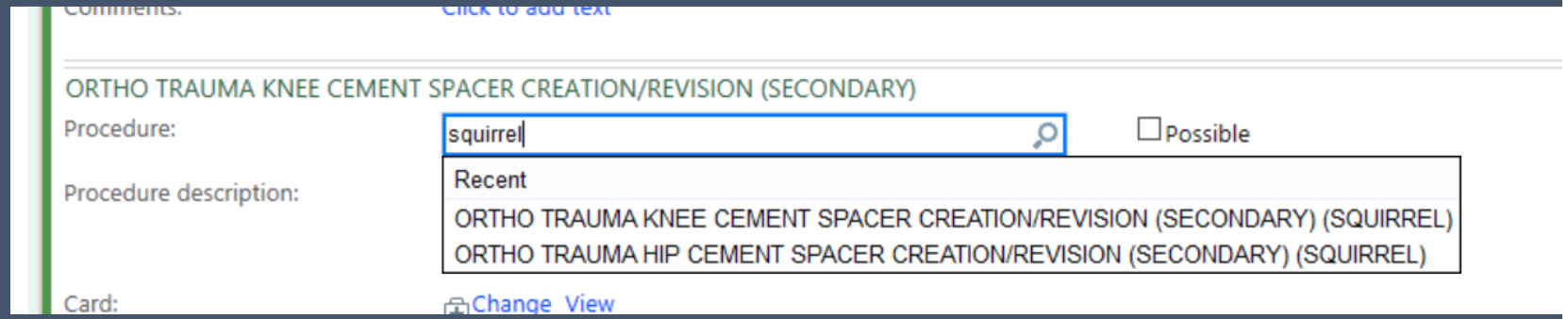
- Replant at 3mo postop at earliest to let fully declare

- Must optimize for replant. Explant not as picky





Sidebar on how to do a spacer



Setups for Explant and Articulating Knee Spacer

First Table (Dirty)

- Basic and knee set
- Power
- 5mm round burr
- Moreland set
- Bunion oscillating saw blade
- Oscillating saw for patellar removal
- Recip saw
- 4 culture tissue specimen tubes (knee #1,2,3,4)
- 9L saline
- Betadine wash (packet in 200 saline)
- Peroxide wash (1:1 in sterile WATER)
- Pulse lavage + canal brush
- Flexible osteotome (medium length narrow x1)
- Depuy straight canal reamers
- Sigma EM tibia cut block (available not open)
- Sigma IM distal femur cut guide (available not open)
- IM revision femur cut blocks and box cutters (available if needed not open)
- Sigma spacer blocks, poly trials and PS femur trials (open)

Second Table (Clean)

- Basic and knee adds (second set)
- 2nd power (second set)
- New gowns and gloves for all
- New extremity drape and impervious stockinette
- Chloroprep stick and new coban
- Palacos R: 3 bags with 3 cheap blue mixing bowls with antibiotic mix individualized per patient (default 2g vanc and 2.4 tobra per pack)
  - 1 bag to build dowels; 1 bag to cement femur; 1 bag to cement tibia
- New bovie, suction, pulse lavage with 3L bag
- Threaded Steinmann pin set
- Biggest chest tube
- 10 blade x1
- Implants will be opened to this table
- Large hemovac x1
- Closure suture: #1 PDS pops; #2 Quill; 2-0 vlock (24”); 3-0 nylon
- Prevena wound dressing (prevena plus for big whack)
- Knee immobilizer

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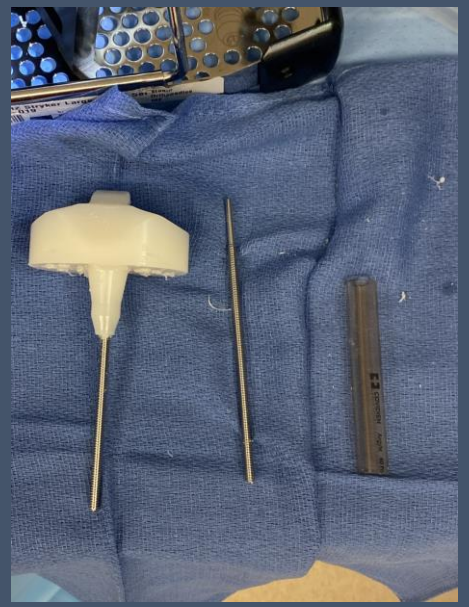
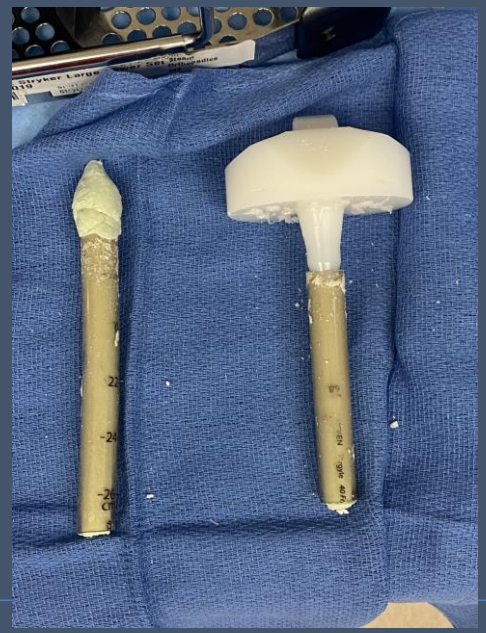
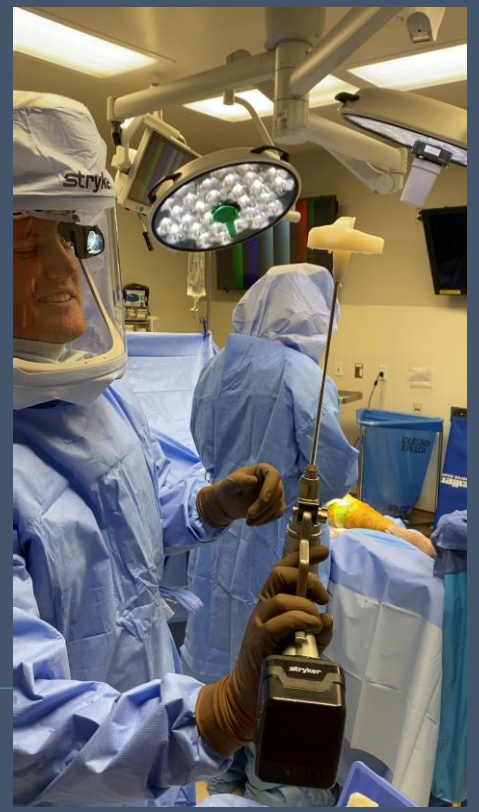
Spacer pearls

- Clean and Dirty totally separate
- Get ALL foreign material out – burr every spec of cement away including under patella

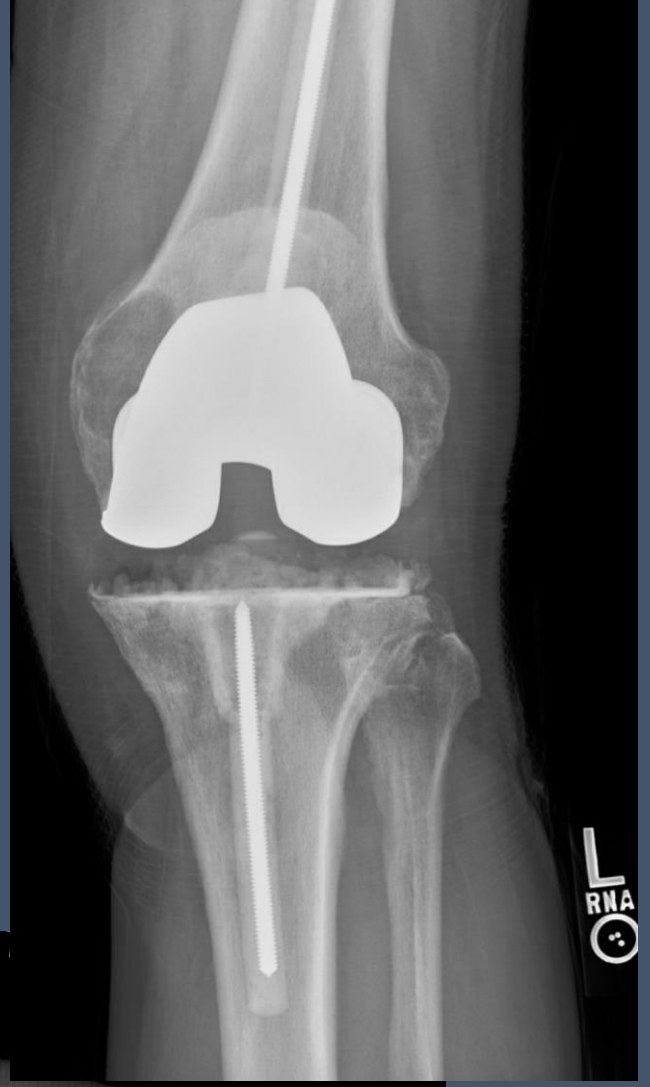
- Stockinette, coban then overdrape.
- Reprep ioban. Wash some more
- Tourniquet down when cementing
- Cement femur first then tibia if using PS
- RP or fully cemented style tibia so have the post to drill pin into

