Management of Periprosthetic Shoulder Infections: Is There a Role for Open Biopsy?

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Background

Periprosthetic shoulder infections

- More common than after THA or TKA
- TSA 3%, RTSA 5% [1-3]
- *P. acnes* common pathogen in shoulder (20%)
  - Difficult to eradicate
  - Implicated as cause of primary shoulder OA [4]
- Gold-standard treatment
  - Removal of hardware, antibiotic spacer and IV antibiotics before replant
  - Reinfection rate 0-37% [5]

Disclosure

- I have no disclosures or financial relationships related to the content of this study.

Purpose

- Decrease reinfection rates after periprosthetic shoulder infections
- Devise a protocol for detection of persistent infections despite previous treatment
**Methods**

- **Stage 1**
  - Removal of hardware
  - Irrigation & debridement
  - Antibiotic spacer placement

- **Stage 2**
  - Culture-specific IV antibiotics for 6 weeks

**Methods**

- **Stage 3**
  - Open tissue biopsy in OR

- **Stage 4**
  - If biopsy results negative
    - Replant prosthesis
  - If open biopsy positive for infection
    - Repeat treatment

**Results**

- 18 patients w/ periprosthetic shoulder infection from 2005-2012
- 14 patients- negative biopsy cultures- replanted shortly after biopsy procedure
- 4 patients (22%)- positive culture growth during open biopsy despite normal CRP, ESR, WBC and no clinical symptoms
  - All underwent repeat I&D, spacer exchange &IV abx
  - 3 patients- negative 2nd biopsy results and replanted
  - 1 patient required additional round of treatment
Results

- Infecting pathogen for 18 pts
  - *P. acnes* 50%
  - *S. epidermidis* 39%
  - *S. aureus* 22%
  - Polymicrobial 22%
- Persistent infections
  - *P. acnes* 75%
- Risk of persistent infections found on biopsy
  - 22% overall
  - 38% if *P. acnes* infection

Discussion

- Current gold-standard two-stage treatment
  - Reinflection rate up to 37%
- Lack of methods to detect persistent infection
  - Frozen sections at time of shoulder surgery [6]
    - 67% sensitivity overall
    - 50% sensitivity for *P. acnes*
  - Needle aspiration
    - 59% sensitivity in hip periprosthetic infections [7]

Conclusion

- Open biopsy before replant of shoulder prosthesis protocol
  - Detected persistent infection rate of 22% despite normal CRP/ESR in our cohort
  - Detected 38% persistent infection rate in patients with *P. acnes* infection
References