Table 3. Treatment Outcome and Risk Factors for Failure

Study	Successful Patients, n (%)	Success Definition	Failed Patients, n (%)	Failure Definition	Surgical option for failed patients	Failure risk factors
Soundarrajan et al. 2022	14/22 (64%)	Absence of laboratory signs (ESR, CRP, WBC, Synovial fluid analysis)	8/22 (36%)	(1) Need any further surgery (2) Need antibiotic suppression therapy (3) Death related to PJI	Two-stage revision Re-debridement Arthrodesis	Univariate analysis: Symptom duration
Chen et al. 2021	81/106 (76%)	NA	25/106 (24%)	(1) Need any further surgery (2) Infection recurrence caused by the same organism strain (3) Death related to PJI	Single-stage revision (5) Two-stage revision (7) Arthrodesis (12) Amputation (1)	Multivariate analysis: Diabetes mellitus Polymicrobial infections
Huotari et al. 2023	24/26 (92%)	(1) Retaining the original prosthesis (2) No death due to infection (3) No active signs of infection	2/26 (8%)	NA	Two-stage revision	NA
Rahardja et al. 2023	47/129 (36%)	(1) Retaining the original prosthesis (2) No death due to infection (3) No active signs of infection (4) no ongoing use of antibiotics	82/129 (64%)	NA	NA	Univariate analysis: Time to PJI Diagnosis
Karlsen et al. 2025	4/6 (67%)	(1) Absence of laboratory (ESR, CRP, WBC) and clinical signs (2) No signs of implant loosening	2/6 (33%)	(1) Need any further surgery (2) Need antibiotic suppression therapy	NA	Univariate analysis: PJI following revision (vs. primary)
Liukkonen et al. 2024	12/25 (48%)	NA	13/25 (52%)	(1) Need any further surgery (due to any reason)	NA	Univariate analysis: DAIR (vs. revision)
Tarity et al. 2021	102/135 (76%)	NA	33/135 (34%)	(1) Need revision surgery	NA	Multivariate analysis: Staphylococcus infection
Geurts et al. 2013	5/6 (83%)	(1) Absence of laboratory (ESR, CRP, WBC), clinical, and radiological signs	1/6 (17%)	NA	Revision	NA
Westberg et al. 2023	10/25 (40%)	(1) Absence of laboratory and clinical signs (2) No signs of implant loosening	15/25 (60%)	(1) Need any further surgery (2) Infection recurrence (3) Death related to PJI	Two-stage revision (6) Suppressive antibiotic (3) Amputation (2) DAIR and resection arthroplasty (2) New DAIR (1) Girdlestone procedure (1)	NA
Segawa et al. 1999	5/7 (71%)	(1) Absence of clinical signs with a functional knee with a total joint prosthesis in place	2/7 (29%)	NA	Suppressive antibiotic (1) Arthrodesis (1)	NA
Bryan et al. 2017	19/24 (79%)	(1) Absence of laboratory signs (ESR, CRP)	5/24 (21%)	(1) Need revision surgery (2) Infection recurrence (3) Death related to PJI	NA	NA
Chiu et al. 2007	5/10 (50%)	(1) Absence of clinical signs (2) Preservation of prosthetic function (3) Retaining the original prosthesis	5/10 (50%)	(1) Need revision surgery (2) Infection recurrence	Two-stage revision (3) Fusion (2)	NA
Cook et al. 2007	3/10 (30%)	NA	7/10	NA	Resection arthroplasty and	NA

