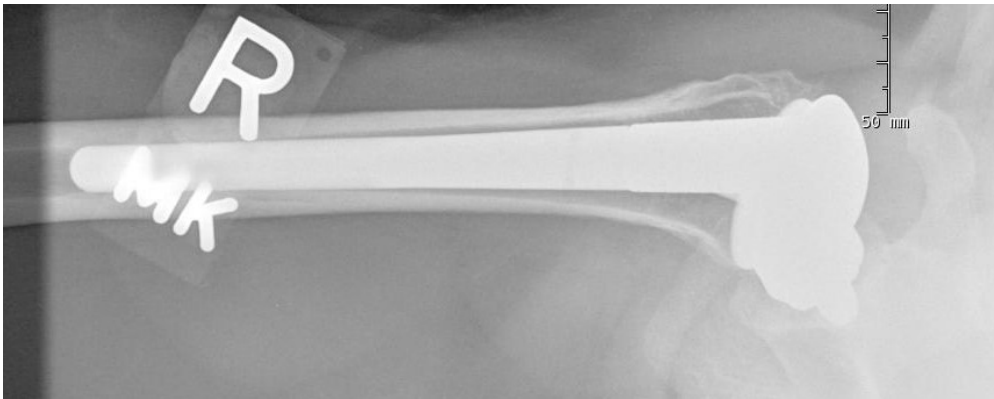


Failed TSA in the Young Patient: Case Presentations

41 y.o. Female, Athletic trainer, owner gym,

- Post traumatic OA with intact rotator cuff
- Total shoulder arthroplasty treated elsewhere
- 1 year post operative pain
- Active ROM
 - FF 80 degrees
 - ER 0 degree: no lag sign
 - IR buttock
 - Belly press unreliable
- w/u negative for infection

Pre operative x-rays



Operative Findings: Cuff and Humeral Stem

- Supraspinatus and posterior cuff were intact. Thinning subscapularis tendon, but intact.
- Small component HH with a large collared stem, anteroinferiorly located relevant to the long axis of the shaft. The stem was not loose. There were no signs of infection.
- The frozen section was negative for suspicion for infection.
- Male Morse taper on the proximal stem with a large collar access prevented access to the glenoid could without first removal of the stem.
- Multiple osteotomes and a bur were used to take away the bony ingrowth in the proximal stem and then the stem could be removed with the bone tamp and mallet without osteotomy. Tuberosities and canal remained intact.

What arthroplasty would you do at this point?

Operative findings: Glenoid

- The glenoid was solidly fixed with bony ingrowth. The polyethylene was removed with osteotome
- A thin tipped pencil bur was then used to dissect the interval between the metal-backed component and the bone. Then with a large bur, the component itself had to be taken out quartered fragments.
 - This resulted a large amount of metal debris and soft tissues.
- Guidepin placed for base plate at the anterior-inferior glenoid: Fluoroscopic control
 - Glenoid was packed with cancellous bone chips obtained from the proximal humerus. Humeral neck cut was recut, cancellous bone from the proximal humerus packed into the glenoid defect, was structurally sound.
- Base plate was used compressing the graft material with solid fixation. Three additional locking screws.
- 32-4, demonstrated the trial stem to be unstable without sufficient soft tissue tension.
- 32-N, improved tissue tension, but not sufficient range of motion with impingement in external rotation.
- 36-N, good stability and range of motion with only mild impingement with 35 degrees of ER in 0 abduction.

