Organization of Care matters: a planned multidisciplinary pathway is associated with successful completion of two-stage revision and reduced hospital stay in hip periprosthetic joint infection

Authors: *Alessandro Bumbaca* 1, 2 *Zaira Chiara Prencipe* 1, 2 ; *Alessandra Bazzani* 1, 2 ; *Francesco Cavola* 1, 2 ; *Mauro* 1 *Luigi Pizzimenti* 1, 2 ; *Francesco Taccari* 3 ; *Raffaele Vitiello* 1, 2 ; *Domenico De*

1 - Department of Orthopaedics, Ageing and Rheumatological Sciences, Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy

2 – Department of Orthopaedics and Geriatric Sciences, Università Cattolica del Sacro Cuore, Roma, Italy

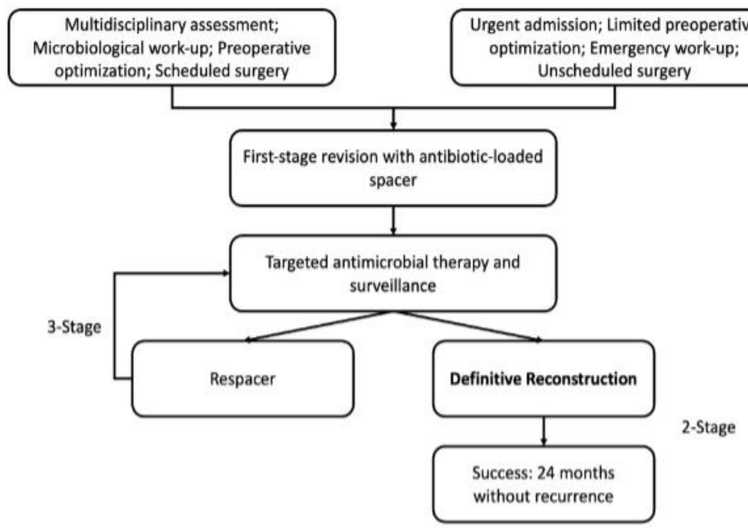
INTRODUCTION

Two-stage revision for chronic hip periprosthetic joint infection (PJI) is a

complex multidisciplinary treatment pathway requiring prolonged hospitalization and multiple sequential interventions. While previous studies have focused on surgical and microbiological determinants of outcome, the impact of healthcare organization on treatment completion remains poorly understood

AIM

. This study evaluated whether a planned multidisciplinary referral pathway influences completion of two-stage revision and hospital resource utilization.



METHOD

Retrospective cohort study conducted including 59 patients who underwent first-stage two-stage revision with implantation of an antibiotic-loaded spacer for chronic hip PJI between January 2019 and January 2025. Patients were grouped according to admission pathway: multidisciplinary referral (n = 20) Emergency Department admission (n = 39). The primary outcome was completion of the planned reconstruction, defined as successful definitive prosthetic reimplantation following first-stage revision. Secondary outcomes: length of hospital stay, microbiological characteristics, weight-bearing recovery, infection eradication.. Multivariable linear and logistic regression analyses were performed to identify independent predictors of hospital stay and completion of planned reconstruction.

RESULTS

Patients managed through the planned multidisciplinary pathway experienced shorter hospitalization than those admitted through the Emergency Department (25.5 ± 18.0 vs. 58.9 ± 42.4 days, p < 0.001). Elective pathway management independently associated with reduced length of stay on multivariable analysis (β = −36.4 days, p < 0.001). Patients in the planned pathway more frequently achieved completion of he planned reconstruction (p = 0.039). After adjustment for potential confounders, planned pathway management was associated with higher odds of reconstruction completion (OR4.47, 95% CI 0.85–23.57), although statistical significance was not reached (p = 0.078). nfection eradication rates were comparable between groups.

Post-Operative Outcomes	Total (n=40)	Elective admission (n=18)	ER admission (n=22)
Procedure time, hours (mean ± SD)	2.5 ± 0.8	2.3 ± 0.7	2.6 ± 0.9
Surgical time, hours (mean ± SD)	1.9 ± 0.6	1.8 ± 0.5	2.0 ± 0.7
Hospitalization, days (mean ± SD)	21.4 ± 10.5	16.8 ± 6.4	25.2 ± 11.6
Time to surgery, days (mean ± SD)	3.8 ± 3.9	1.5 ± 1.2	5.7 ± 4.5
Full weight-bearing post-op, n (%)	12 (30.0%)	7 (38.9%)	5 (22.7%)
Full weight-bearing at 15 days, n (%)	26 (65.0%)	14 (77.8%)	12 (54.5%)
Complications			
Spacer dislocation, n (%)	3 (7.5%)	1 (5.6%)	2 (9.1%)
Re-operation, n (%)	8 (20.0%)	3 (16.7%)	5 (22.7%)
Re-spacer, n (%)	4 (10.0%)	1 (5.6%)	3 (13.6%)
Infection eradication, n (%)	33 (82.5%)	16 (88.9%)	17 (77.3%)
Re-implantation, n (%)	31 (77.5%)	15 (83.3%)	16 (72.7%)
Girdlestone, n (%)	4 (10.0%)	1 (5.6%)	3 (13.6%)
Amputation, n (%)	1 (2.5%)	0 (0.0%)	1 (4.5%)

Data are expressed as absolute number (%) or as mean ± standard deviation (SD).

CONCLUSIONS

Patients managed through a planned multidisciplinary pathway experienced shorter hospitalization and more likely to achieve completion of the planned reconstruction than those admitted through the Emergency Department. These findings suggest that organization of care may represent a modifiable determinant of outcome in patients undergoing two-stage revision for hip PJI and support further investigation of structured referral pathways in larger multicenter studies.

CONTACT INFORMATION

zairachiara,prencipe01@icatt.it

giulio.maccauro@policlinicogemelli.it,

domenico.demauro@guest.policlinicogemelli.it,

raffaele.vitiello@policlinicogemelli.it