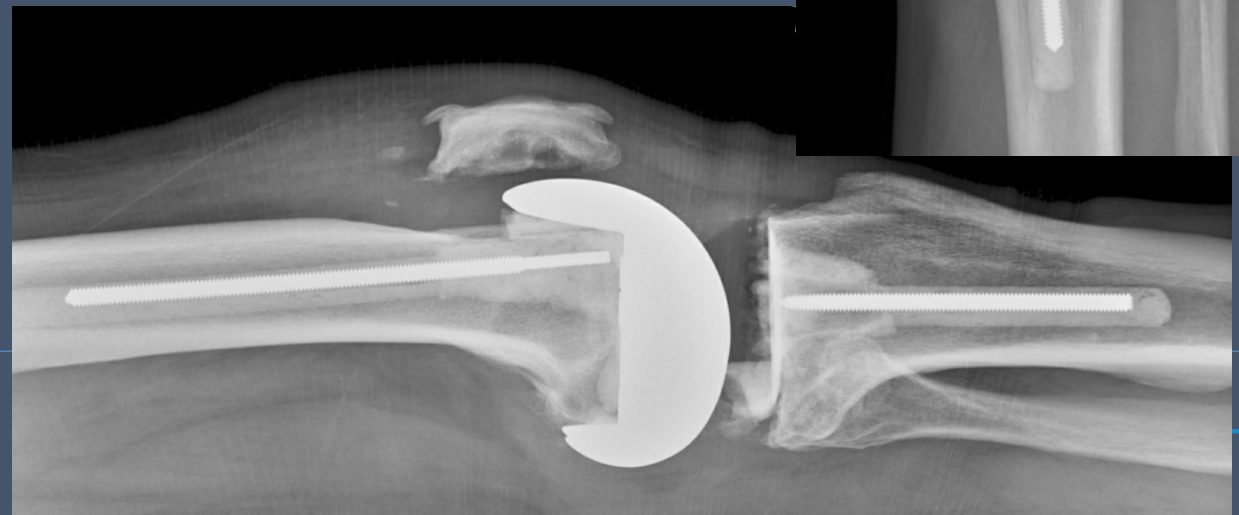




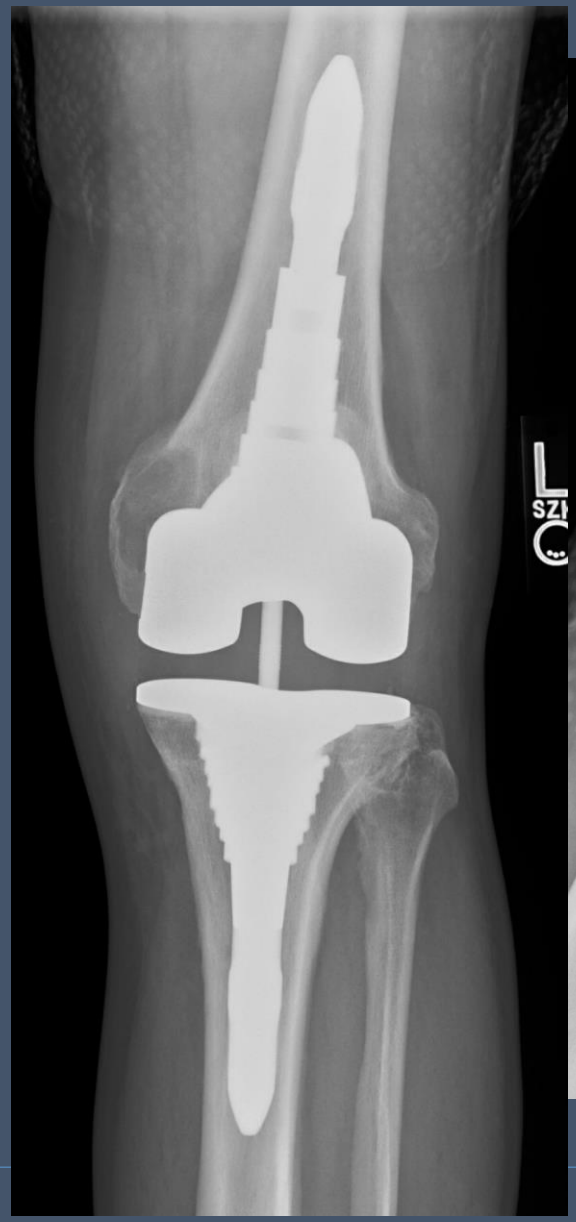


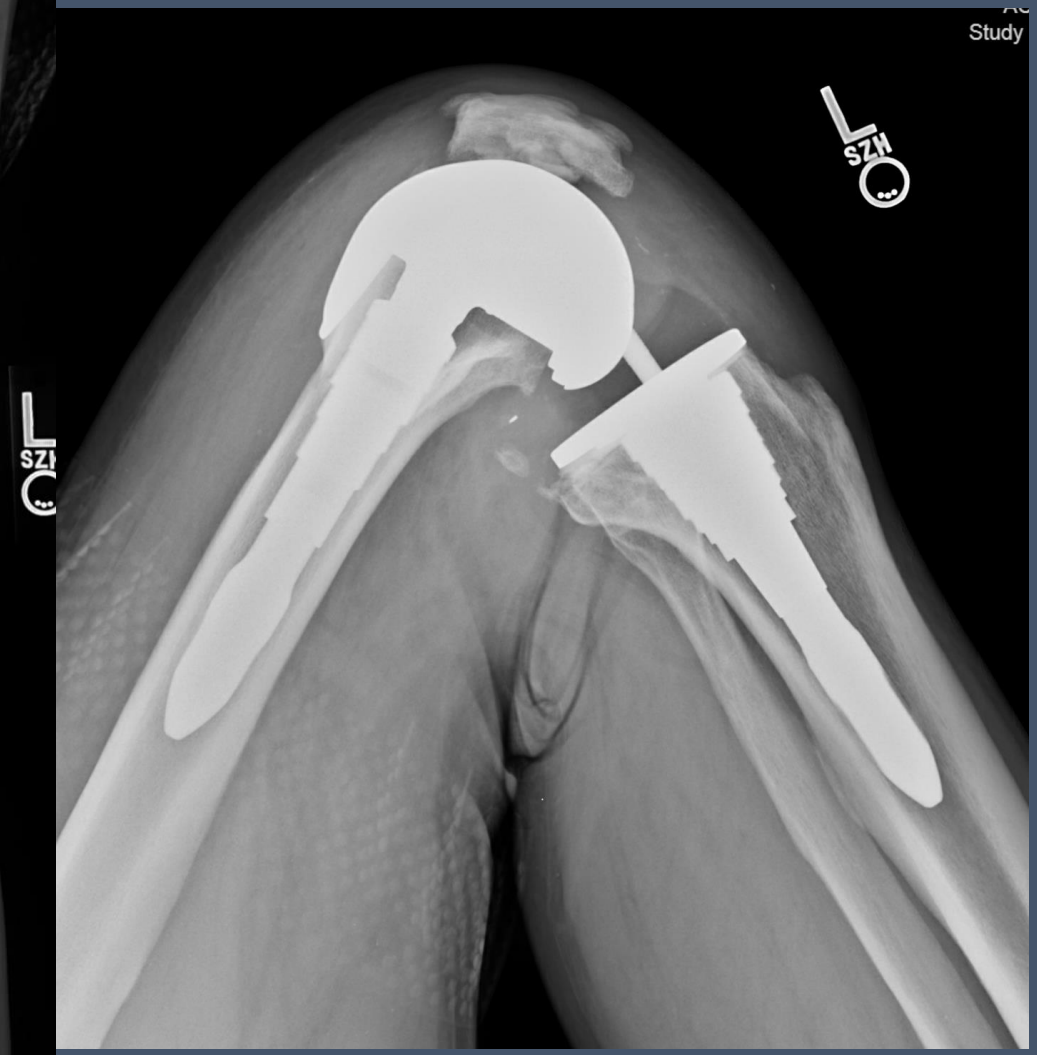
- When to reimplant?
- Anything special with regards to fixation of a second stage?
- Abx after second stage?

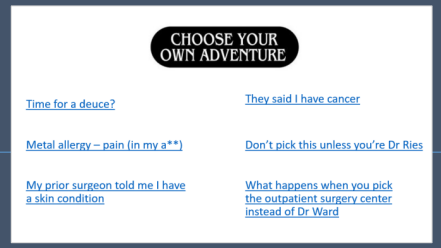




- 2yrs out – no s/s infxn
- 0-137 (upset he never got to 140)
- Back at gym. Umpiring baseballs games.







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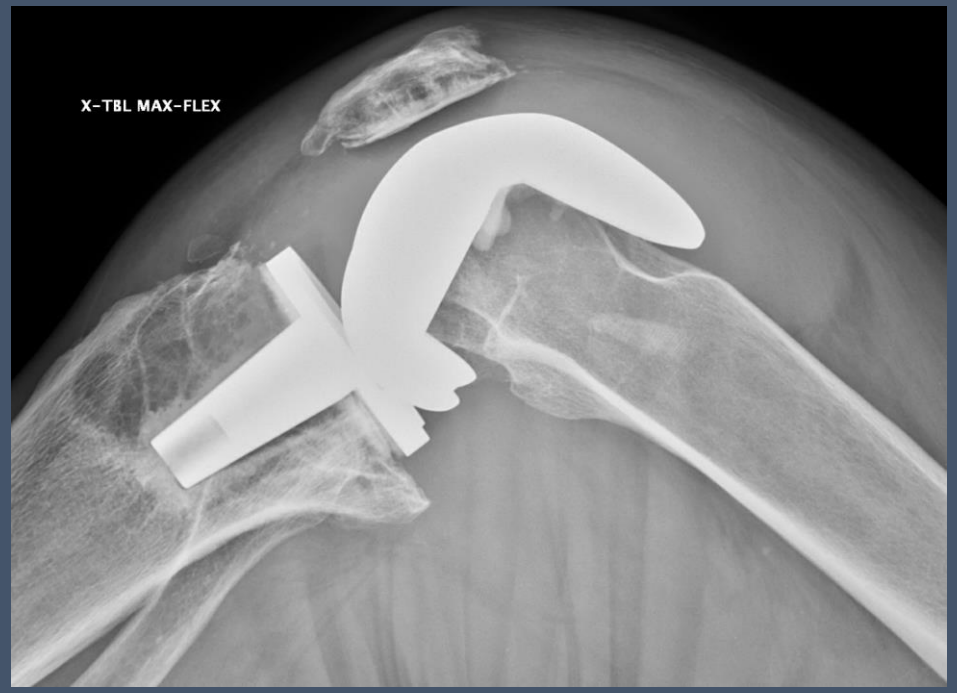
MS

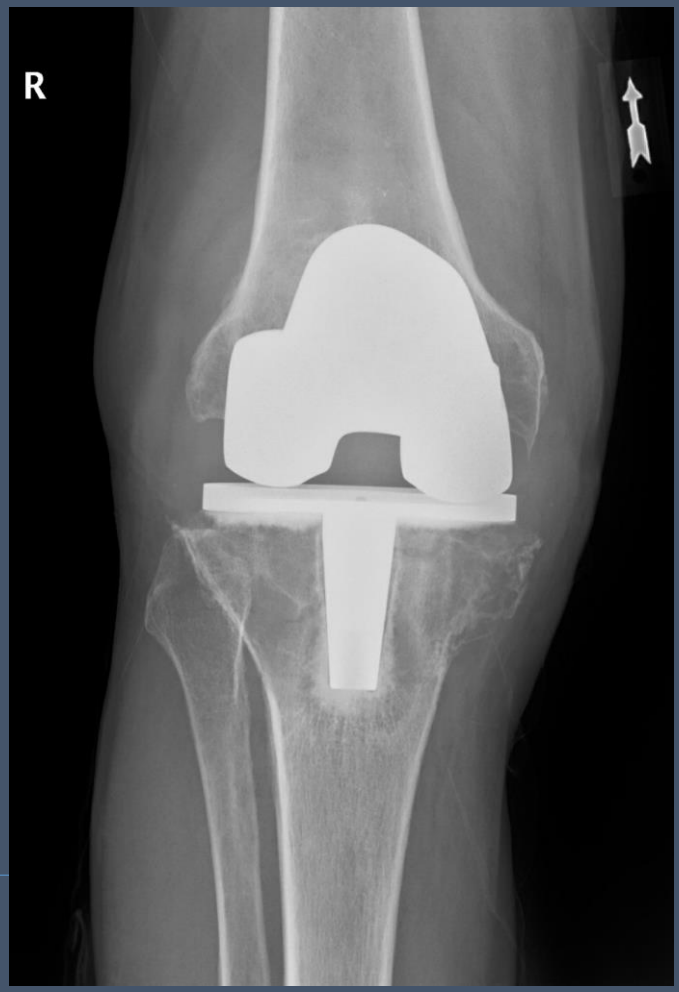
- 79yoM presents to Dr Ward clinic.
- R TKA 10 years ago. Did well for 6 then worsening past 6 really bad last 1.5yrs. Using walking sticks
- PMH: Pacemaker; HTN
- PSH: R TKA 2010
- 5’10” 175lbs BMI 25
- Antalgic gait
- Healed midline incision
- 10-80
- Moderate JLT
- >10mm AP and varus/valgus laxity
- Mild effusion

- Normal ESR/CRP
- Aspiration done by referring surgeon – low cell count, PMN%, NG final

- Thoughts and plan?

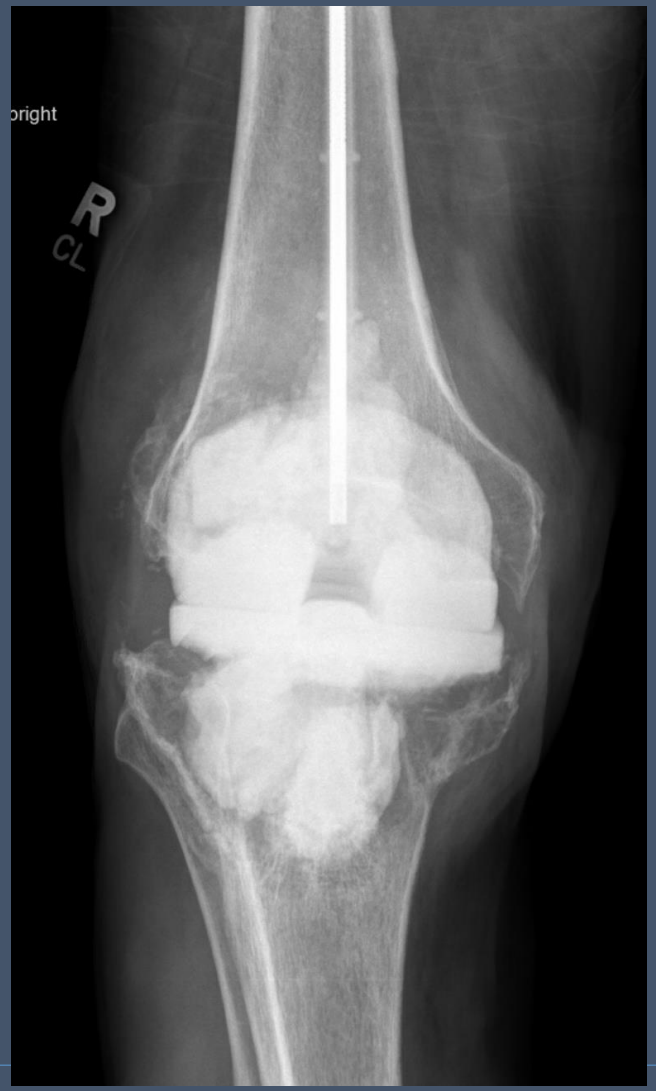
- Dr Ward (as seen on TV) recommends revision R TKA

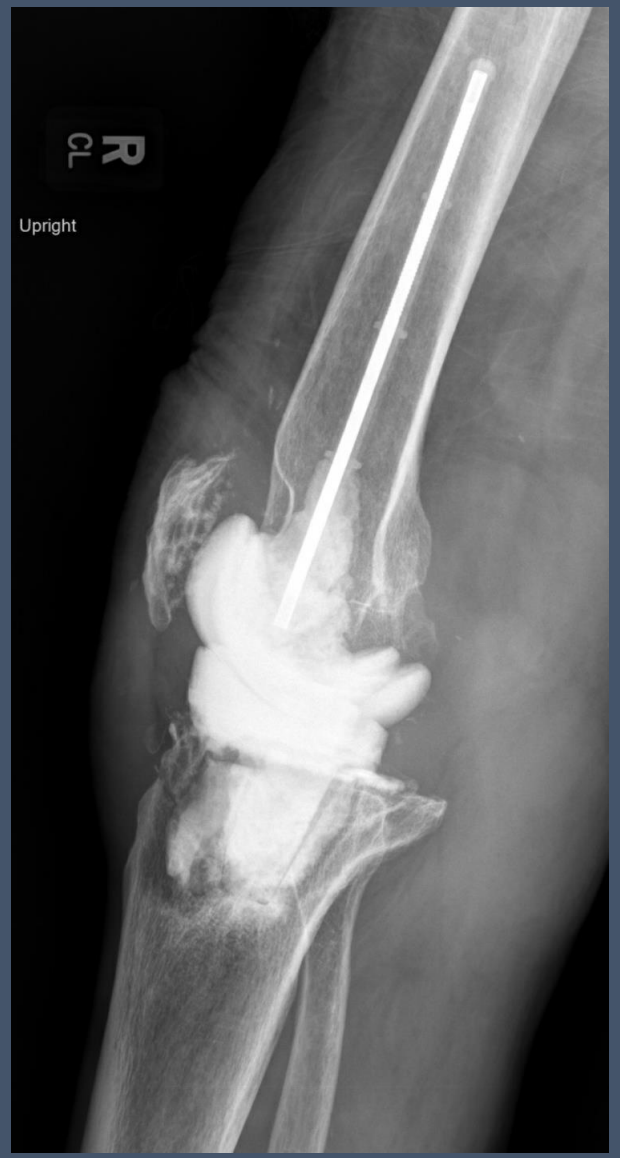




- Lost to follow up
- Ward waitlist was too long so went for revision at outpatient surgery center 4mo ago. Surgeon op note says massive bone loss could only be from infection –put in spacer. 6wks empiric abx. Never found infection but told to go to Stanford ortho onc team for further care. Stanford ortho onc said go find a joint surgeon.
- Dr Ward and Stanford waitlists too long. Presents to me (never been on TV)