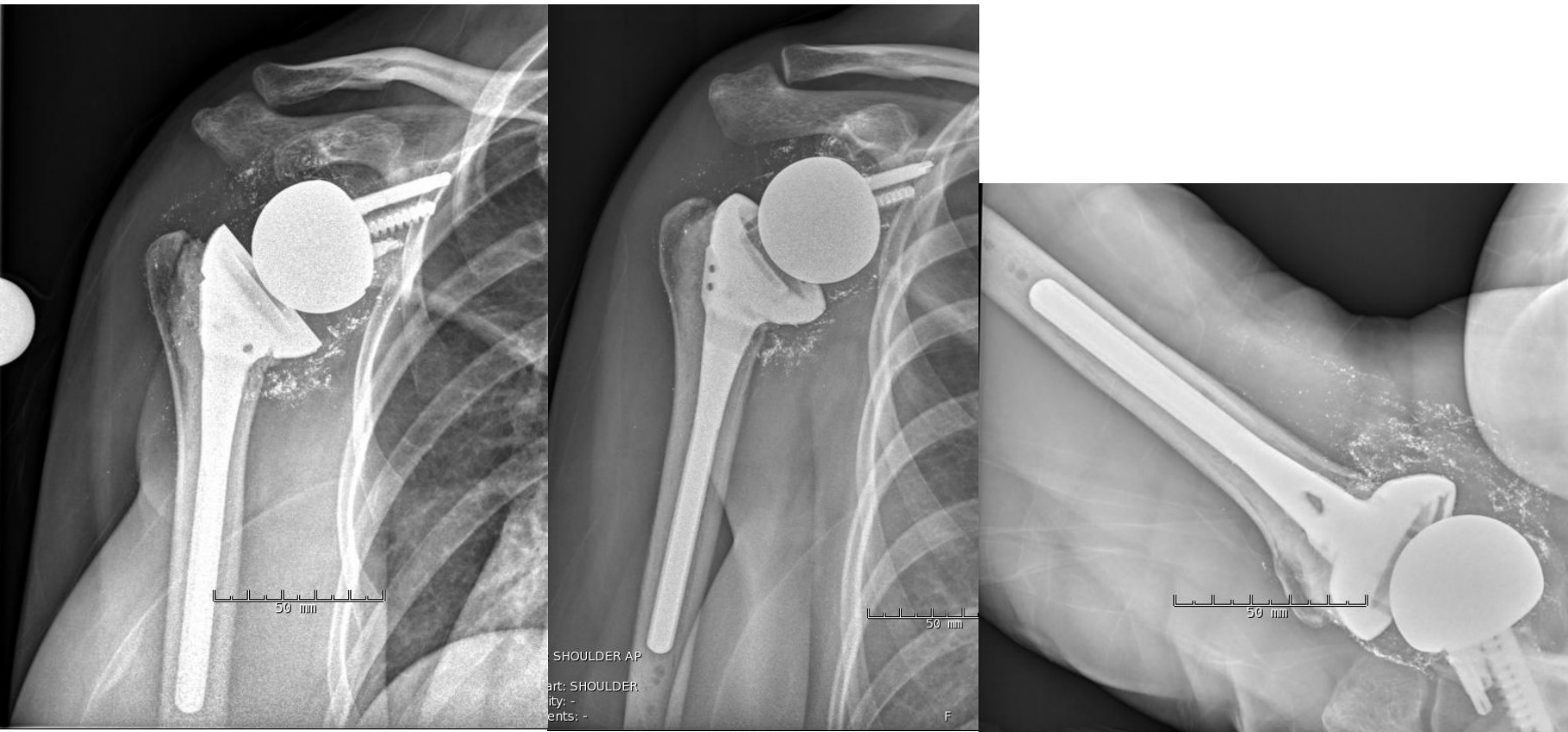
Positive Cultures C. Acne

- 2/4 intra-operative tissue samples for culture
- Immediate post op discharged with oral doxycycline
- 6 weeks IV Vancomycin
- 3 months oral doxycycline

One Year Post Op: Telemedicine Visit

- Improved from her preoperative level. She has minimal pain. She has about 3 out of 30 days a month with pain that is 5-6 in severity.
- Most days she has no pain and is very pleased with result she's had a marked improvement of her function.
- Back to work as a athletic trainer. She is able to lift of 60 pound bar two arms and about 8 pounds single arm above shoulder level.
- She's been off oral antibiotics now for approximately 9 months. She's had no recurring evidence for infection.
- Physical: Active elevation approximately 140°, external rotation 30° IR to the lower thoracic spine.

Post operative x-rays

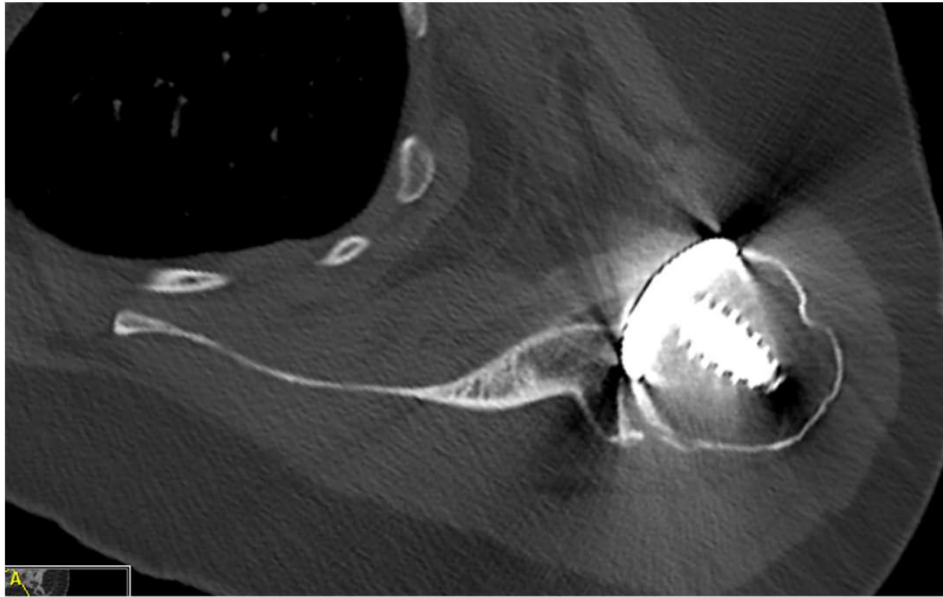


Case #2: 40 year old female

John Sperling MD
Mayo Clinic

History of multiple instability procedures elsewhere followed by resurfacing arthroplasty



