

# Early Recovery Trajectories After Surgery for Prosthetic Joint Infection, Aseptic Revision, and Primary Arthroplasty



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## MAIN FINDING

Early patient-centered recovery after surgery is delayed in both PJI and aseptic revision compared with primary arthroplasty.

Completed dataset | n = 138 | 47 PJI / 25 aseptic revision / 66 primary arthroplasty | pre-op, discharge, 1 month, 3 months

## AIM

To compare early multidimensional recovery trajectories among patients undergoing surgery for prosthetic joint infection (PJI), aseptic revision, and primary arthroplasty, and to determine whether early patient-centered recovery differs primarily between revision and primary pathways or specifically between PJI and aseptic revision.

## METHODS

In this comparative cohort study, 138 patients were analyzed: primary arthroplasty (n = 66), aseptic revision (n = 25), and PJI (n = 47). Assessments were performed preoperatively, at discharge, and at 1 and 3 months postoperatively. Psychological status was evaluated using the Hospital Anxiety and Depression Scale (HADS). Health-related quality of life was assessed using the EuroQol five-dimension instrument (EQ-5D) and EQ visual analogue scale (EQ-VAS). Both absolute scores at each timepoint and change-from-baseline values were compared across groups.

## STUDY DESIGN

|                      |        |
|----------------------|--------|
| PJI                  | n = 47 |
| ASEPTIC REVISION     | n = 25 |
| PRIMARY ARTHROPLASTY | n = 66 |