- Wheelchair x4mo; ROM painful 10-40
- No medial endpoint – very unstable – hard to tell spacer moving or no collaterals





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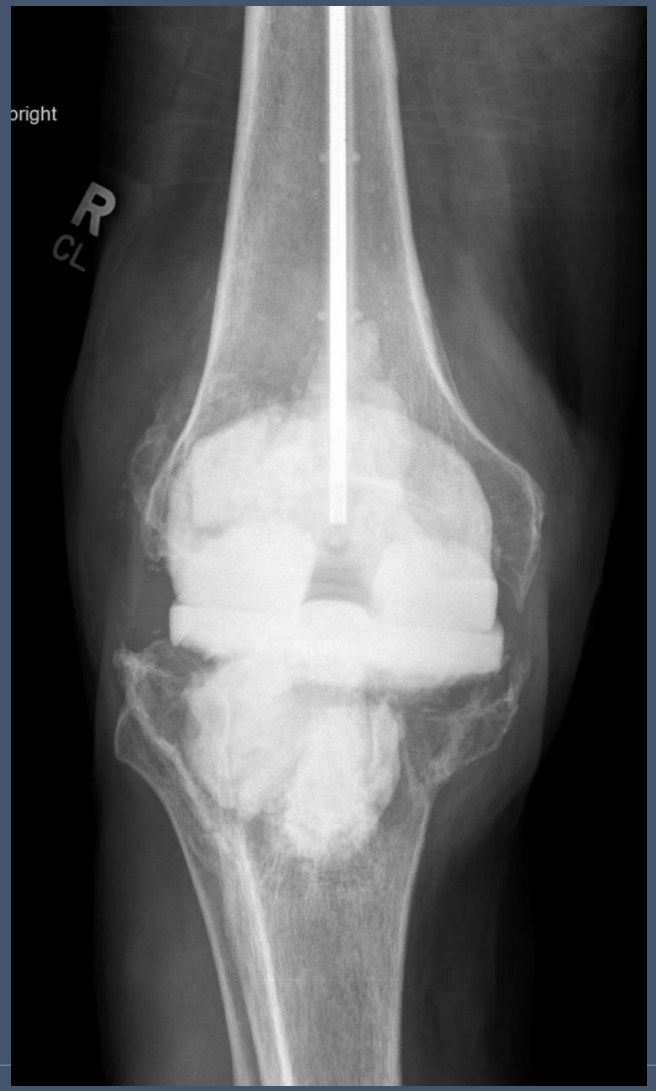
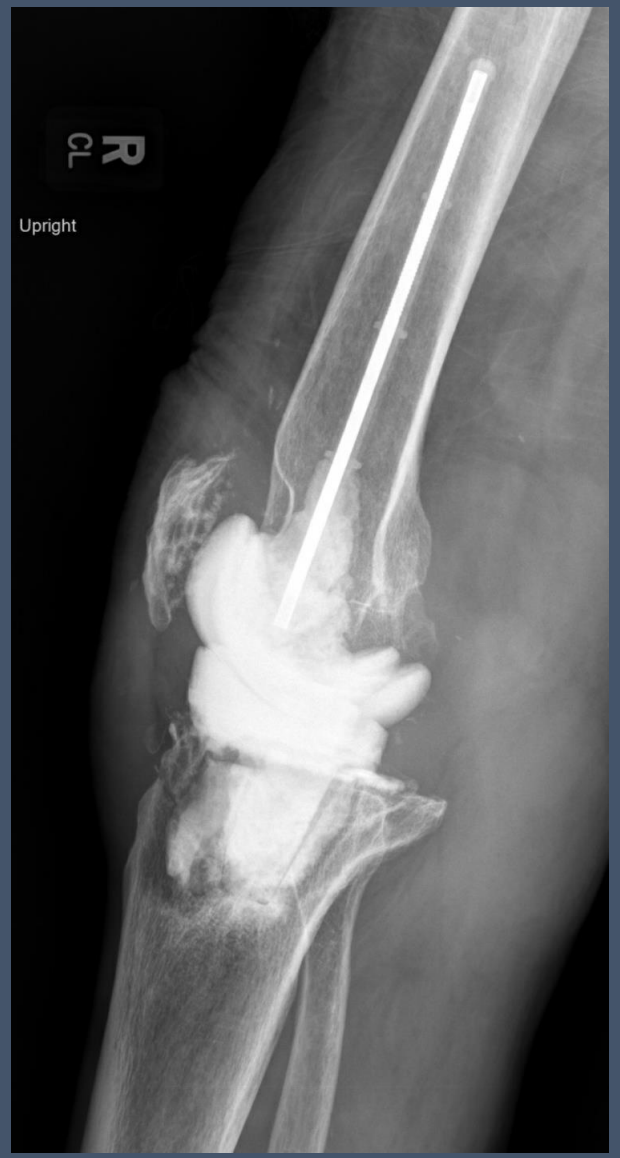
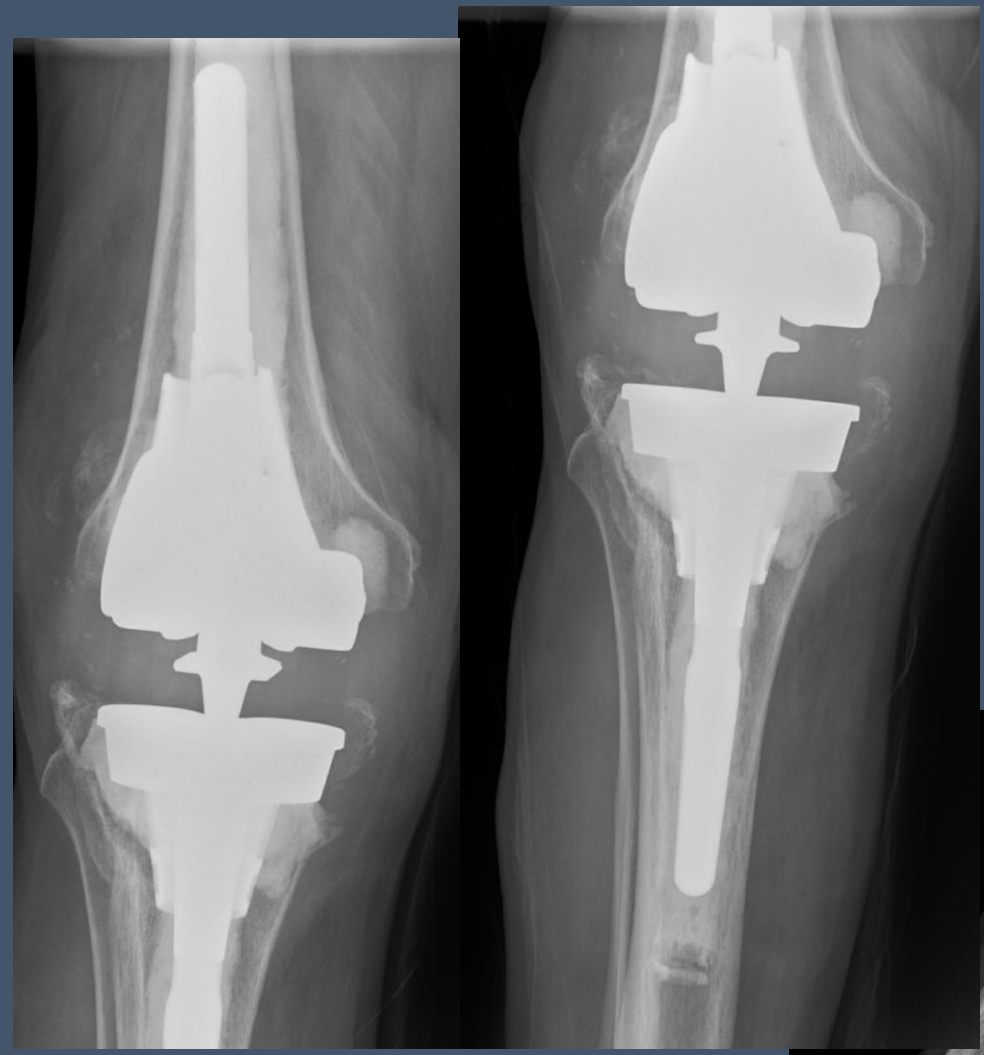
- What are you counseling patient is a realistic expectations?
- Do we need a tumor prosthesis here?
- What fixation method?
- Tricks for thin patella?

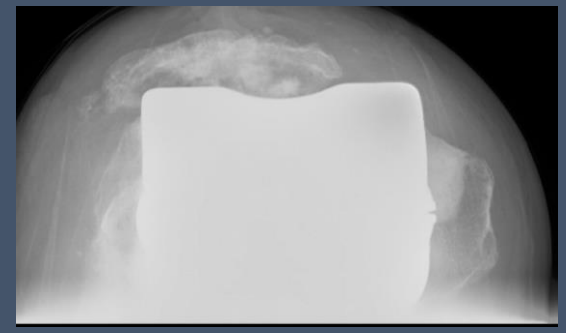


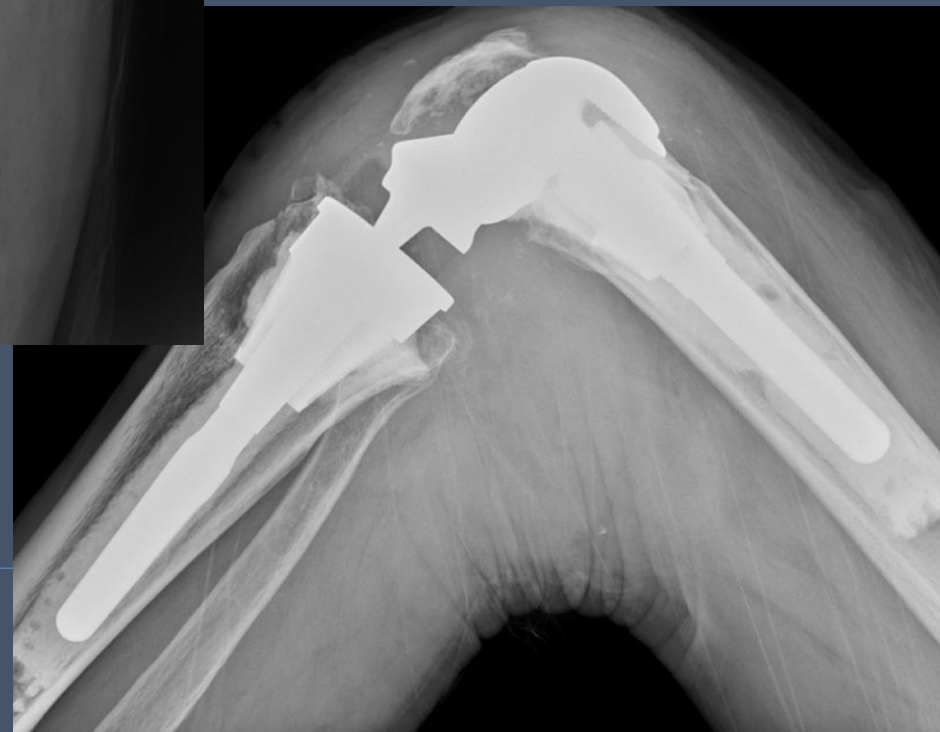


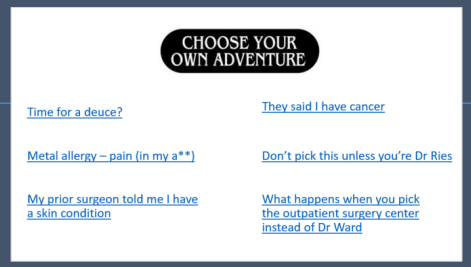
- Distal MCL gone – no medial restraint
- Massive tibial and femoral bone loss
- Patella too thin to resurface
- Largest size cones – tray sitting on a potted cone maybe 2cm in