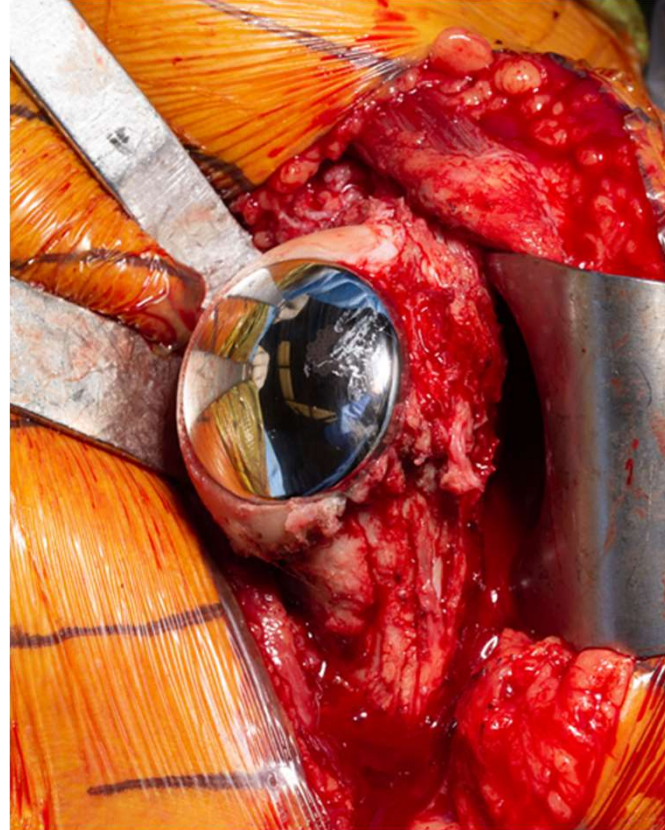


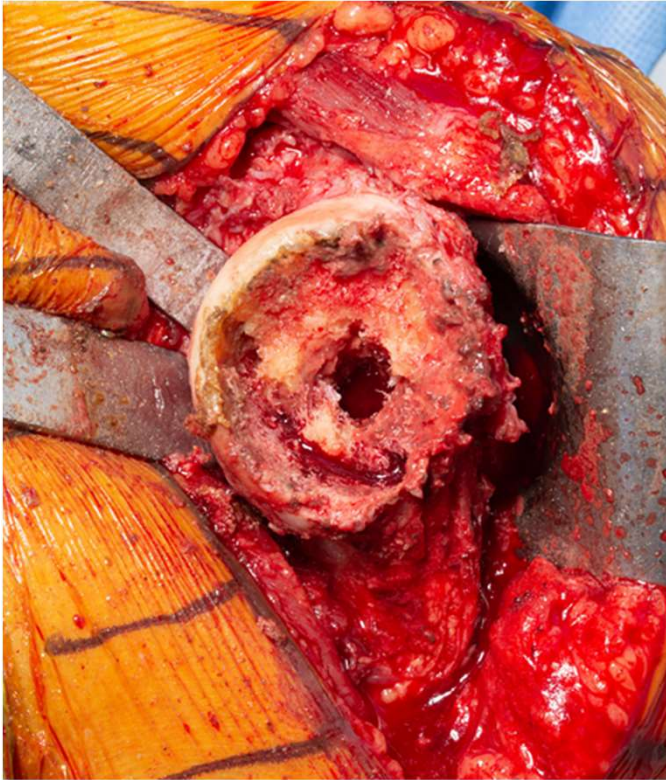
Painful L shoulder resurfacing

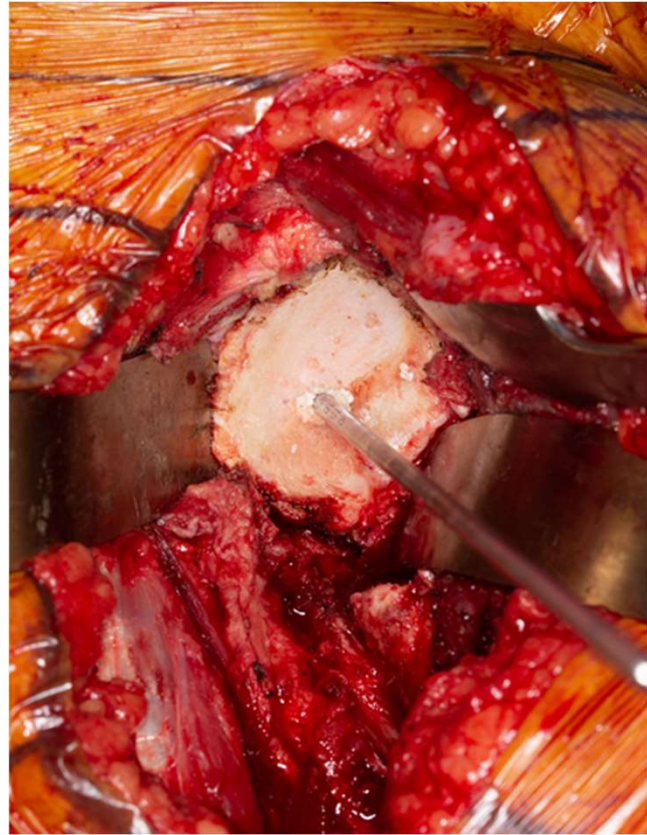