PRE-OP → DISCHARGE → 1 MONTH → 3 MONTHS

HADS | EQ-5D domains | EQ-VAS

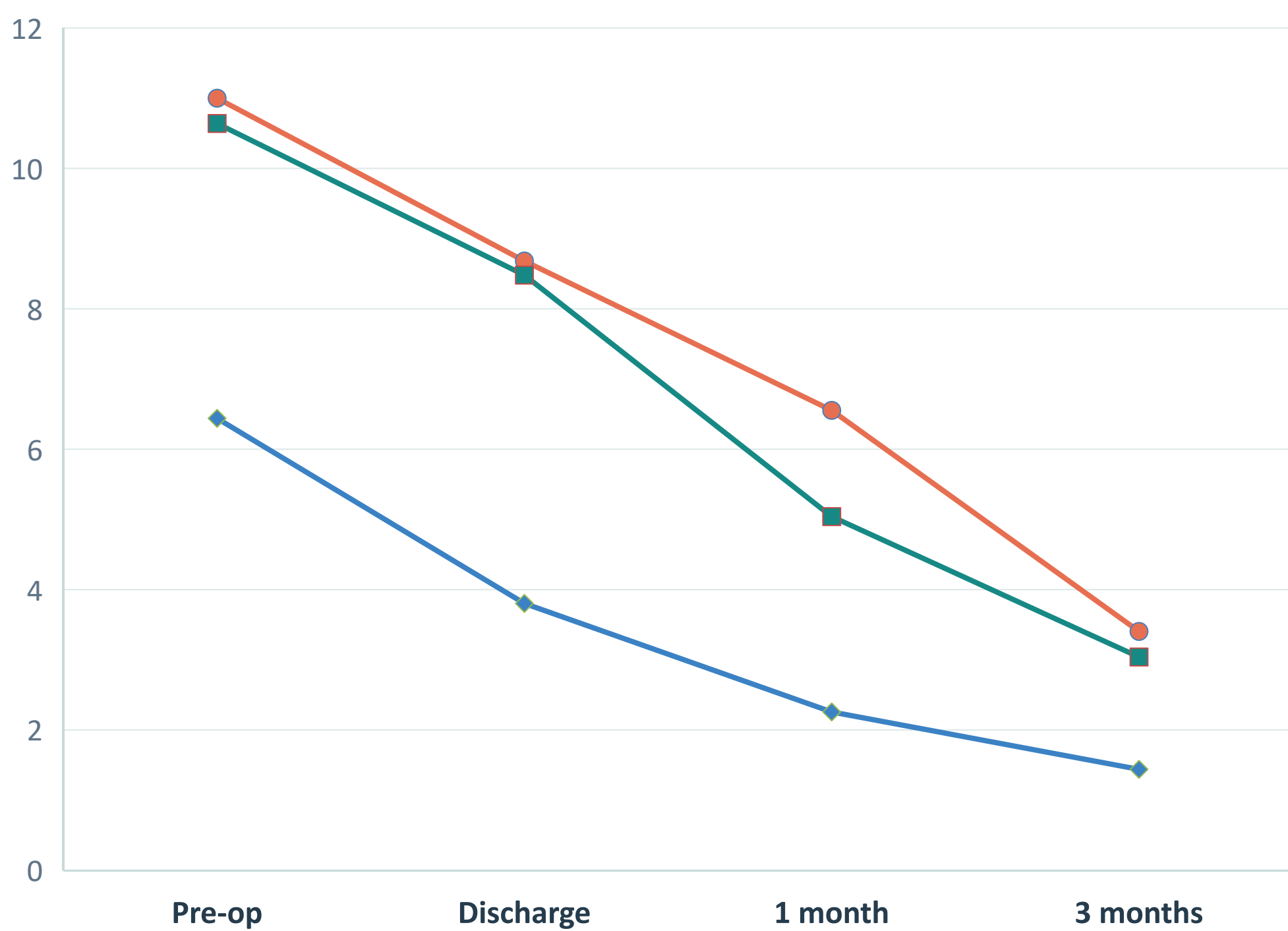
## COMPLETE DATA

All 138 records in the integrated analysis dataset had complete values for the plotted HADS, EQ-VAS, and pain/discomfort