

# Is Operative Diagnosis for Aseptic Revision Total Hip Arthroplasty Related to Patient Reported Outcomes?

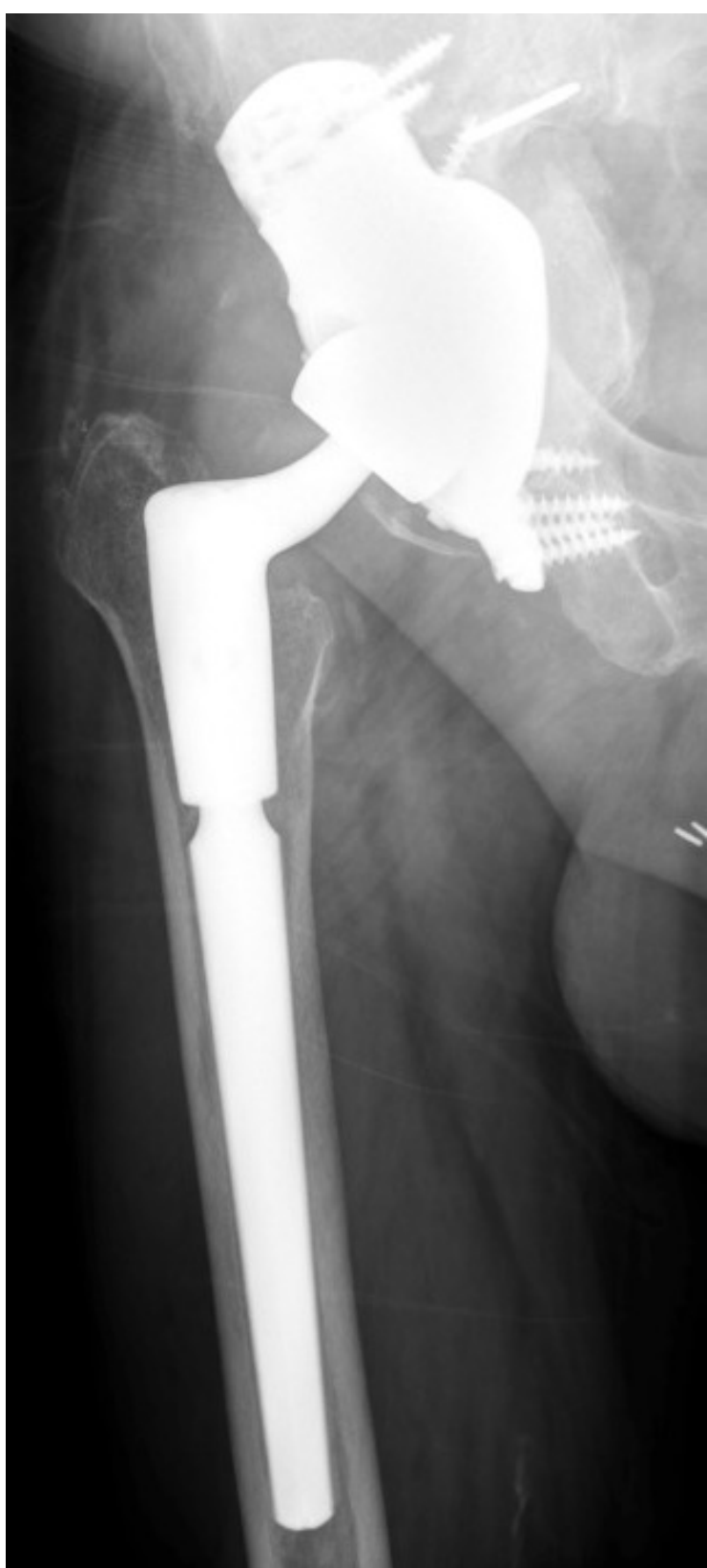
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## Background

Demand for total hip arthroplasty (THA) is expected to increase from 1.8 in 2015 to 2.8 million per year in 2050. The THA revision burden is projected to concurrently increase in response. Component loosening and instability are the leading causes of aseptic revision. To date, only one study has examined whether patient outcomes vary based on the underlying cause for revision. **The purpose of this study was to compare patient-reported outcomes (PROMs) after revision THA based on failure etiology to help patients and providers set expectations for recovery.**