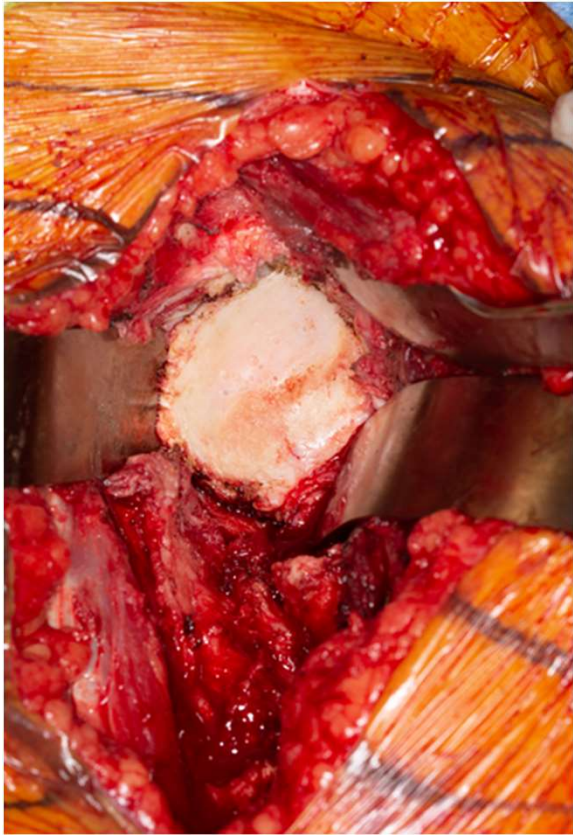
- Aspiration-no fluid could be obtained
- US-subscapularis torn

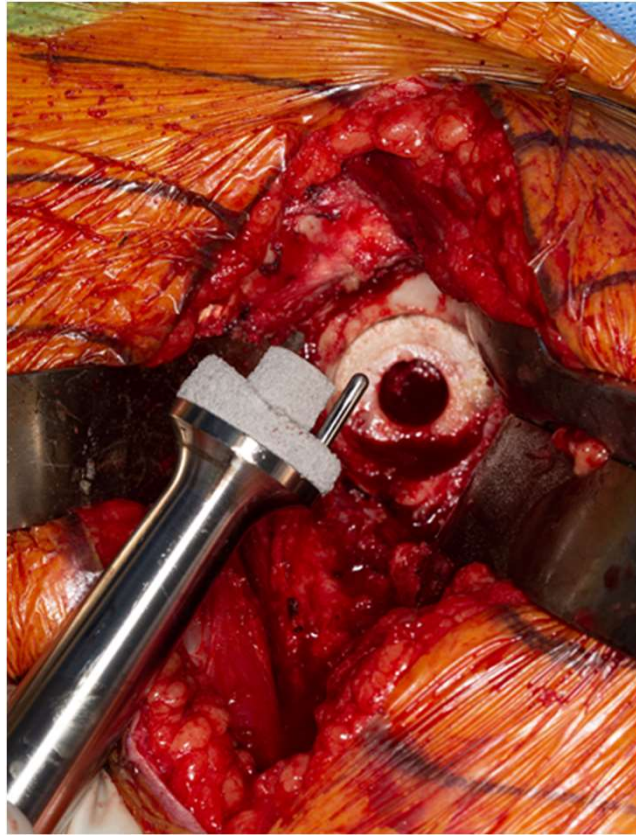
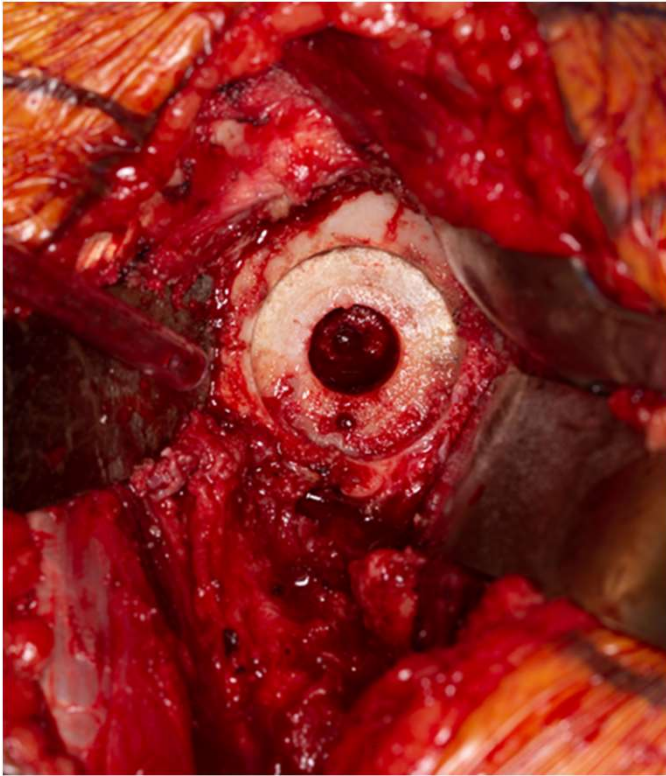
Options