- 4mo out. Walking several blocks.
- Motion 0-100 with 5deg lag









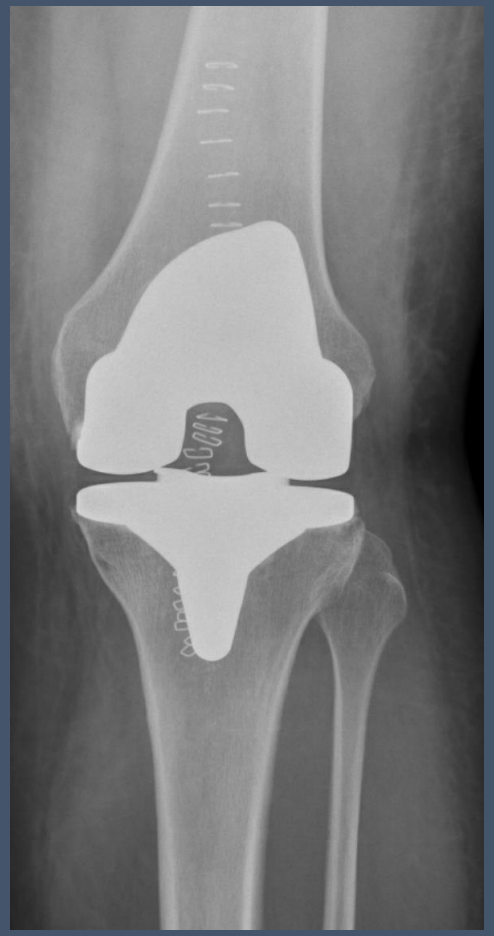
YD

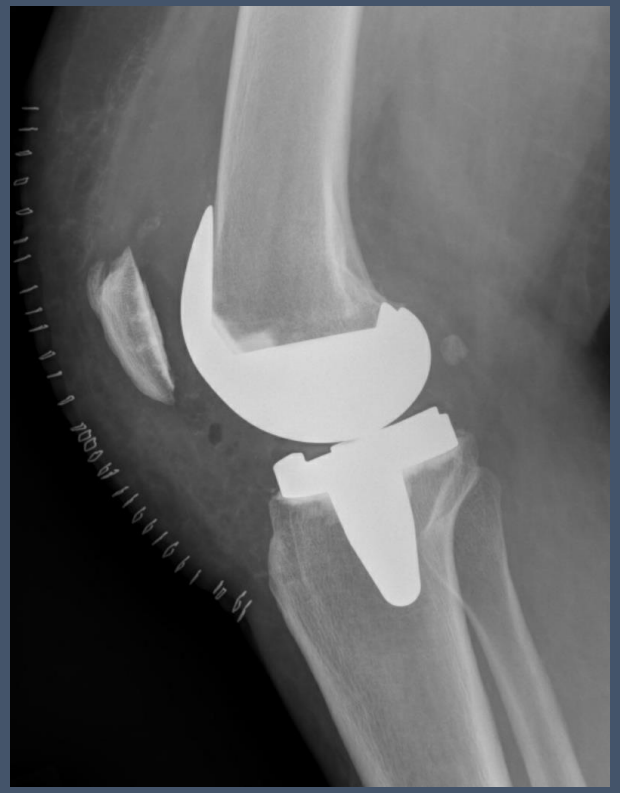
- 58F painful L TKA presents to outside surgeon 1yr postop with persistent diffuse pain, swelling, stiffness

- PMH: Crohns disease, h/o IVDU remote (on methadone 130mg daily), bipolar, anxiety, PTSD, +tob

Exam:

- 5’8” 180lbs
- Tearful, 0-95 ROM; stable; incision healed; mild effusion; TTP entire knee and calf nonspecifically



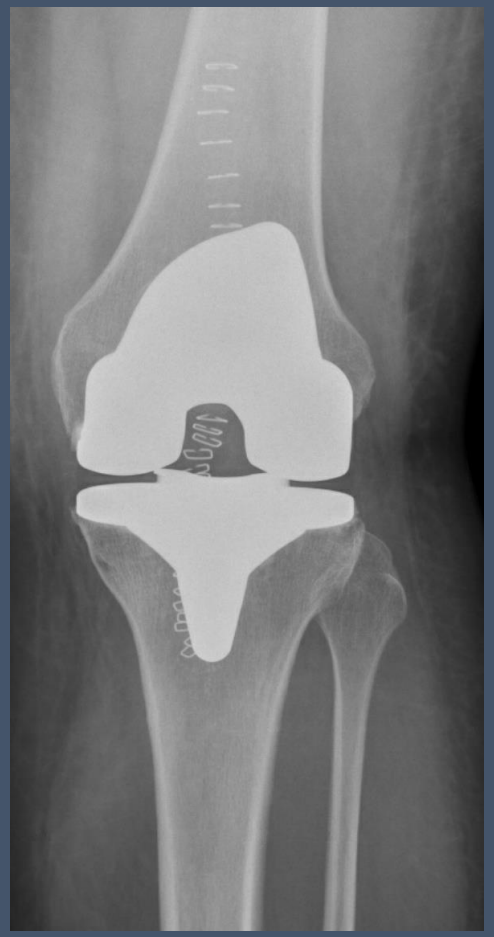


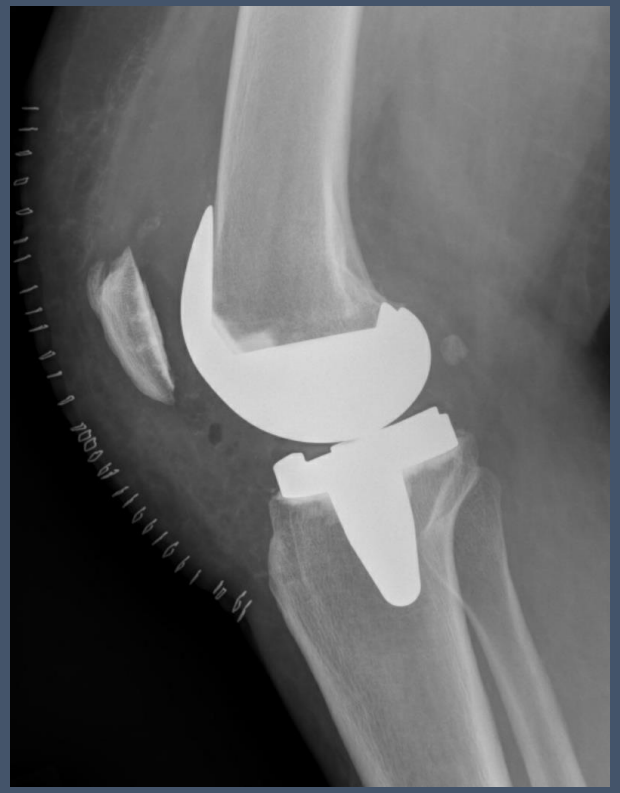
- Xray above 2wks postop but assume no changes at outside surgeon visit 1yr postop

Painful TKA

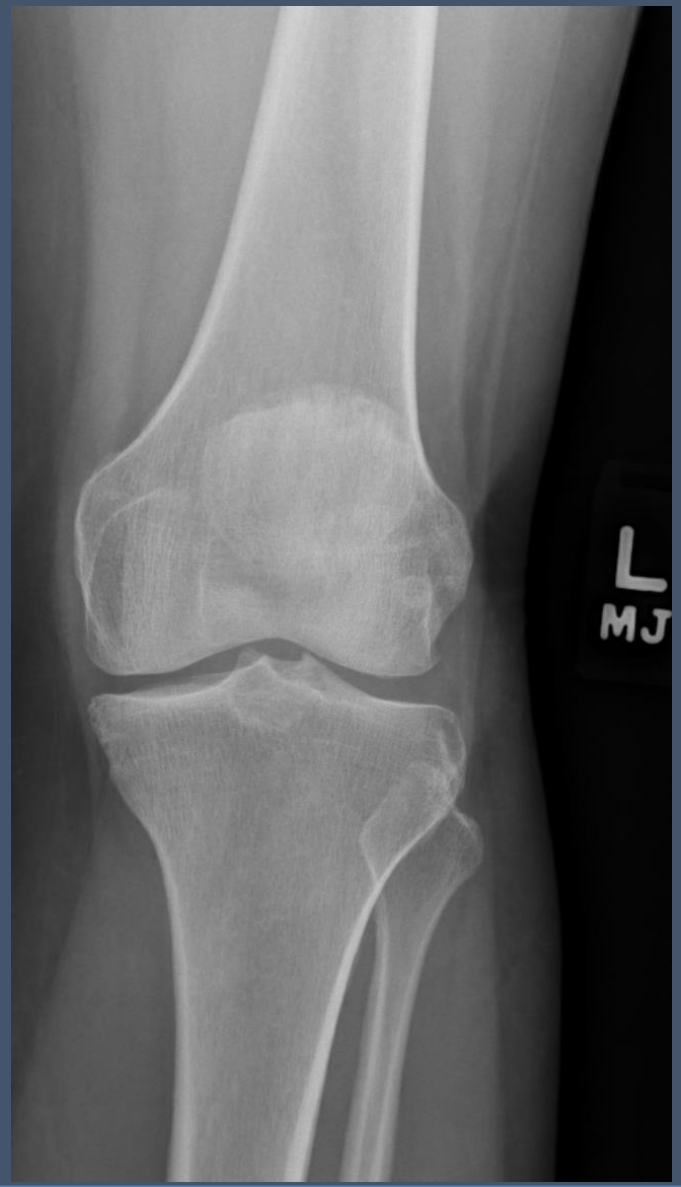
- 1yr out. Painful TKA
- Workup?

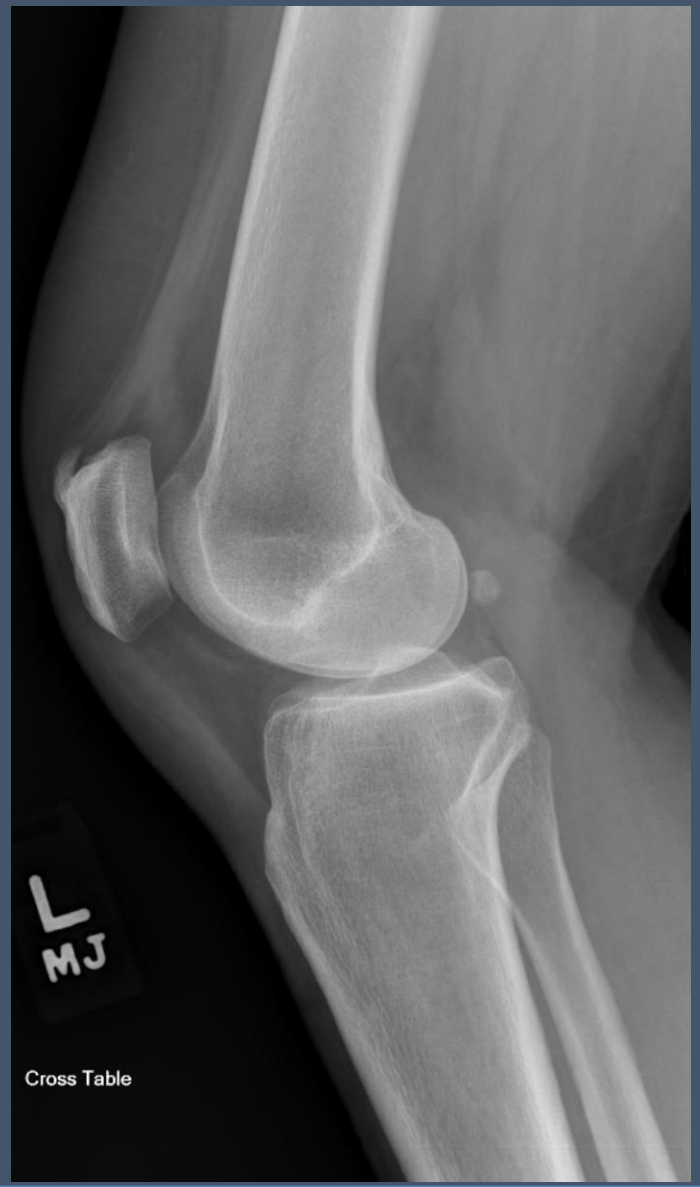
- ESR/CRP normal
- Serial xrays postop stable
- Anyone ordering bone scan? Aspiration? Additional labs? Just revise right now?