Infected revision right total hip arthroplasty, treated with resection and insertion of an antibiotic cement spacer, followed by reimplantation with a custom tri-flange acetabular component

## Methods

### Sample

- 363 consecutive revision THAs, performed between 2010 and 2017 by three surgeons at the same institution using the same standardized protocols, were retrospectively reviewed.
- 176 cases were excluded for revision or another procedure within the same year (n = 144), performed for fracture (n = 9), deceased before minimum 1 year PROMs were collected (n = 7), lost to follow up (n = 9), and other (n = 7).
- The distribution of the final analysis sample (n=187) by failure etiology is shown in **Graph 1**.

### Measures

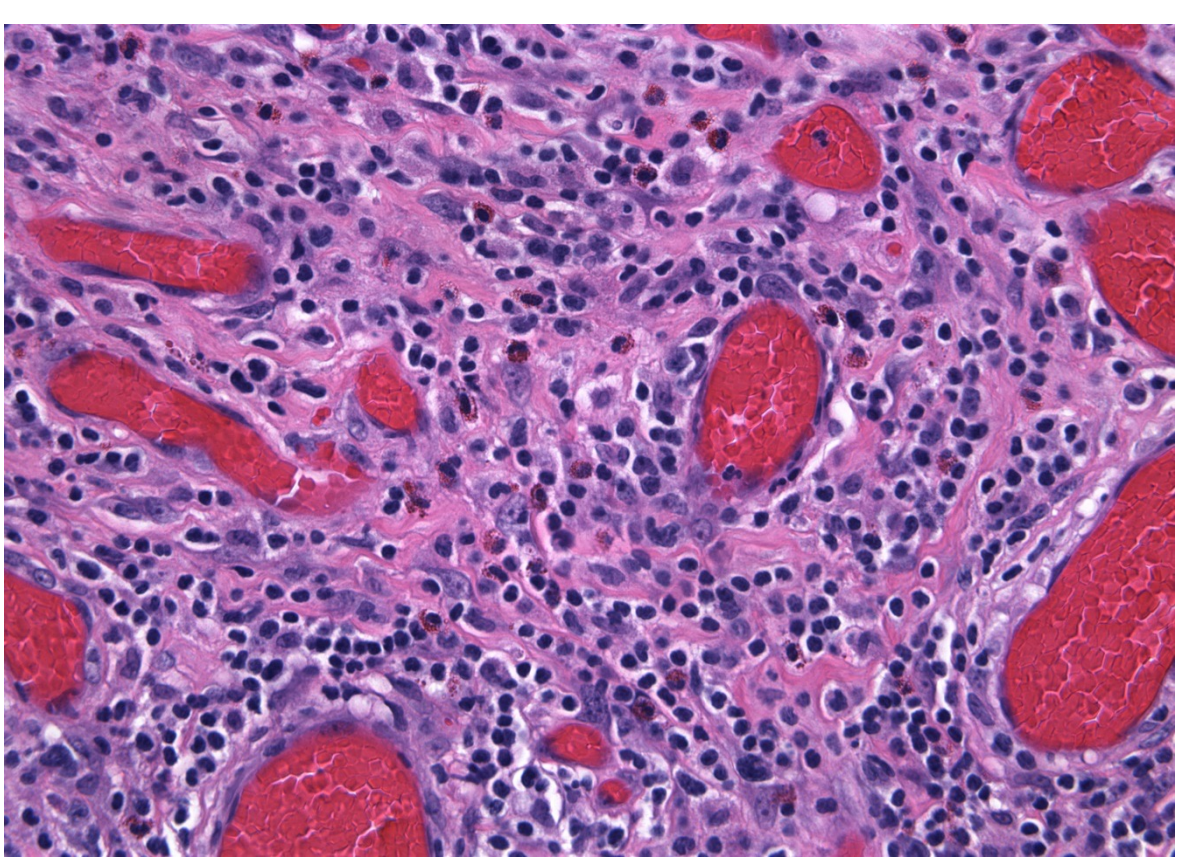
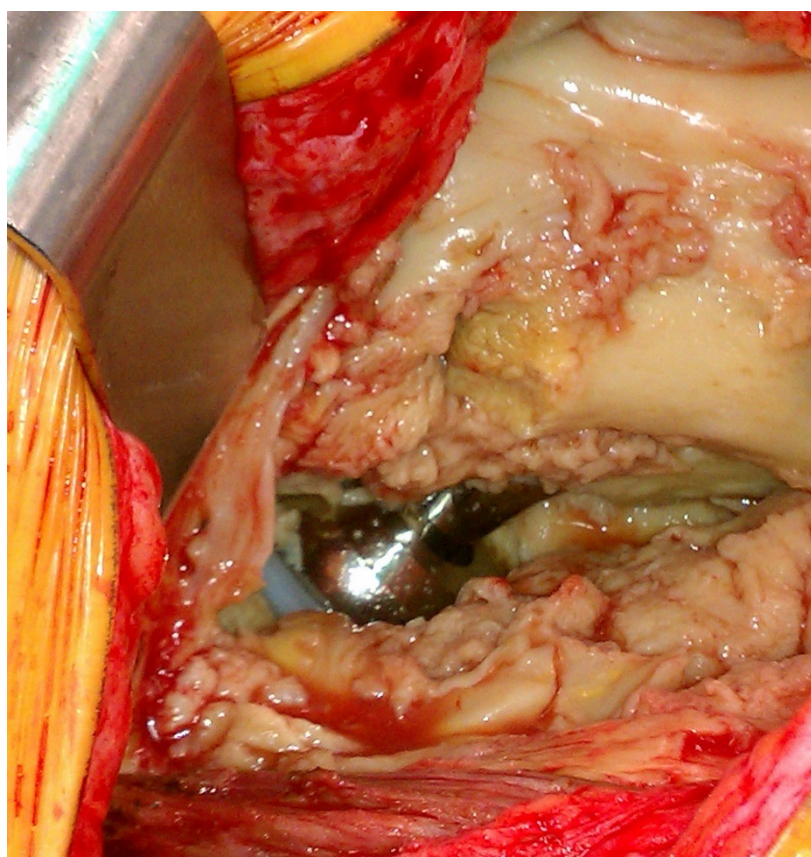
- Ten demographic variables and potential covariates** extracted from the electronic medical record were accounted for: sex, age, BMI, ASA classification, history of heart disease (CHF, MI, CAD) lumbar spine disease, preoperative narcotics, fibromyalgia/ lupus, depression, and rheumatoid/psoriatic arthritis.
- PROMS included preoperative and minimum one-year Hip Disability and Osteoarthritis Outcome Score (HOOS Jr.), University of California Los Angeles (UCLA) Activity Level, Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and satisfaction (5-point Likert scale).