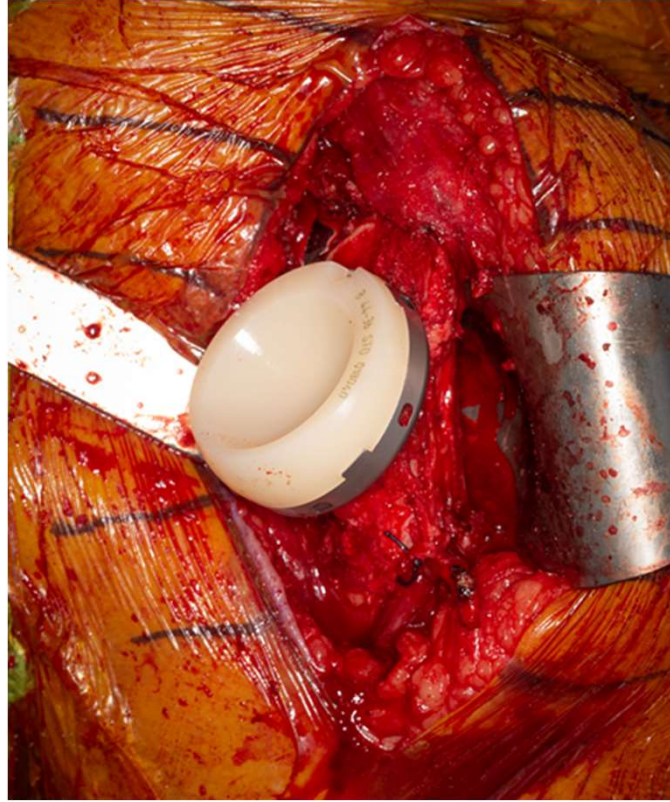
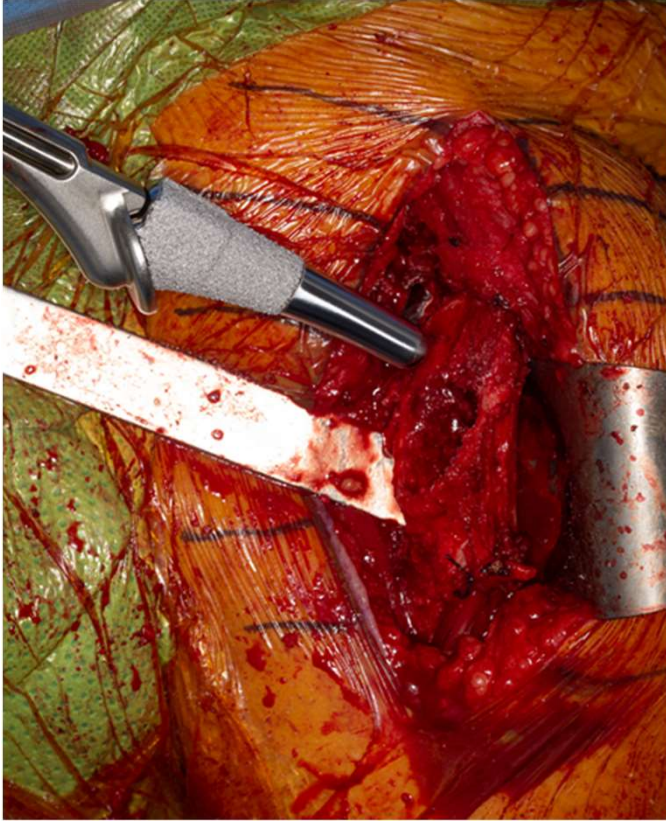
- Scope biopsy
- Anatomic TSA with tissue transfer
- Reverse