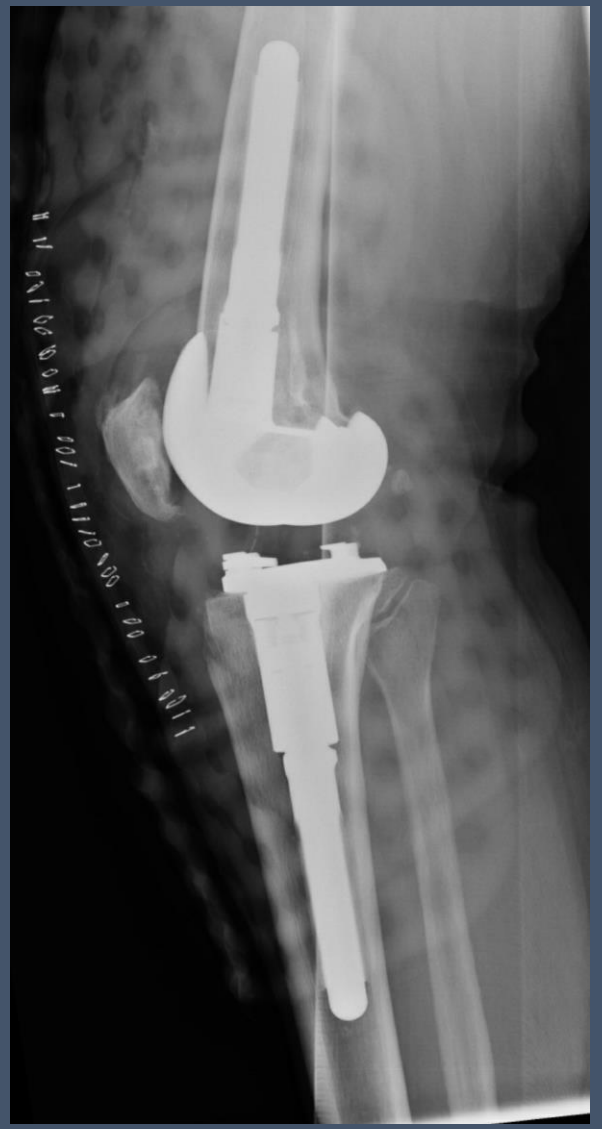


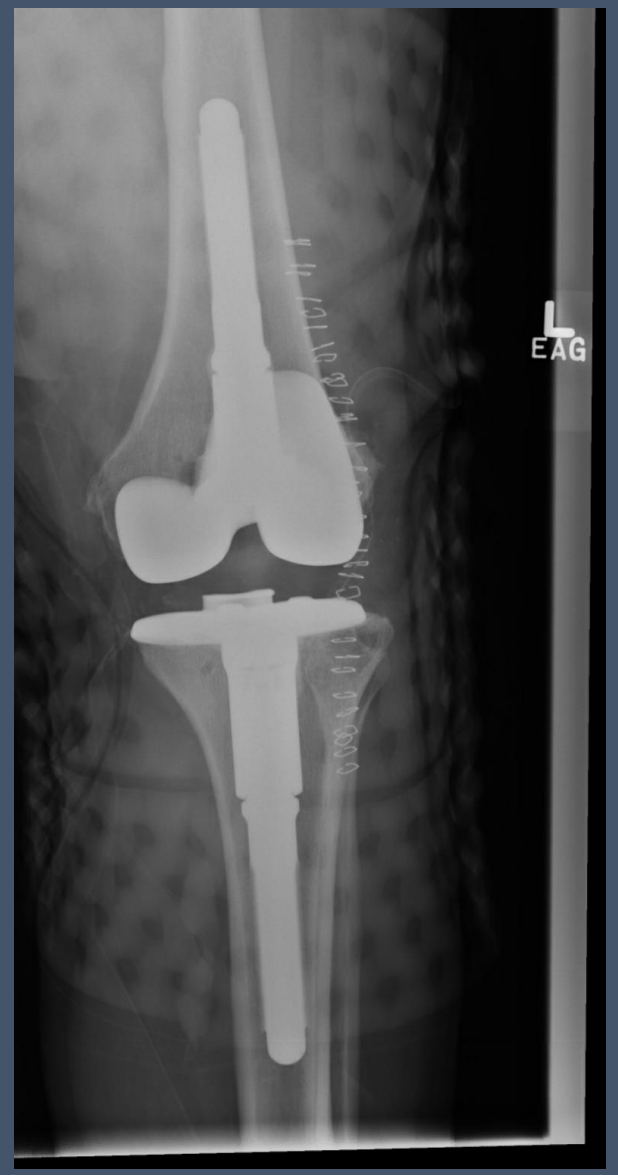
PreTKA films





- Outside surgeon tells patient likely nickel allergy. Recommends revision to “lower” nickel content knee.
- Do you believe in metal allergy?
  - If so how do you test and what circumstances?
- Revised and notes tibia loose
  - Thoughts on reconstruction
- Biomet knee – make a titanium niobium nitride coated implant but unclear if was used here – records don’t indicate that one being used



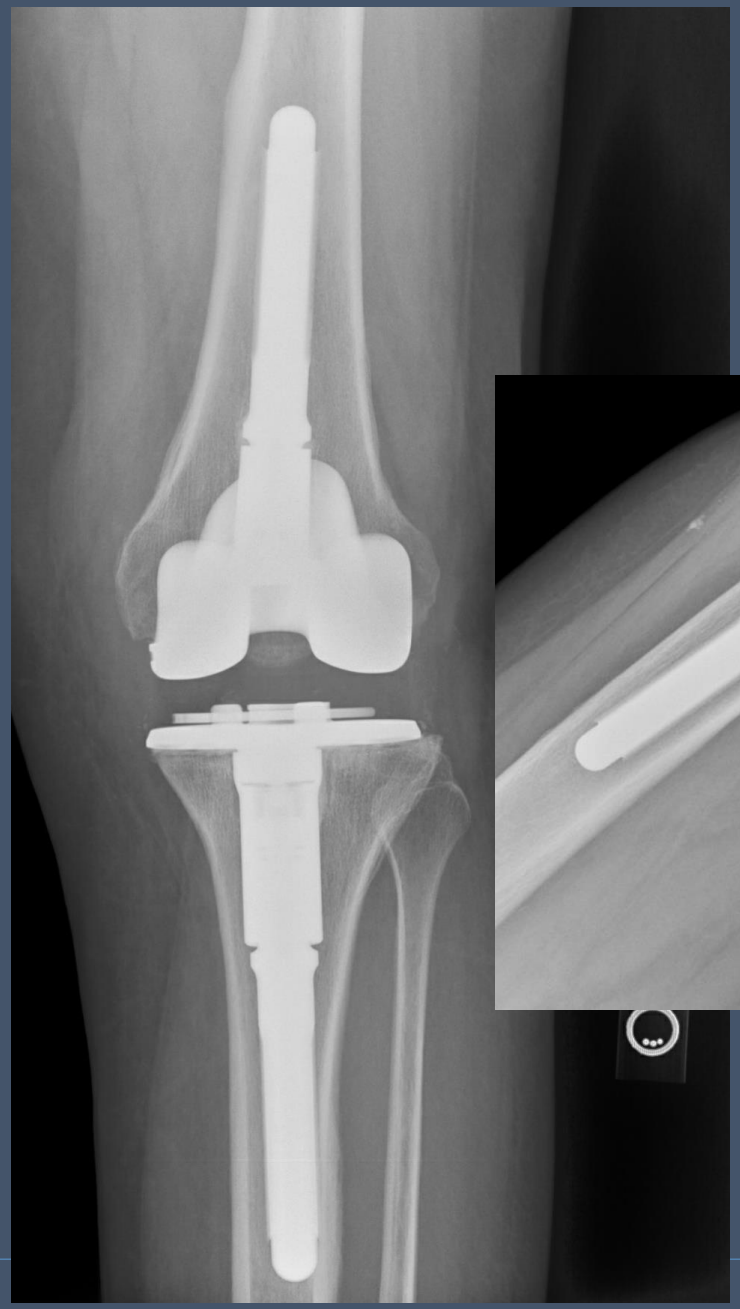


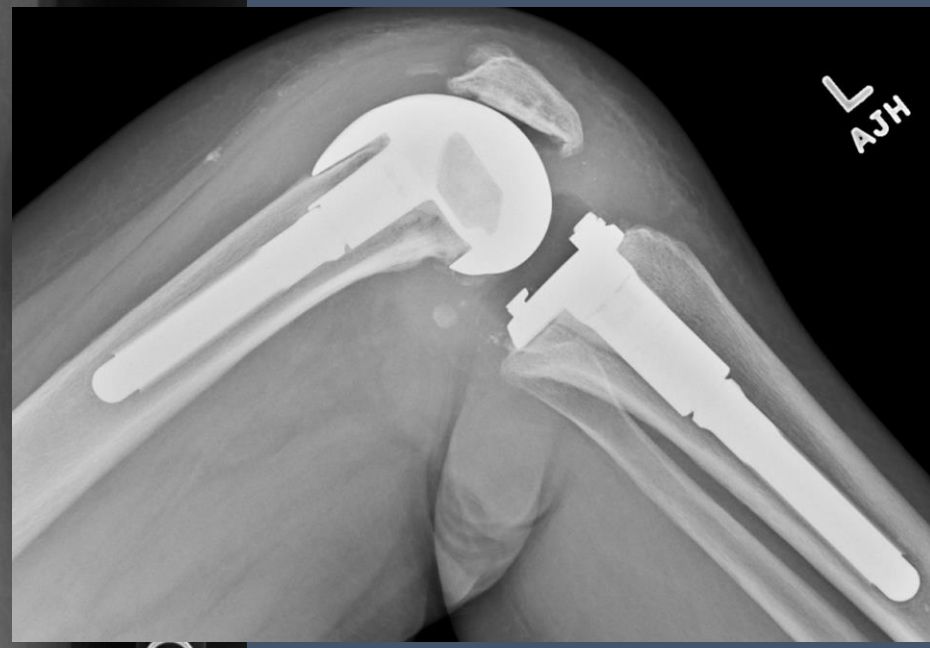
- Presents to me 1yr post “nickel” revision with persistent intractable pain. Recurrent significant effusions

- ESR normal; CRP 10H (nl <8mg/L)
- Aspiration + synovasure
  - No growth synovasure lab
  - 44WBC 20% PMNs, neg alpha defensin, neg microbial panel
  - C. acnes from UCSF lab

- Anyone treating as infection?

- Repeat aspiration similar cell count. No growth final

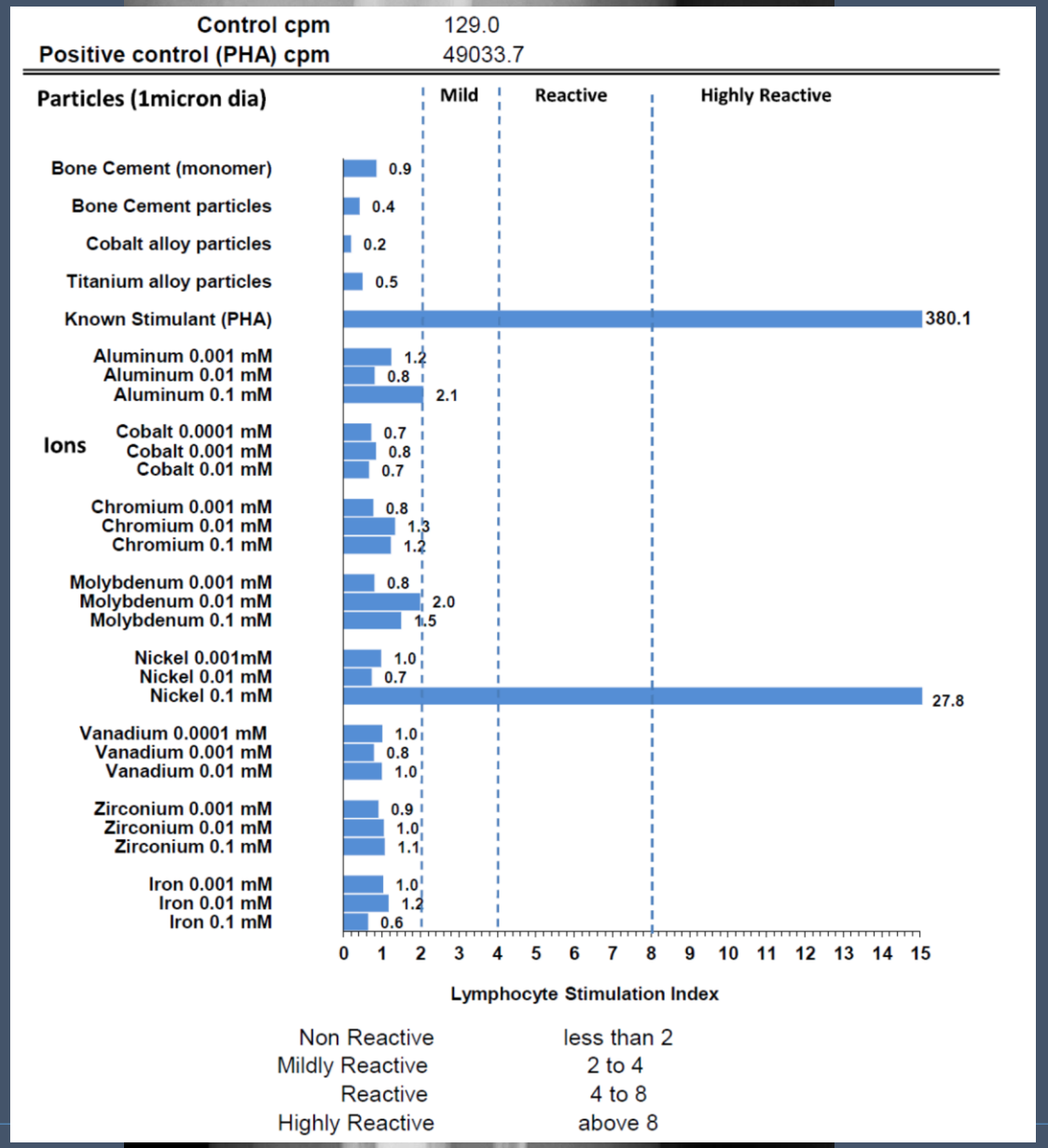




- Slow play over several visits
- Patient adamant has nickel allergy and that implant put in was not nickel free
- Getting recurrent large effusions
- Unable to ambulate – using crutches

- I send LTT and bone scan
  - Bone scan hot around whole implant

- Now what….?



