

Introduction

- Projections show an increase of 43% to 70% for revision total knee arthroplasty (rTKA) and 78% to 182% for revision total hip arthroplasty (rTHA) by 2030 from 2014 levels¹
- Indications for revision includes prosthetic joint infection (PJI), mechanical failure, aseptic loosening, and periprosthetic fracture
- Gold standard treatment for revision arthroplasty is two-stage revision.²⁻⁵
- Lack of consensus on timing and protocol for 2-stage revision⁶
- In 2018, the Proceedings of International Consensus on Orthopedic Infections had no consensus for optimal timing for reimplantation due to lack of conclusive evidence.⁷
- Timing for reimplantation is at the discretion of the healthcare team⁷
- Current literature suggests the effectiveness of 2-stage arthroplasty for infection ranges from about 72% to 95% with an average around 85%^{2,8}
- Goal is to decrease interval between stages to lower the burden of disease for, decrease unnecessary interventions, and reduce costs without increasing complication rate
- Main complications of interest are infection/reinfection and all-cause return to the operating room (RTOR)

Purpose

The purpose of this study is to investigate the complications including reinfection and return to the operating room within 90-days post operatively of two-stage revision exchange with a 6-week protocol that minimizes costs and patient burden at a single high-volume center.

Methods

- The retrospective cohort analysis comprised of 81 patients who underwent 2-stage TKA or THA revision between January 1, 2018, and December 31, 2022
- Total of 84 2-stage revisions identified
- Patients of all genders age 18 to 89 years were included.
- Surgery performed by one of three surgeons utilizing 6-week protocol

Results

Table 1. Patient Characteristics

Characteristics	
Males (n, %)	48 (59.3%)
Females (n, %)	33 (40.7%)
Age (mean, SD)	66.5 (11)
BMI (mean, SD)	31.0 (5.3)
Charlson Index for Stage 1 (mean, SD)	3.35 (1.5)

Table 2. Reason for Revision

Diagnosis	Number of Events (Percent)
Infection/Inflammatory Reaction	82 (97.6%)
Chronic Osteomyelitis	1 (1.2%)
Periprosthetic Fracture	1 (1.2%)

Table 3. Summarized Complications

Complication	Number of Events	Number of Patients (% of total patients)
Unplanned RTOR	23	17 (21.0%)
Unplanned RTOR Related to Orthopedics	20	14 (17.3%)
RTOR for PJI	4	4 (4.9%)
PJI Not Requiring RTOR	1	1 (1.2%)
Dislocation	4	4 (4.9%)
Hematoma	3	3 (3.7%)
Periprosthetic Fracture	3	3 (3.7%)
Dislocation of Spacer	2	2 (2.5%)
Other	21	18 (22.2%)

Discussion

- One of the primary concerns in 2-stage revision is reinfection
- This 6-week protocol shows an infection complication rate of 6.2% within 90-days
 - Other studies have shown mixed complication rates with decreased interval timing
- Decreasing the interval between the first stage and second stage has several benefits to the patient
 - Less time spent with static spacers or decreased mobility
 - Decrease the number of treatments
 - Decrease in costs
- Goal of this protocol is to decrease the time for the patient to return to their “normal” activities with equivalent or better results
- Results indicate a low failure rate and a high effectiveness for 2-stage arthroplasty revision, but additional analysis is required
- Cases will be further examined to provide details on complications for up to one-year following the the revision
- Data will continue to be analyzed to determine patterns within the protocol

Conclusion

Initial results show the 6-week two-stage exchange protocol for rTKA and rTHA show a short interval between first and second stage does not negatively impact reinfection or RTOR rates. More data analysis for one year follow up needs to be done to confirm this trend.

References

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