Shoulder Arthroplasty In The Management Of Native Shoulder Joint Infections Has A High Complication Rate And Poor Functional Outcome – A Systematic Review.

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Disclosures

• All authors involved in the production of this research declare no conflicts of interest.
Background

• Septic arthritis of the shoulder accounts for up to 3-15% of all cases of septic arthritis.

• *Cutibacterium* acnes (C. acnes) and coagulase-negative staphylococcus (CoNS) are most common pathogens.

• 40% of patients achieve eradication of infection following single arthroscopy surgery.

• 37% of patients have symptoms or complications even after eradication.

• The aim of this study was to systematically review the available literature and to report the outcomes of patients undergoing shoulder arthroplasty following native glenohumeral septic arthritis.
Methods

• PRISMA guidelines
• Registered on PROSPERO
• Searches May & June 2022
• Eligibility
  • Clinical studies, case series or case reports in English language
  • Patients age >16 years undergoing
    • total shoulder arthroplasty, reverse shoulder arthroplasty, hemiarthroplasty or long-term spacer
  • Patients with sequelae of GHJ infection.
• Outcomes included
  • function scores, range of motion, reinfection or complications.
Results - Summary

• 14 studies eligible for inclusion

• 136 patients
  • 60% male

• Mean age 56-72 years

• Mean follow-up 20.5 – 8.2 years

• Primary infections in 37%
  • Haematogenous spread
  • Shoulder injections/aspirations
  • Unspecified causes

• Secondary infections in 63%, following
  • RCR
  • Fracture fixation or
  • Other arthroscopic surgery
Results

• Commonest organisms included:
  • MSSA 12-91%
  • CoNS 7-38%
  • C. acne 9-40% and
  • S. epidermidis 18-57%

• 56% underwent a 2 stage procedure,
• 34% underwent a single stage and
• 10% opted not to proceed to a second stage
Results - Complications

• **26%** overall complication rate.

• Complications following shoulder arthroplasty included:
  • 5.7% loosening,
  • 4.5% acromial fractures,
  • 4.5% periprosthetic fractures and
  • 4.5% joint instability.
Results - Functional outcomes

• Post-op PROMs
  • Mean CM score 38-56.2 and
  • Mean ASES score 57.6-78.4.

• Post-op Range of Motion
  • Mean flexion 82-143 degrees
  • Mean external rotation 18-36 degrees
Results - Reinfections

• **2.3% overall** reinfection rate:
  
  • 4.6% reinfection in single stage group and
  
  • 1.3% reinfection in two stage group.
Limitations

• Majority of studies were retrospective

• MINORS grading ranged from 7 to 22

• Studies contained low numbers

• Short or medium term follow up only
  • Long term follow up is required to gain a fair reflection on the successful eradication of infection

• Data generally included both native shoulder infections and PJI with difficulty separating the data.
Conclusions

• Shoulder arthroplasty in following GHJ septic arthritis has a high complication rate (26%) & relatively poor functional outcomes.

• The reinfection rate maybe low in the short term.

• Longer term studies with larger participant numbers are required to ensure this low reinfection rate is maintained in the long term.

• Based on the findings from the review the authors recommend the following treatment algorithm (see next slide).
Figure II – Suggested Algorithm for the Management of Native Shoulder Infection with Arthroplasty

- Clinical examination
- Inflammatory markers
- Plain radiograph and MRI
- Obtain previous microbiology results

Multidisciplinary Team meeting

Joint aspiration to guide antibiotic choice for spacer

- Extensive open debridement
- Removal of any implants and non-viable tissue
- Multiple cultures including frozen section where available
- Implantation of cement spacer

Positive culture

- Empirical IV antibiotics until prolonged cultures available
- Conversion to complete 6 week of antibiotics according to sensitivities
- Monitor clinically and biochemical makers off antibiotics

Further open biopsy/cultures

Clinical concerns

- Proceed to second stage arthroplasty
- Multiple samples taken

Negative culture

No concerns

- No further surgery if patient content with function with spacer
References


Hattrup SJ, Renfree KJ. Two-stage shoulder reconstruction for active glenohumeral sepsis. Orthopedics 2010; 33: 20.