Case #3

David Dines MD
Hospital for Special Surgery

64 yo very athletic active male

- “Former Collegiate Wrestler and work-out fanatic with primary OA
- Multiple Arthroscopic Debridements (3) over 10 years
- Multiple Steroid injections (+ others)
- Steroid user in past
- Anatomic TSR 2016



- Did well but at 19 months post-op developed increasing pain and loss of ROM
- W/U
 - Infection v glenoid component loosening
 - Cuff or subscap failure

- P acnes 5/7 cultures
- Glenoid loose → removed
- Subscapularis insufficiency
- Spacer



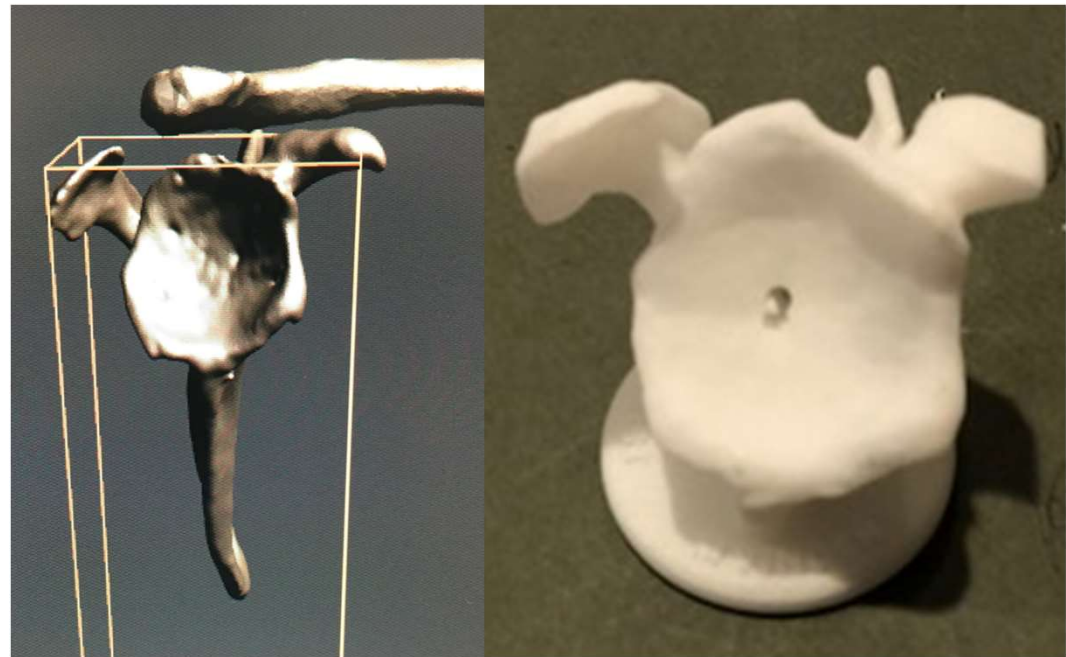
- IV Abx then aspiration @ 8 weeks
- Substantial bone loss
 - 3D CT
 - Surgical Planning



What can we do now?

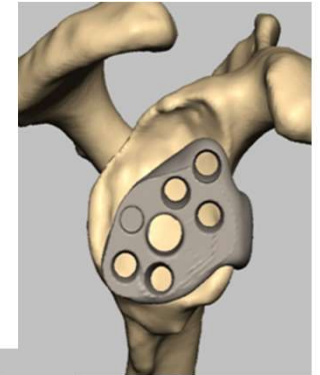
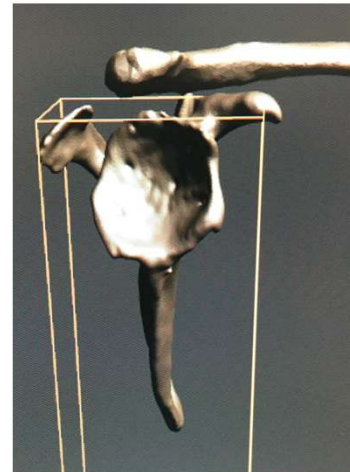
- The problem