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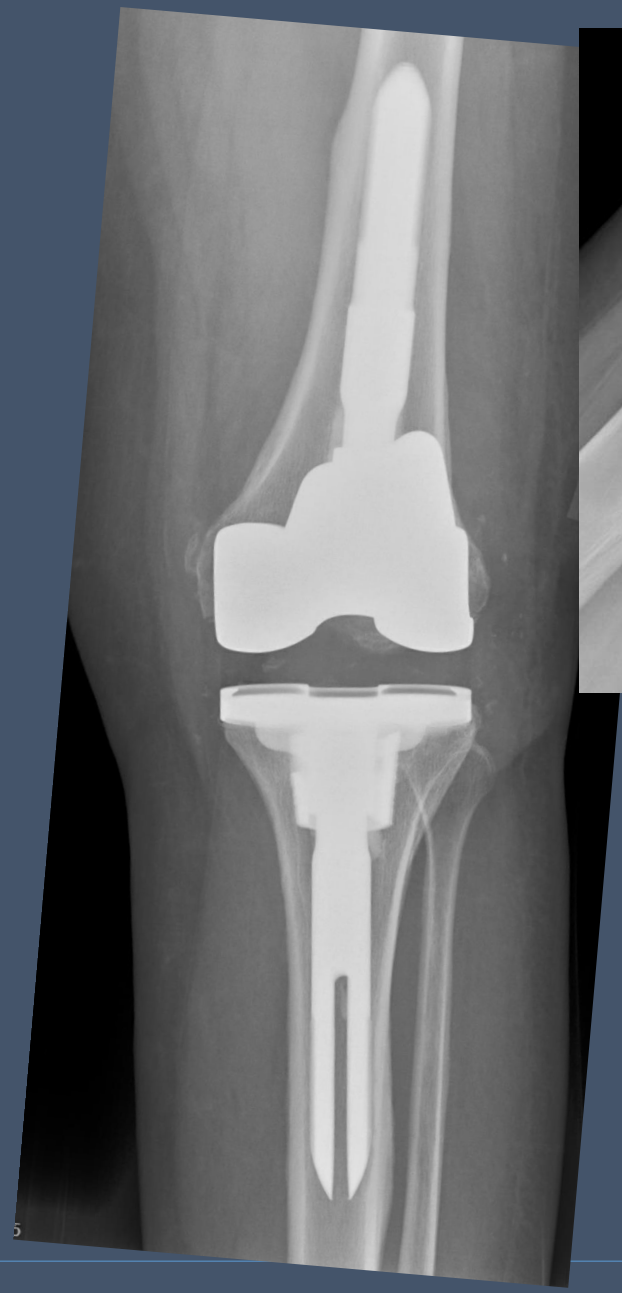
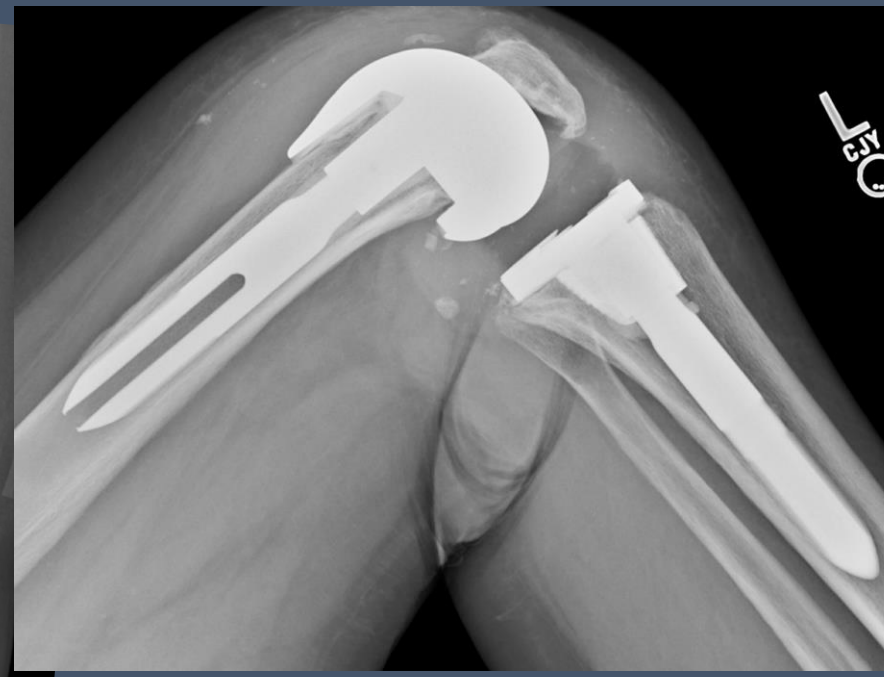
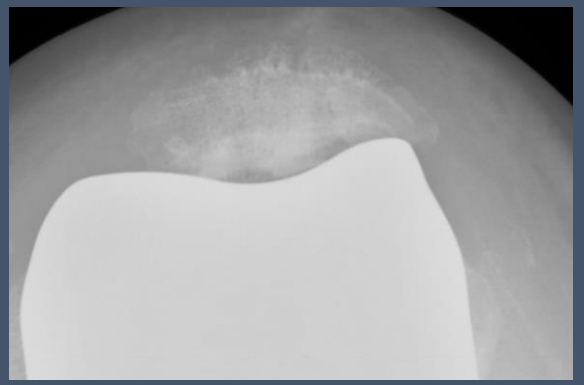
- Prior implants grossly loose – removed by hand
- Good bone quality
- Titanium cone, stems, tray, oxidized zirconium femur

- Cultures 1/5 rare staph epi
- Now what?

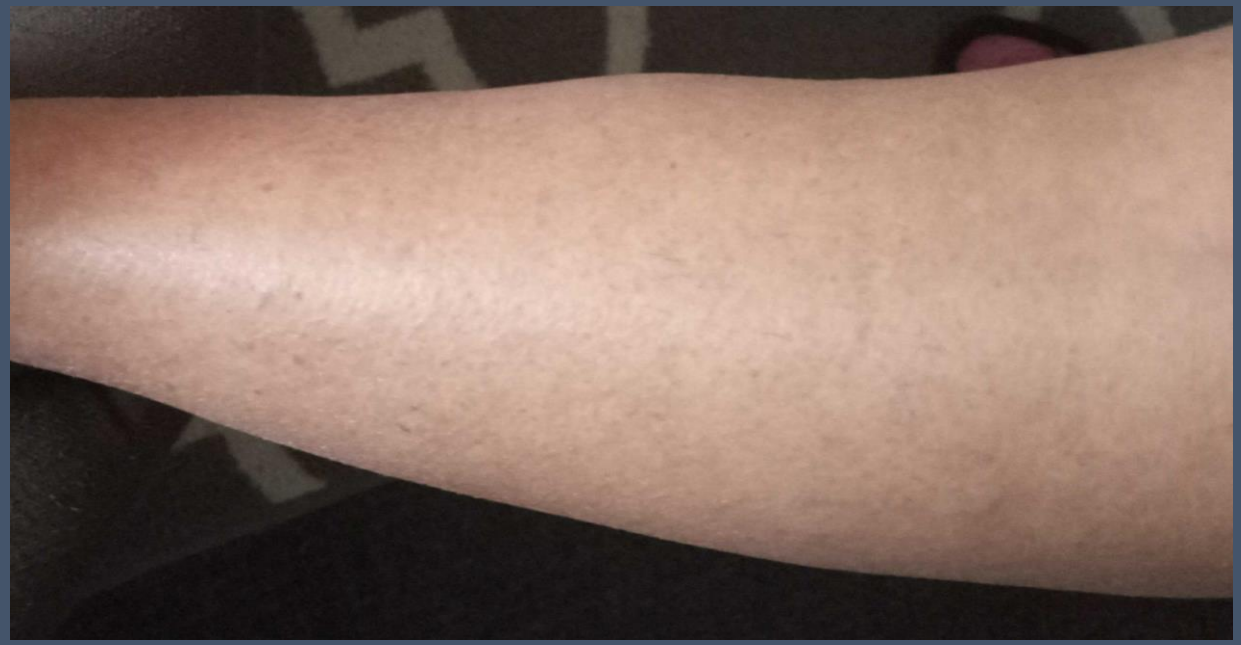




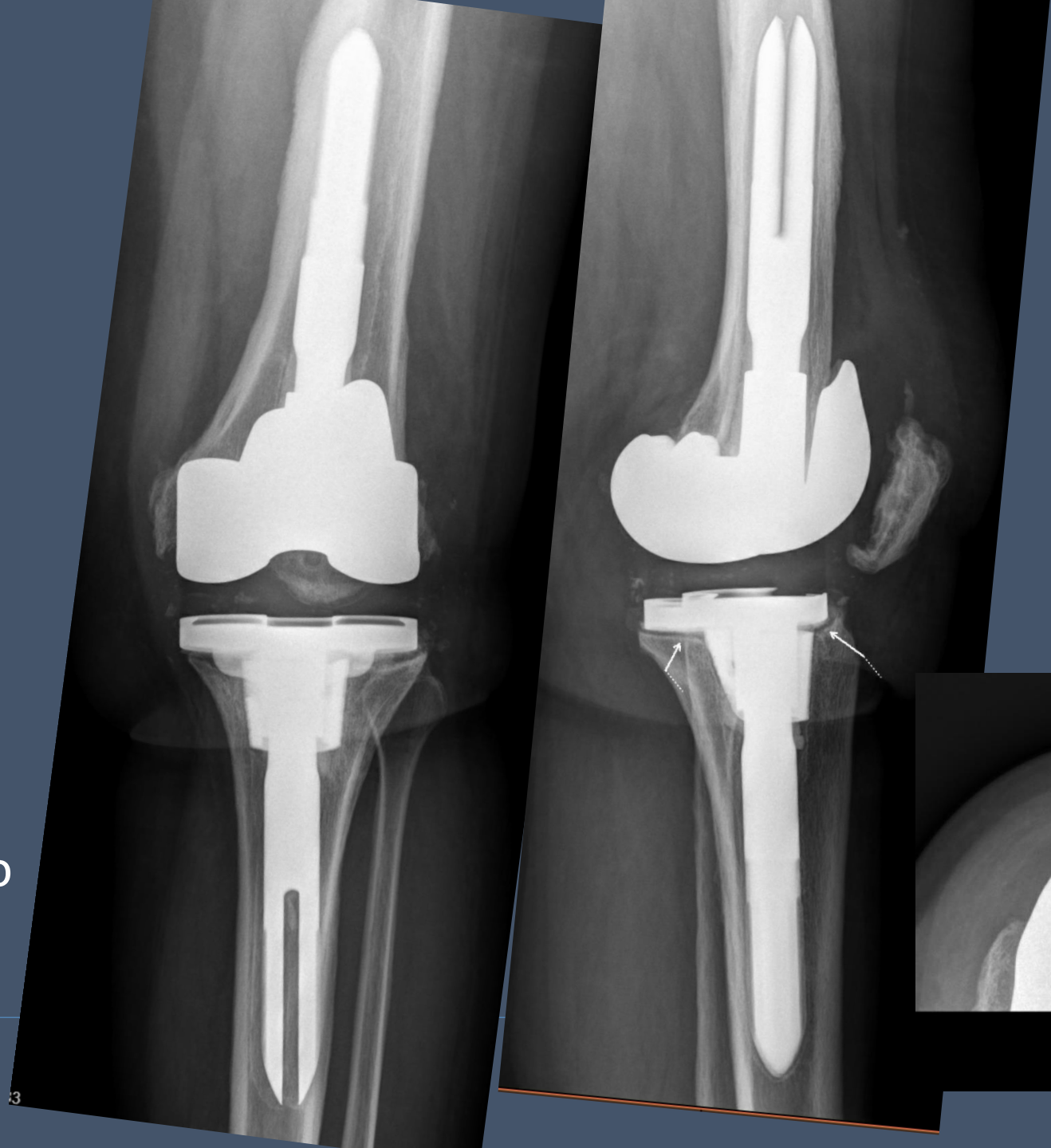


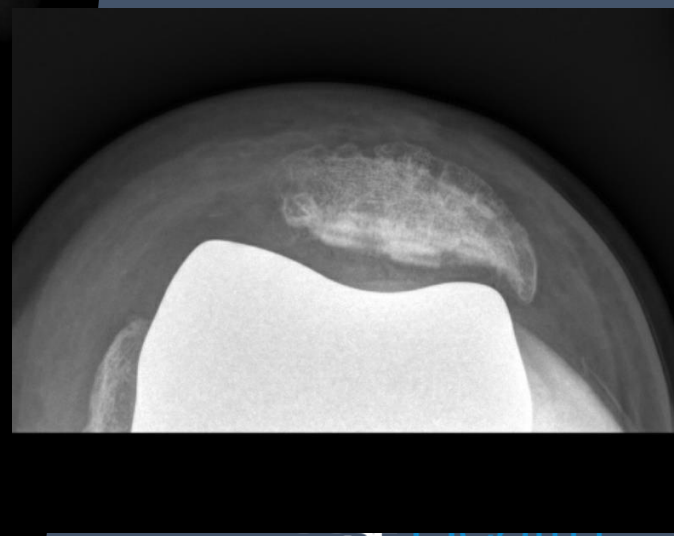
Xrays from 3mo postop

- Treated as if was infected undergoing 1stage with ID agreement given history and to be conservative – 6 weeks IV abx
- Initially does well objectively. Heals wound, motion back, slow improvement mobility. Subjectively still persistent pain unchanging.
- A lot of classic super close up, super helpful pictures of “redness”, “swelling”, “pain”