### Data Analysis

- Minitab 17 (State College, PA) was used for data analysis. Chi square ( $\chi^2$ ) was used to test observed vs. expected frequencies and one-way ANOVA (F) was used to compare group means. **“Other” failure etiology was excluded from analysis due its heterogeneous composition.**

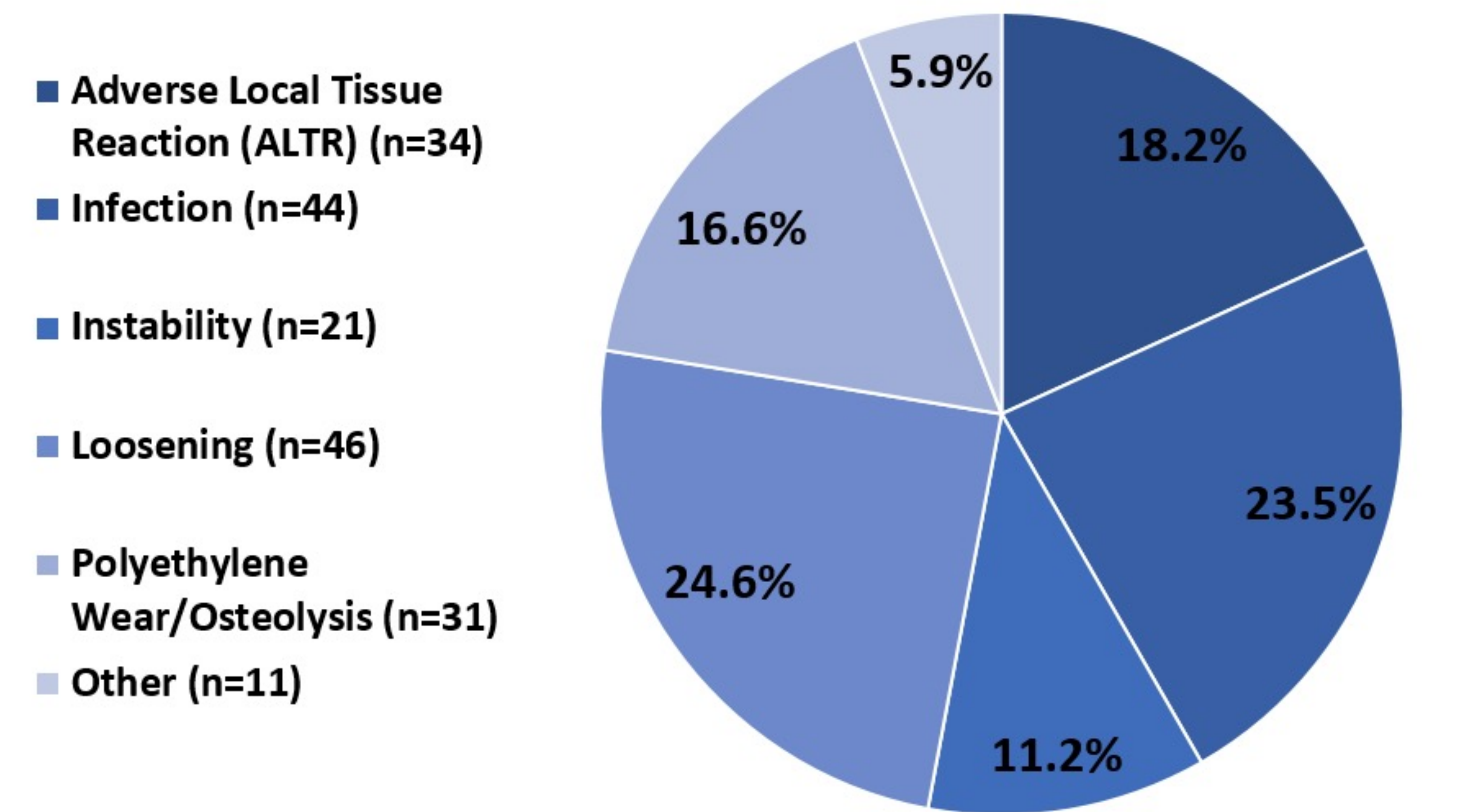
## Results

- There were no differences in the distribution of demographics and covariates based on failure etiology except patients with infection and loosening were more likely to be ASA 3 / 4 ( $p = 0.001$ ), patients with poly wear were older than patients in all other groups except loosening ( $p = 0.031$ ), and lumbar spine disease was not as prevalent in patients with infection and poly wear ( $p = 0.047$ ). However, none of these variables were related to PROMs ( $p \geq 0.098$ ).
- UCLA activity level was higher at preoperative baseline in patients revised for ALTR and poly wear ( $p = 0.001$ ) but was equivalent in all groups at latest follow-up ( $p = 0.530$ ) indicative of the greater improvement in activity levels obtained by patients with infection and instability compared to those revised for ALTR and poly wear ( $p = 0.027$ ).
- WOMAC pain, joint stiffness, function, and total scores largely did not differ preoperatively or at latest follow-up, but patients revised for loosening consistently showed greater improvement in these scores compared to other failure etiologies ( $p \leq 0.039$ ) (**Graph 2**).
- At latest follow-up 77% (ALTR patients) to 100% (instability patients) were satisfied or very satisfied with their revision surgery outcome ( $p = 0.260$ )