- Narrowed vault, excess erosion, revisions, oncology
 - Unreliable bone grafting
 - Minimal fixation with standard line implants
 - Painful HA only option
 - **Patient specific Implant VRS**

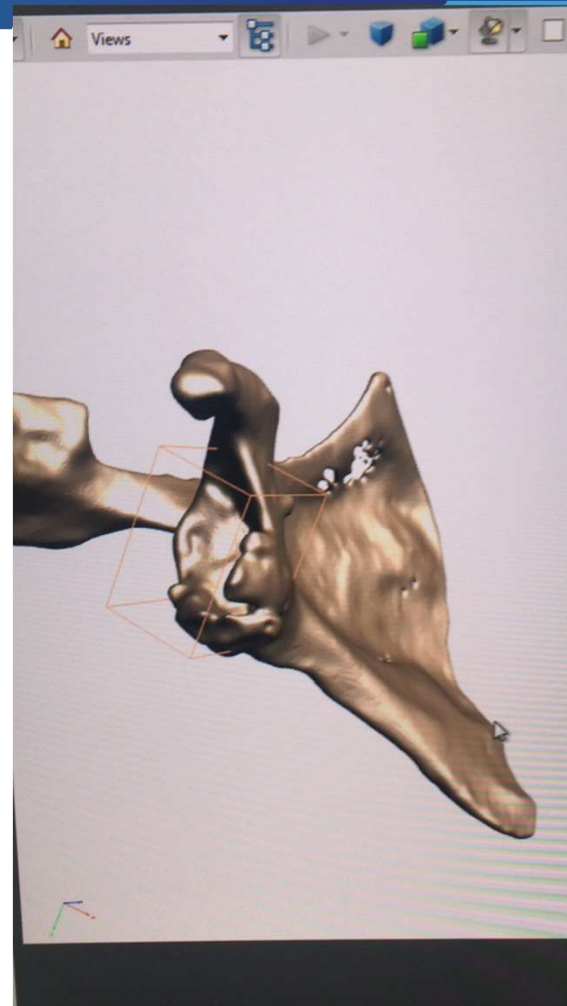


Vault Reconstructive System

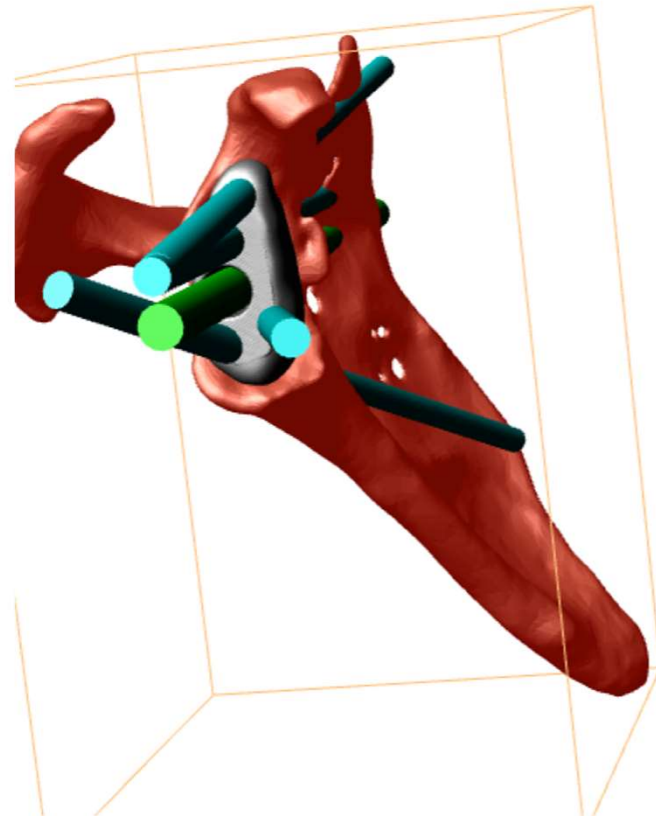
- No standard option existed – VRS originally limited by FDA for custom implants
- CAD-CAM concepts from THR surgeons
- Fill in bone defect with porous ingrowth implant
- Now FDA approved for RSA



Recreate GH joint line
Proper glenoid version/tilt
Fill the defect
Screw placement