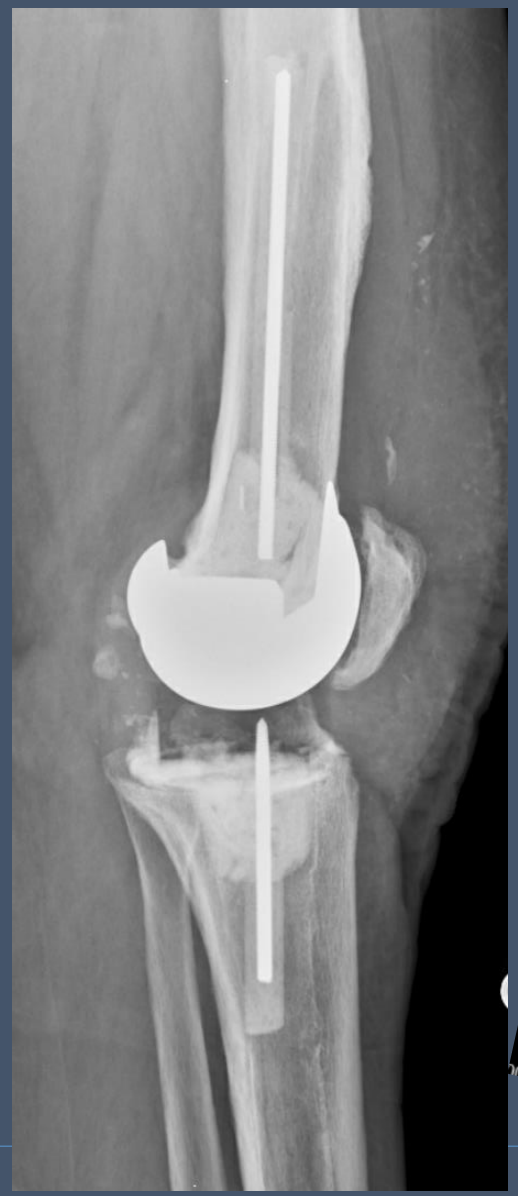
- 1yr postop
  - Pain worsening
  - Was doing somewhat better now worsening
- ESR nl; CRP 16H
- Reaspirate x2
- 190wbc; 59% PMNs, neg alpha defensin; No growth x2

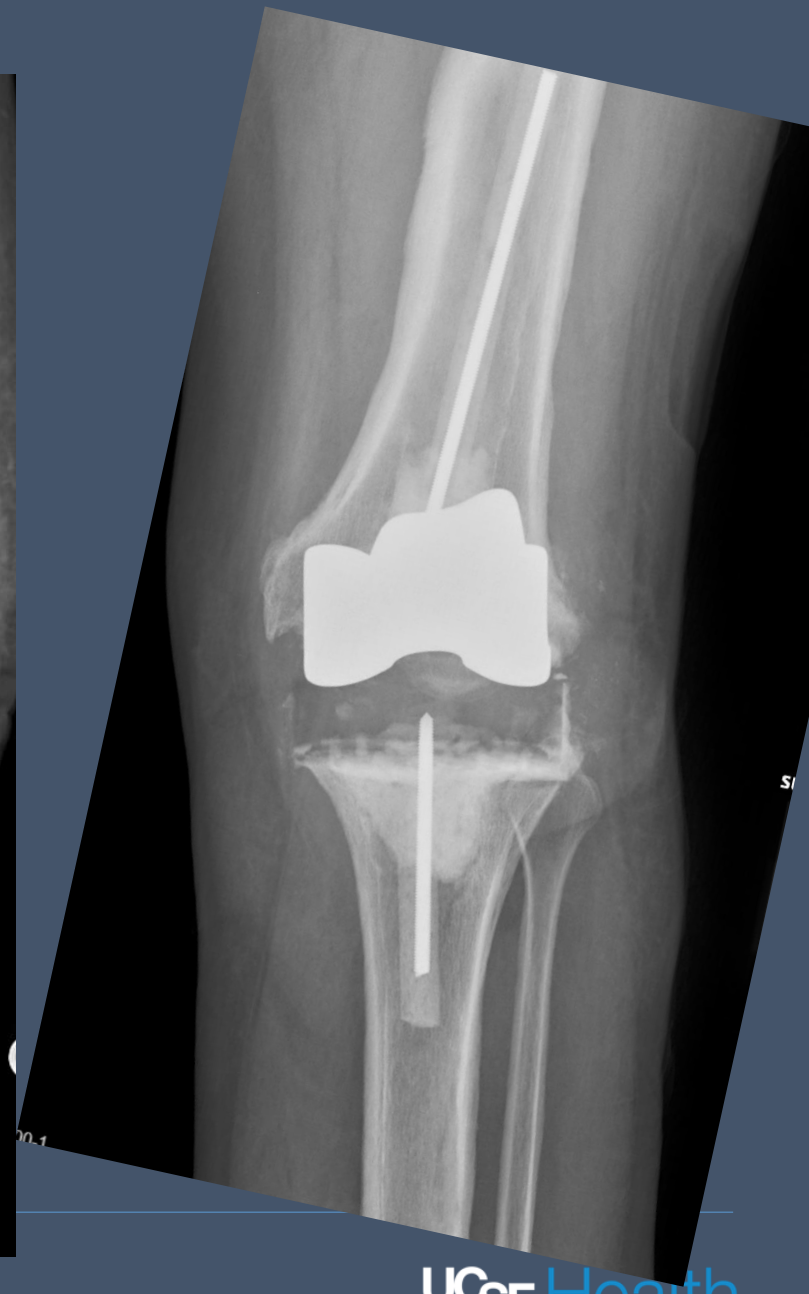




- Treated for presumed culture negative infection – 3rd set of implants loose less than 2yrs postop
- Cultures all negative including microbial DNA study

- Replant again with no nickel? Nickel inside cemented mantle ok? Cement Ti pressfit stems?





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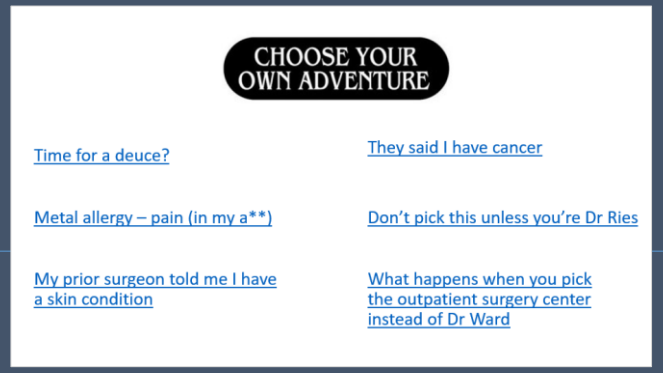
- Come back next year to find out what happens!



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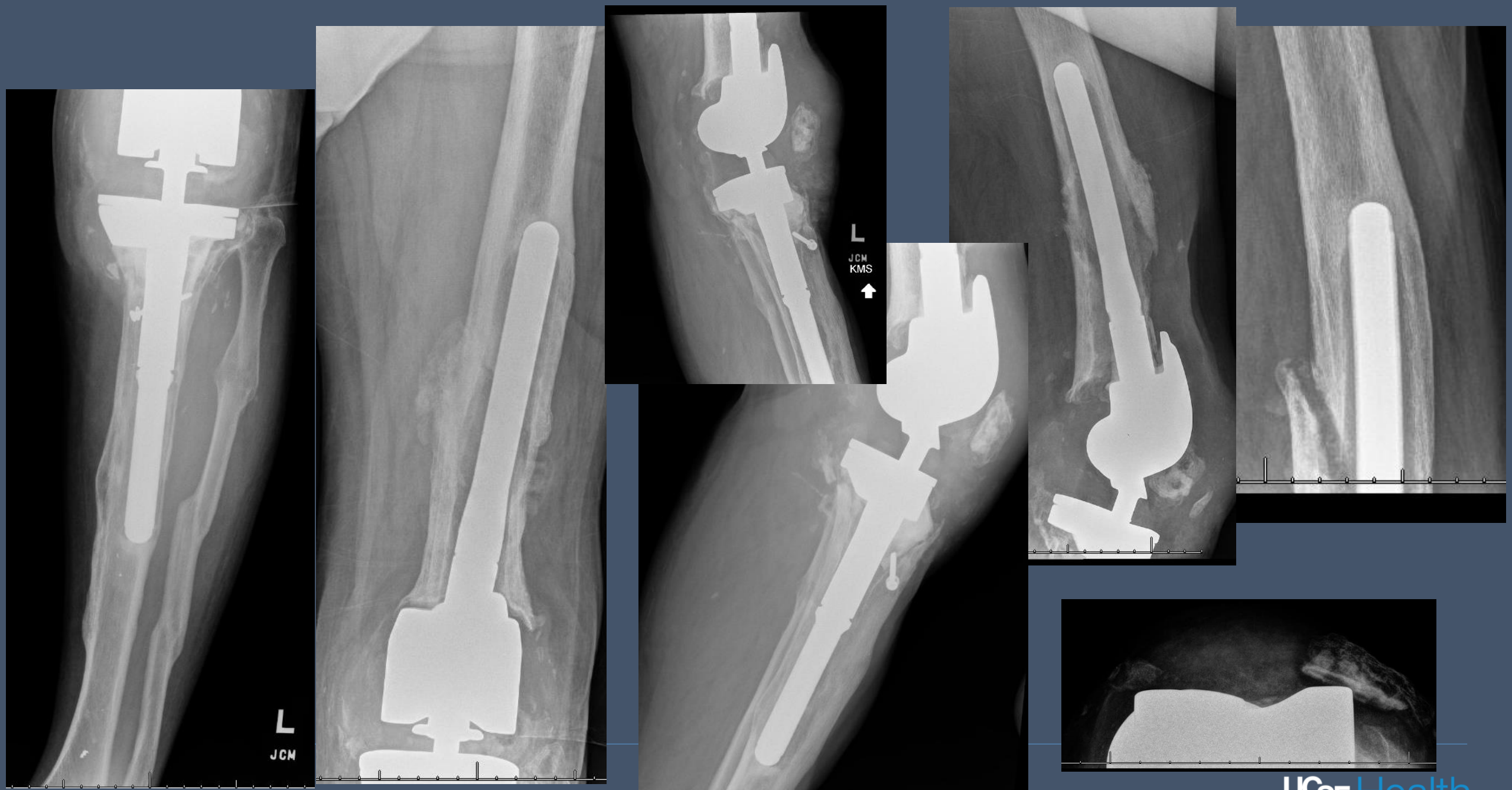
JA

- 71yo vet. L knee pain 1 year since fall and “fracture”. 5 prior surgeries to knee since pinned by car last 2015. Uses crutches since the fall. Lives in trailer in NV alone. On disability – previously driver.

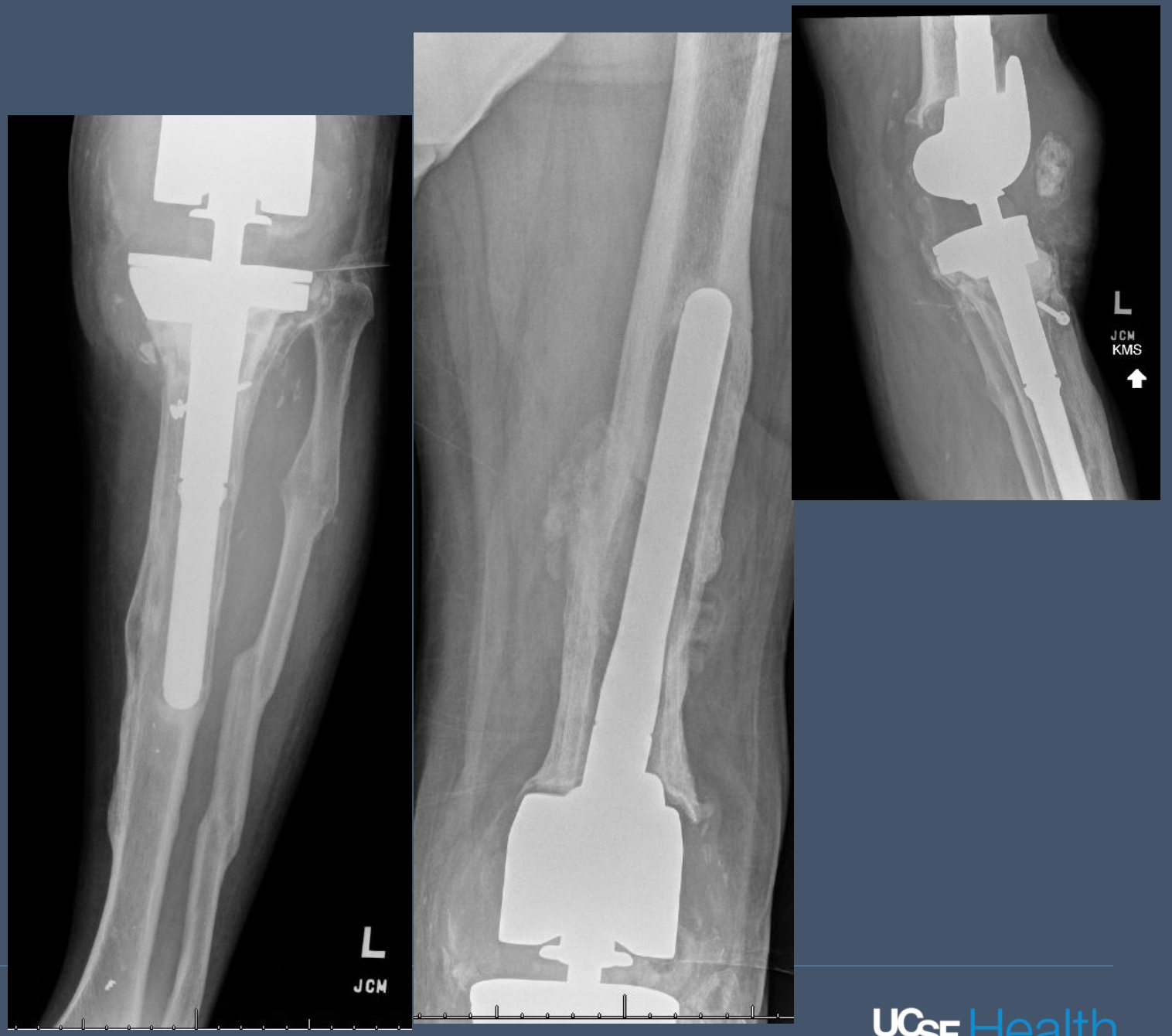
- PMH: CAD s/p bypass; gastic ulcers
- PSH: 5 L TKA (last 2015; possible prior infections? – takes amoxicillin for past decade plus); R TKA