measures at all four assessments. Absolute scores and change-from-baseline values were compared across groups.

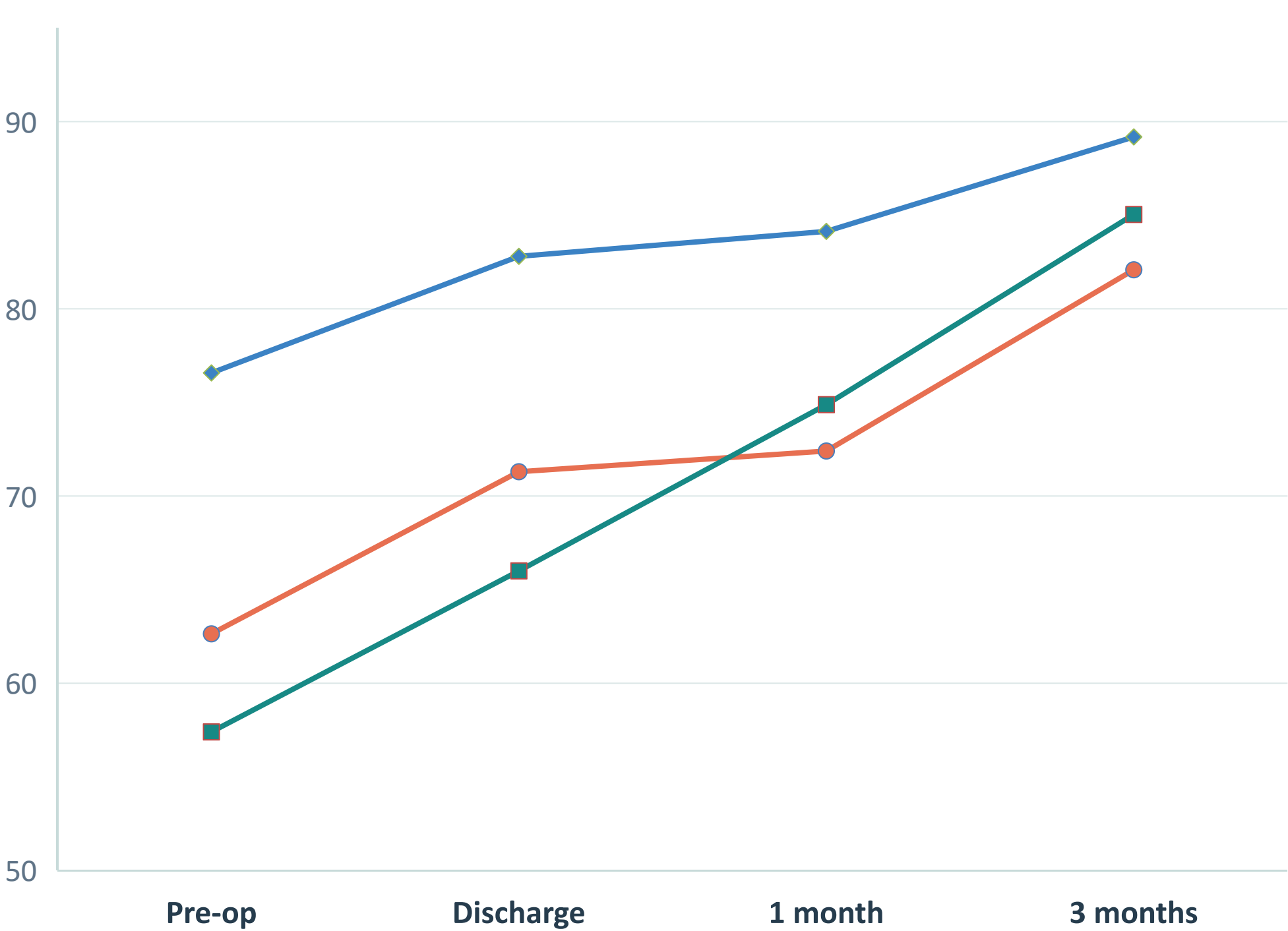
Kruskal-Wallis overall tests; Mann-Whitney U pairwise contrasts with Bonferroni correction.