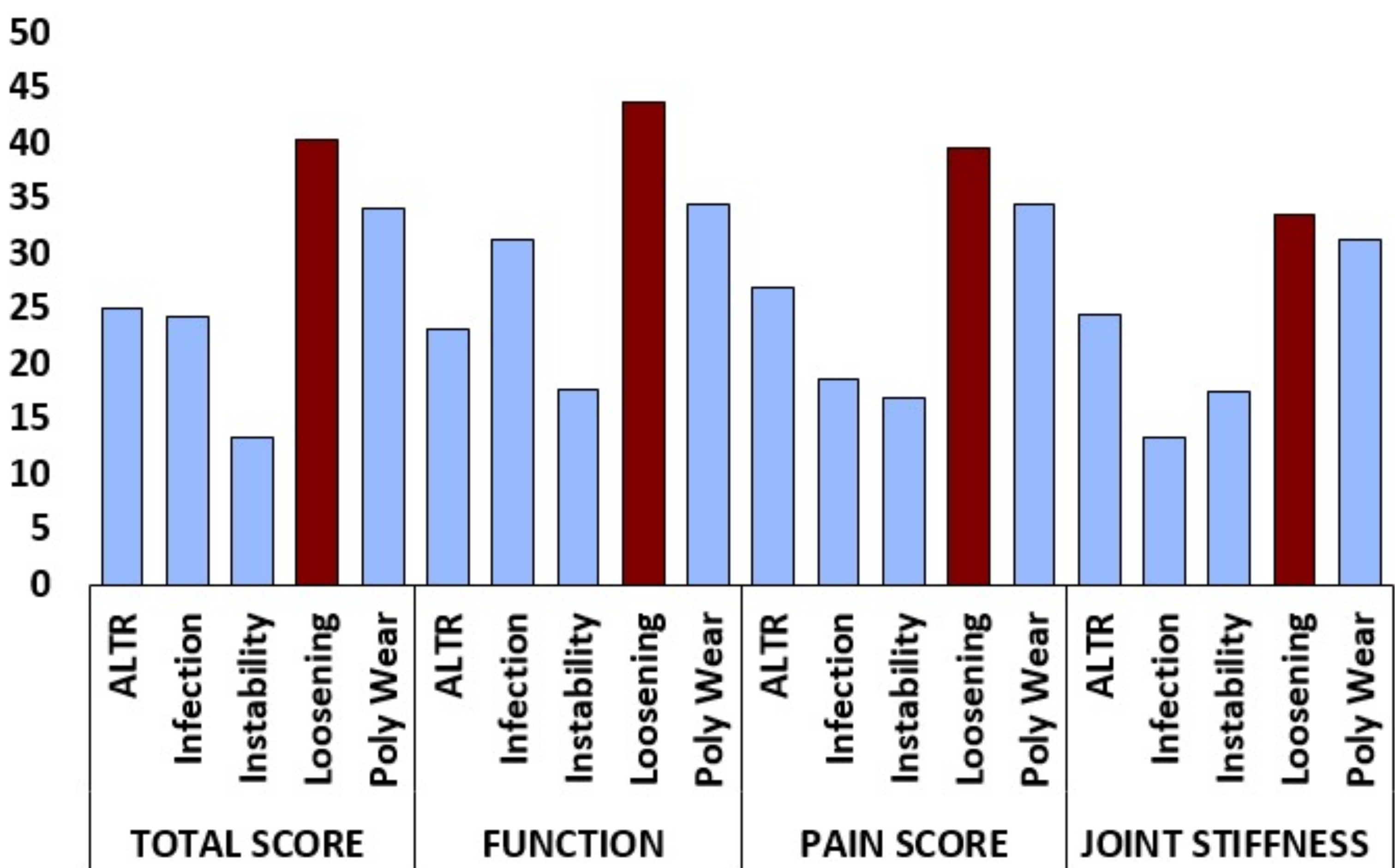


Adverse local tissue reaction from trunionosis of dual-modular neck stem resulting in necrosis of surrounding tissue

Graph 1: Failure Etiology



Graph 2: Improvement in WOMAC Scores by Failure Etiology



## Conclusion

We observed that patient-reported outcomes following revision THA vary based on failure etiology. In particular, improvement in activity level was mitigated in patients revised for ALTR and poly wear compared to other revision groups. In addition, patients revised for loosening showed significantly more improvement in all WOMAC domains. **These findings may help surgeons and patients alike set expectations for recovery following revision THA.**

Principal Disclosures: DJO Surgical, Osteoremedies, MuveHealth, PixarBio, EMOVI (RMM)  
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