26% Failures in Surgical Treatment for Bacterial Arthritis of a Native Joint in Adults: A Systematic Review of 8,586 joints

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26% Failures in Surgical Treatment for Bacterial Arthritis of a Native Joint in Adults: A Systematic Review of 8,586 Joints

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Background

Bacterial arthritis is a clinical emergency that requires prompt treatment.

Most patients are effectively managed with a single surgical debridement, but some cases may require more than one debridement to control the infection.

Reported failure rates of a single surgical debridement vary widely and a structured assessment of risk factors for failure is lacking.

Aims

To assess the overall failure rate of a single surgical debridement in adults with bacterial arthritis of a native joint.

To identify risk factors for failure of a single surgical debridement.

Methods

Study design: Systematic review

Protocol: PROSPERO (CRD42021243460) & PRISMA guidelines


Inclusion criteria

Bacterial arthritis of a native joint

Cohort > 10 or more patients

16 years or older

Incidence of failure (i.e. persistence of infection requiring reoperation or mortality)

Exclusion criteria

No original data, meeting abstracts, case reports, animal or cadaveric studies

Arthroplasty included

Patients with a foreign body in the affected joint

Axial arthritis

Risk of bias analysis: Quality in Prognostic Studies (QUIPS) tool

Primary outcome: The rate of failures

Secondary outcome: The potential risk factors associated with failure (best evidence syntheses)

Results

Study and patient characteristics

Title and abstract screening: 1,836 studies

Full-text screening: 97 studies

Included: 30 studies (97% retrospective design)

Low risk of bias: 12 studies

Moderate risk of bias: 13 studies

High risk of bias: 5 studies

Patients: 8,569 (8,586 joints)

Mean age: 29 years (mean age range 42 - 72)

Gender: 61% male, 39% female, 0% others

Joints: Shoulder (70%), knee (21%), hip (6%), other (3%)

Microorganism: Staphylococcus Aureus (44%)

Operation: 66% arthrotomy, 33% arthroscopy, 1% not reported

79 risk factors: 26 significant predictor

Best evidence synthesis:

• Strong evidence: 0
• Moderate evidence: 1 (synovial white blood cell count)
• Limited evidence: 5 (sepsis, large joint, irrigation volume, blood urea nitrogen test, and blood urea nitrogen/creatinine ratio)

Conclusion

One out of four single surgical debridements fails to control the infection in native bacterial arthritis

Limited to moderate evidence exists that risk factors associated with failure are synovial white blood cell count, sepsis, large joint, irrigation volume, blood urea nitrogen test, and blood urea nitrogen/creatinine ratio.

These factors should urge physicians to be especially receptive to signs of an adverse clinical outcome.
26% Failures in Surgical Treatment for Bacterial Arthritis of a Native Shoulder in Adults: A Systematic Review of 8,586 Joints