## RECOVERY TRAJECTORIES

HADS | lower scores indicate less distress

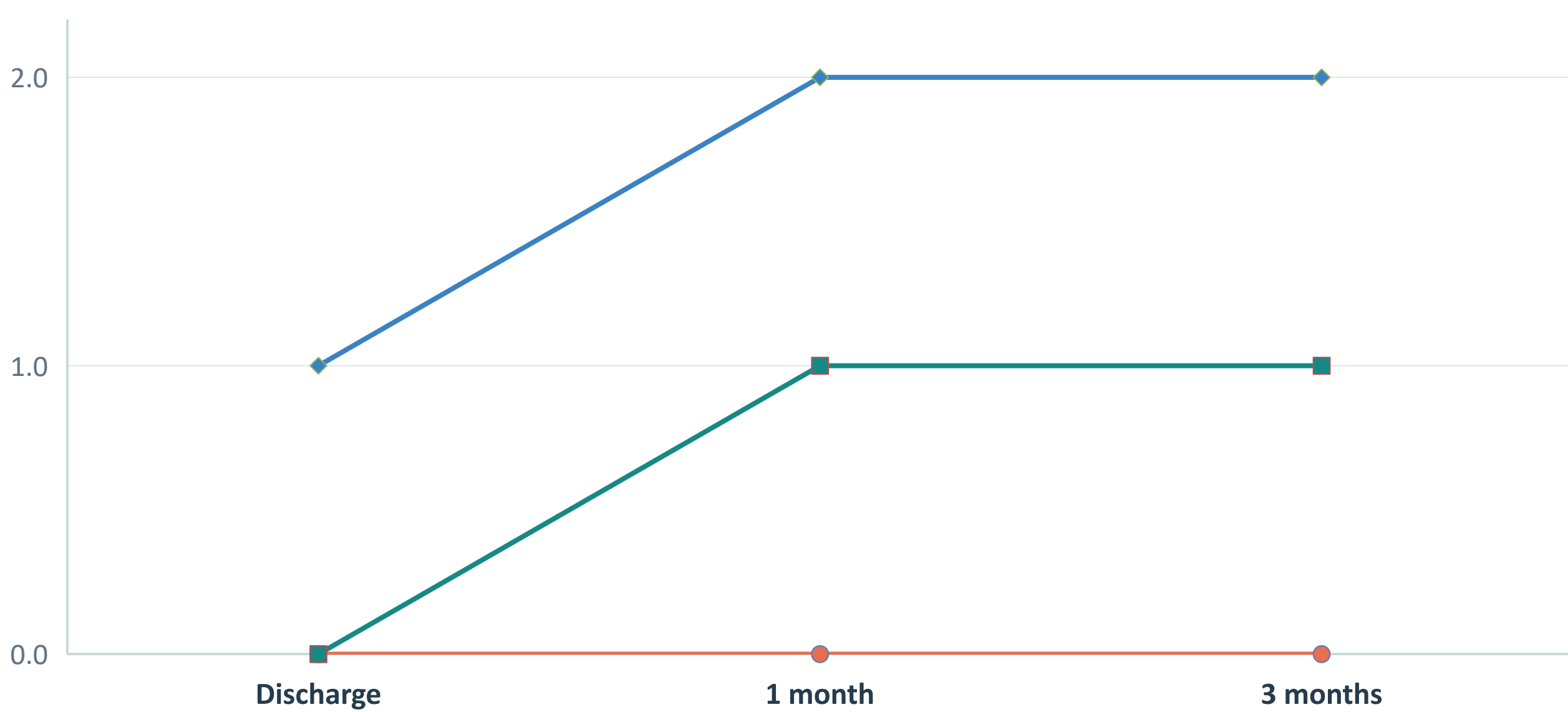


EQ-VAS | higher scores indicate better health



## PAIN/DISCOMFORT IMPROVEMENT

Median reduction from baseline; larger values indicate greater improvement



### 3-MONTH MEDIAN IMPROVEMENT

|                      |   |
|----------------------|---|
| PJI                  | 0 |
| Aseptic revision     | 1 |
| Primary arthroplasty | 2 |

Overall  $P < 0.001$  at every timepoint. At 3 months, aseptic revision also improved more than PJI ( $P = 0.048$ ).

## RESULTS

Baseline age, body mass index, and American Society of Anesthesiologists grade were comparable across groups, whereas prior surgical burden was greatest in the PJI cohort. Preoperatively, both PJI and aseptic revision patients had worse HADS and EQ-VAS scores than primary arthroplasty patients, while differences between PJI and aseptic revision were limited. This pattern persisted through discharge and 1 month. By 3 months, absolute HADS, anxiety, and depression scores were no longer significantly different across groups, although improvement in total HADS remained greater in both revision groups than in primary arthroplasty ( $P = 0.002$ ). Across EQ-5D domains, the dominant separation was observed between revision patients and primary arthroplasty rather than between PJI and aseptic revision. At discharge and 1 month, mobility, self-care, usual activities, and pain/discomfort were all significantly worse in both PJI and aseptic revision groups than in primary arthroplasty (all overall  $P < 0.001$ ). At 3 months, deficits persisted for mobility, self-care, usual activities, pain/discomfort, and anxiety/depression (all overall  $P \leq 0.001$ ). Recovery trajectories similarly showed substantial overlap between PJI and aseptic revision. However, pain/discomfort recovery remained slowest in PJI: improvement was consistently smallest in the PJI group and greatest in primary arthroplasty at discharge, 1 month, and 3 months (all  $P < 0.001$ ), and at 3 months aseptic revision also showed greater improvement than PJI ( $P = 0.048$ ).

## CONCLUSIONS

Early patient-centered recovery after surgery is delayed in both PJI and aseptic revision compared with primary arthroplasty, indicating that the major early recovery gap is associated with the revision pathway itself rather than infection status alone. PJI and aseptic revision showed broadly similar early recovery patterns, although PJI demonstrated the slowest pain-related recovery. Infection eradication alone therefore does not fully reflect the early postoperative burden after PJI surgery.

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