5’10” 230lbs BMI 33

- Wheelchair in clinic; unable to WB on LLE;
- LLE short several inches
- Second articulation point noted above knee
- Healed long anterior knee incision
- 1/5 quad; full lag; ROM difficult to assess 2/2 pain
- Foot drop on R (contralateral); DNVI on L


L
JCM
L
JCM
KMS
KMS

- ESR/CRP normal
- Aspiration 30cc black motor oil
  - 500wbc 70%PMNs No growth
- Options?
- Fixation tibia and femur
- Management of EM?
- What do you make of the amoxicillin?



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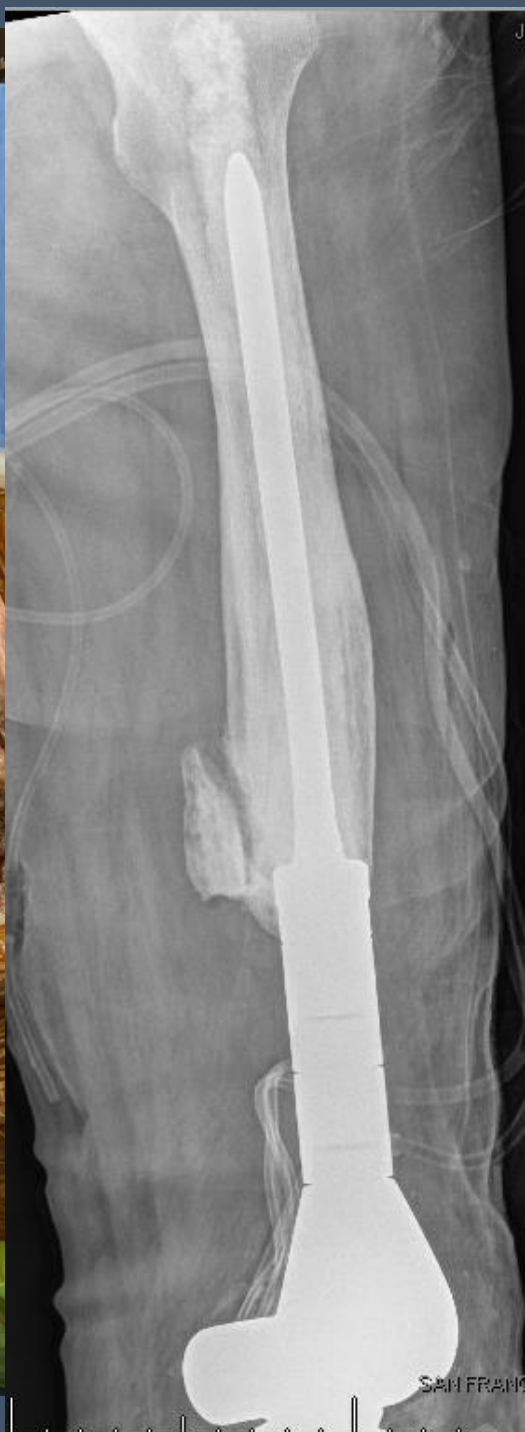
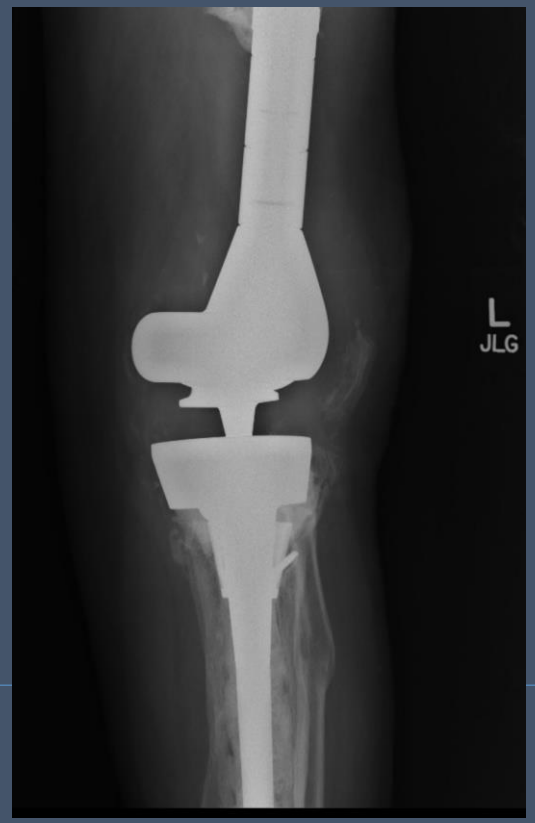
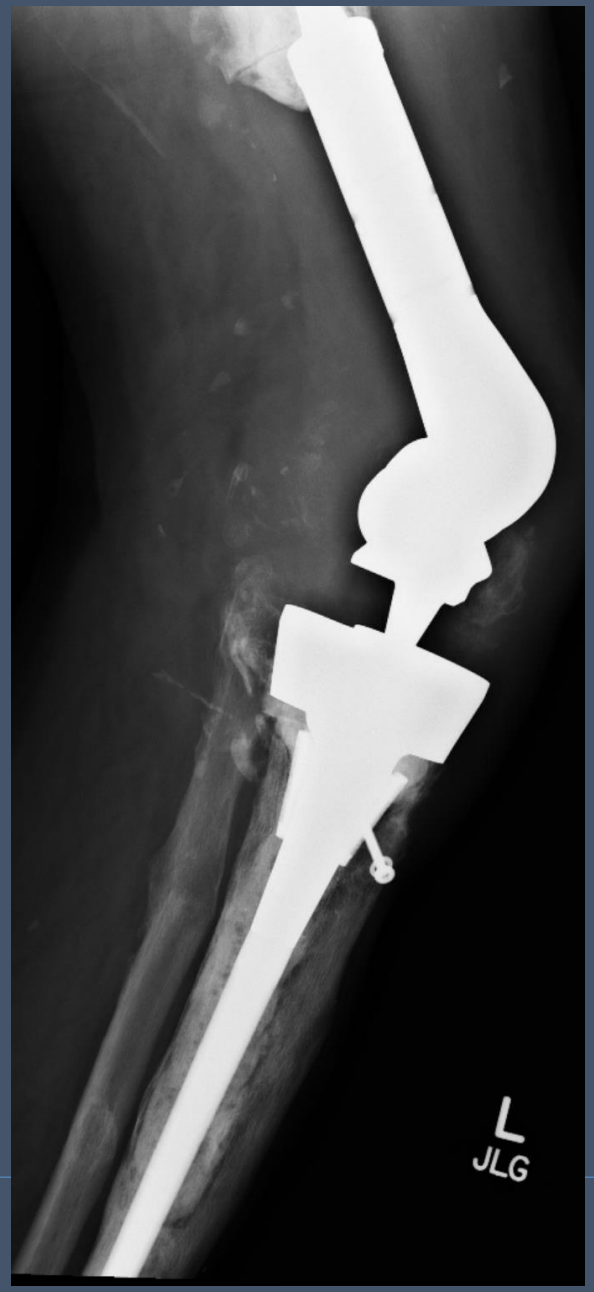
- Diffuse necrosis, cement debris, metal staining
- Patella fell out
- Aggressive debridement of bone and soft tissue
- No EM recon done (nothing to attach to proximal looked like prior allograft)

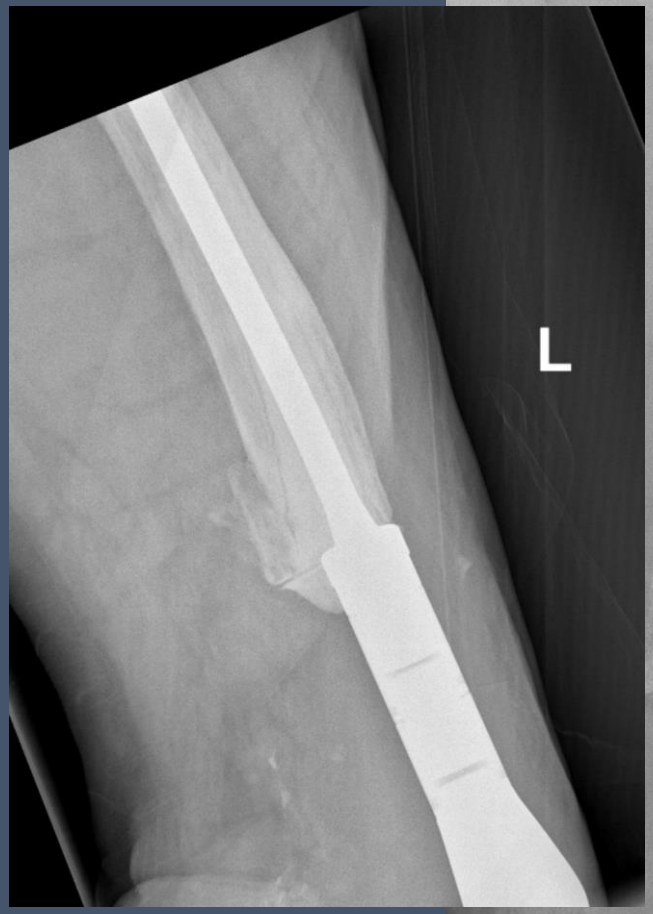
- Tricks for length in these cases?
- If we did do EM recon of choice?

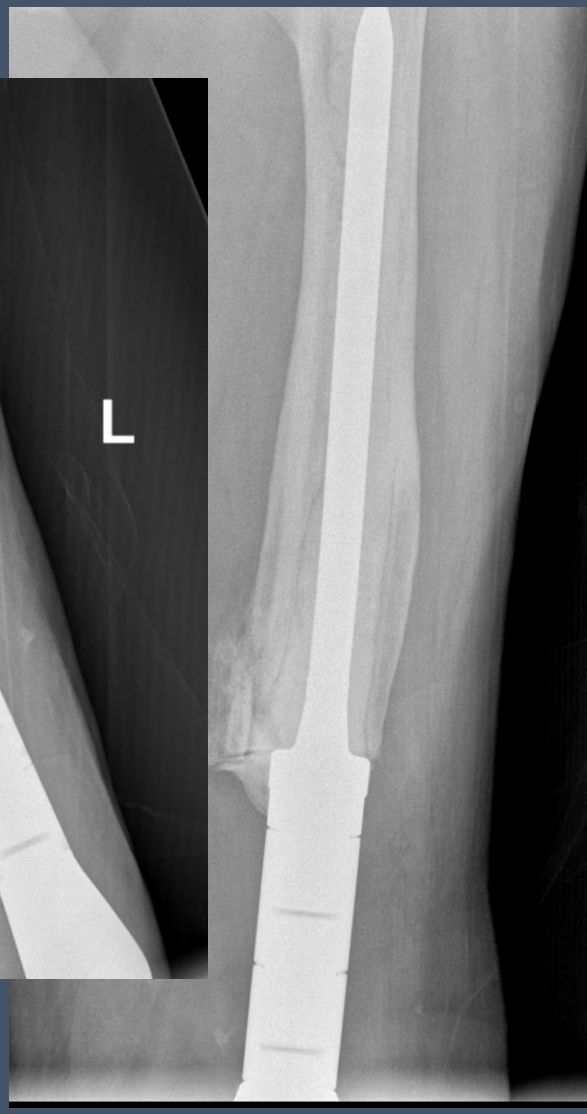


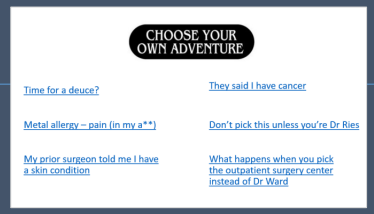
- 1 year postop films
- Never grew anything
- 0-100 PROM
- 2/5 quad with 30+deg lag
- Working again as courier; doesn't like braces
- Cont abx suppression life (amox 500 bid)











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