- Case plan
 - Vault sizing and position
 - Screw trajectory plan



3D-Printed Models

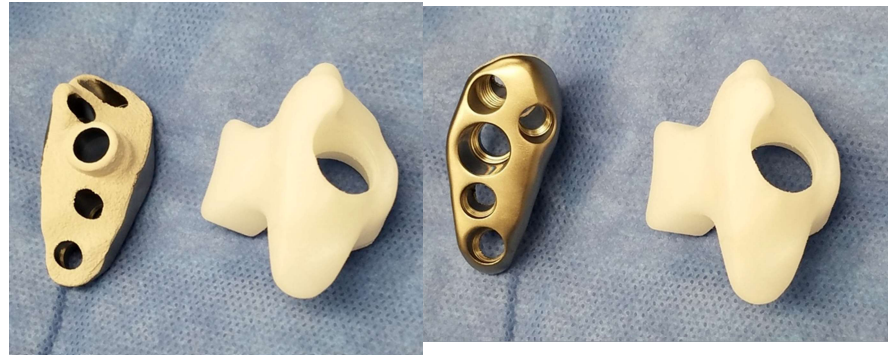


Deformity

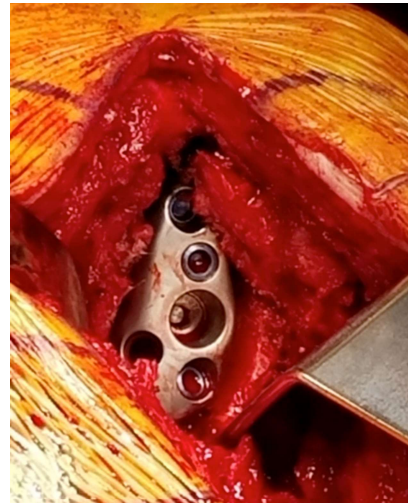


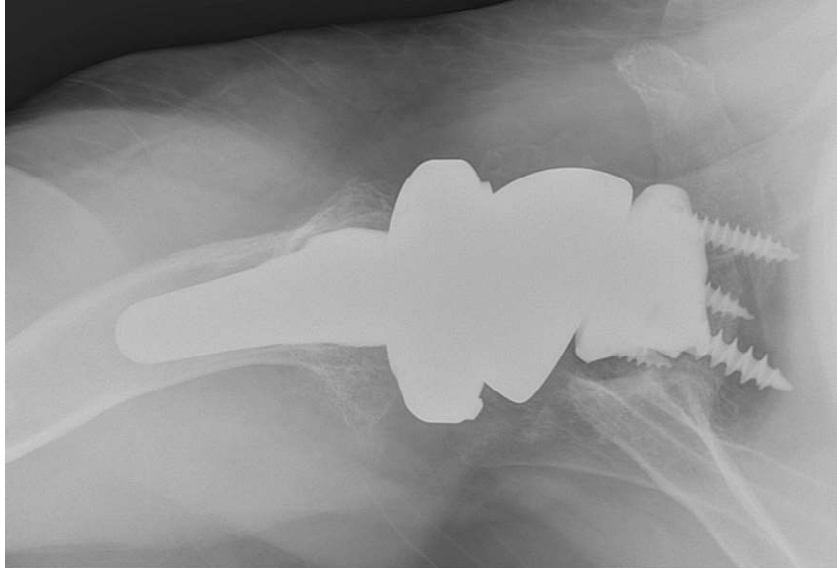
Implant Deformity
Correction

- Real implant front and back with intra-op guide which allows for “boss” ream of medial vault with a stop

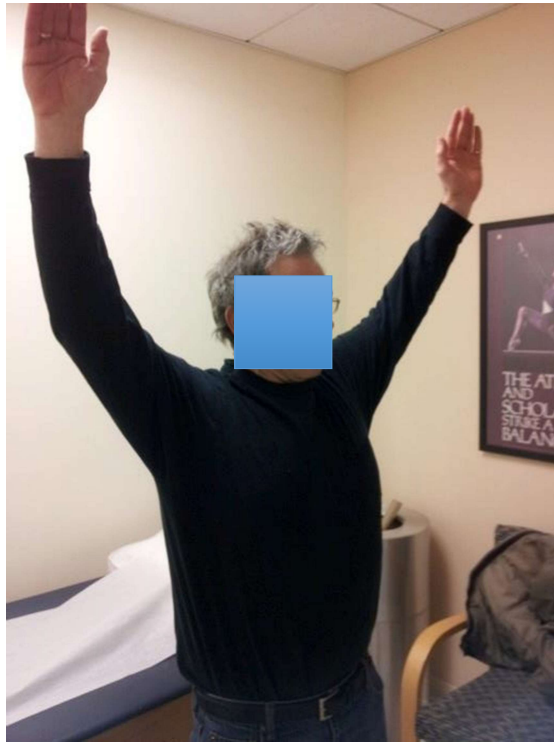


- Real implant in place





VRS 2 – Stage Revision, 64 Year Old Male
28 months post-op



Fingers crossed- still cautious optimism

Panel Questions: Summary

- What are the indications for a anatomic reconstruction for a patient with a failed anatomic total shoulder arthroplasty
- Patient Factors
- Anatomic Factors that you would not do a reverse TSA