			(70%)		reimplantation (4) Resection arthroplasty and reimplantation plus I & D with liner exchange (3) Amputation (1)	
Crockarell et al. 1998	2/4 (50%)	NA	2/4 (50%)	(1) Need revision surgery	NA	NA
Tsukayama et al. 1996	3/6 (50%)	(1) Absence of clinical signs	3/6 (50%)	NA	Revision (2) Resection (1)	NA
Estes et al. 2010	16/18 (89%)	(1) Absence of laboratory (ESR, CRP) and clinical signs	2/18 (11%)	(1) Need revision surgery (2) Infection recurrence (3) Need long-term antibiotic therapy	Long-term oral antibiotics (2)	NA
Fink et al. 2016	16/28 (57%)	(1) Absence of laboratory (CRP) and clinical signs	12/28 (43%)	(1) Infection recurrence	NA	Univariate analysis: Time to PJI Diagnosis Comorbidities score
Flierl et al. 2016	9/18 (50%)	NA	9/18 (50%)	NA	Two-stage revision Suppressive antibiotic	NA
Hernandez et al. 2019	3/4 (75%)	(1) No need for reoperation	1/4 (25%)	(1) Infection recurrence	Two-stage revision (1)	NA
Uriarte et al. 2019	2/10 (20%)	(1) Absence of laboratory (ESR, CRP), clinical, and radiological signs (2) Prosthesis retention	8/10 (80%)	(1) Need revision surgery (2) Need long-term antibiotic therapy (3) Death related to PJI	One-stage revision Two-stage revision Suppressive antibiotic	Univariate analysis: Male sex General orthopedic surgeon (vs. hip surgeon) Symptom duration (11 days was a significant cut-off point for success)
Engen et al. 2024	17/34 (50%)	(1) Absence of laboratory signs (WBC, ESR, CRP)	17/34 (50%)	(1) Need any further surgery	NA	NA
Kim et al. 2011	2/7 (29%)	NA	5/7 (71%)	NA	Revision (4) Two times revision arthroplasty and arthrodesis (1)	NA
Koh et al. 2015	11/20 (55%)	(1) Prosthesis retention (2) no ongoing use of antibiotics	9/20 (45%)	(1) Need antibiotic suppression therapy (2) Need revision surgery, arthrodesis, resection arthroplasty, or amputation	Two-stage revision (6) Suppressive antibiotic (1) Fusion or amputation (2)	Univariate analysis: Acute hematogenous (vs. early post-surgical) Symptom duration
Konigsberg et al. 2014	33/42 (79%)	NA	9/42 (21%)	(1) Need any further surgery (2) evidence of persistent infection (e.g. a sinus tract), or prosthetic loosening	Two-stage revision (8) Resection (1)	NA
Koyonos et al. 2011	22/50 (44%)	(1) Absence of laboratory signs (ESR, CRP)	28/50 (56%)	(1) Need any further surgery (2) Need long-term antibiotic therapy	Further surgery (22) Long-term oral antibiotics (2)	Multivariate analysis: Staphylococcal infection
Son et al. 2017	12/15 (80%)	(1) Absence of laboratory and radiological signs	3/15 (20%)	(1) Need any further surgery (2) Need long-term antibiotic therapy (3) Death related to PJI	Two-stage revision (3)	NA
Kuo et al. 2019	26/49 (53%)	(1) Absence of laboratory signs (ESR, CRP)	23/49 (47%)	(1) Need any further surgery (2) Infection recurrence (3) Death related to PJI	NA	Multivariate analysis: Positive blood culture
Lora-Tamayo et al. 2013	20/52 (38%)	NA	32/52 (62%)	(1) Need revision surgery (2) Death related to PJI (3) Need for extra debridements (4) Need long-	NA	Multivariate analysis:

				term antibiotic therapy		Staphylococcal infection Symptom duration
Salmons et al. 2023	20/25 (80%)	NA	5/25 (20%)	(1) Need revision surgery	NA	NA
Renz et al. 2021	34/50 (68%)	NA	16/50 (32%)	(1) Death related to PJI (2) Infection recurrence	NA	Univariate analysis: DAIR (vs. implant removal)
Lora-Tamayo et al. 2017	139/234 (59%)	NA	95/234 (41%)	(1) Need revision surgery (2) Death related to PJI (3) Need for extra debridements (4) Need long-term antibiotic therapy	NA	Multivariate analysis: Rheumatoid arthritis Bacteremia --- Exchange of removable components was associated with a favorable outcome
Shao et al. 2022	18/24 (75%)	NA	6/24 (25%)	(1) Fistula, drainage, or pain, and infection recurrence caused by the same organism (2) Need any further surgery (3) Death related to PJI	NA	Multivariate analysis: Symptom duration
Chaiyakit et al. 2021	13/15 (87%)	(1) Absence of laboratory (ESR, CRP), clinical, and radiological signs (2) Synovial fluid analysis	2/15 (13%)	(1) Nonhealed wound with or without sinus tract, wound drainage, and persistent pain (2) Need any further surgery (3) Death related to PJI (4) Need long-term antibiotic therapy	Two-stage revision	NA
Iza et al. 2019	7/12 (58%)	(1) Absence of laboratory (ESR, CRP) and clinical signs (2) Prosthesis retention (3) no ongoing use of antibiotics	5/12 (42%)	(1) Need any further surgery (2) Infection recurrence (3) Death related to PJI	Two-stage revision Suppressive antibiotic	Multivariate analysis: Staphylococcus aureus
Pérez-Prieto et al. 2023	10/10 (100%)	NA	0/10 (0%)	(1) Need any further surgery (2) Infection recurrence (3) Death related to PJI (4) Suppressive antibiotic	NA	NA
Chang et al. 2022	48/67 (72%)	NA	19/67 (28%)	(1) Repeated DAIR or two-stage revision	Repeated DAIR Two-stage revision	NA
Toh et al. 2021	51/73 (70%)	Chronic antibiotic suppression post-DAIR were considered a success	22/73 (30%)	(1) Need revision surgery, arthrodesis, or amputation	Revision Arthrodesis Amputation	Multivariate analysis: Staphylococcal infection Higher preoperative ESR (above 107.5)
Sendi et al. 2017	12/14 (86%)	NA	2/14 (14%)	NA	Suppressive antibiotic (1) Single-stage revision	NA
Shohat et al. 2019	23/52 (44%)	NA	29/52 (56%)	(1) Need any further surgery (2) Infection recurrence caused by the same organism strain (3) Infection recurrence	NA	Multivariate analysis: Higher preoperative ESR Comorbidities score
Swenson et al. 2017	16/19 (84%)	NA	3/19 (16%)	NA	NA	NA
Vilchez et al. 2011	5/12 (42%)	(1) Absence of clinical signs (2) Prosthesis retention	7/12 (58%)	(1) Infection recurrence (2) aseptic loosening	NA	Multivariate analysis: Hematogenous infections (vs. early post-surgical)
Waldman et al. 2000	4/12 (33%)	NA	8/12 (66%)	NA	Fusion Two-stage revision	NA
Wouthuyzen-	187/340	NA	153/340	(1) Need revision surgery (2) Death related to PJI	Revision (55)	Multivariate analysis:

Bakker et al. 2019	(55%)		(45%)	(3) Need for suppressive antibiotic	Suppressive antibiotic (24)	Staphylococcus aureus DAIR (vs. implant removal) --- Exchange of removable components was associated with a favorable outcome
Zhu et al. 2020	41/102 (40%) 53/123 (43%)	NA	61/102 (60%) 70/123 (57%)	(1) Need revision surgery (2) Death related to PJI (3) Need for suppressive antibiotic	NA	Multivariate analysis: Higher preoperative CRP (optimum threshold value of 65 mg/L) Staphylococcus aureus Gram-negative infections --- Exchange of removable components and the lack of intraoperative purulence were associated with a favorable outcome
Nurmohamed et al. 2021	11/16 (69%)	(1) Absence of laboratory and clinical signs (2) no ongoing use of antibiotics	5/16 (31%)	(1) Need any further surgery (2) Need for suppressive antibiotic (3) Infection recurrence	NA	NA

ESR, Erythrocyte Sedimentation Rate; CRP, C-Reactive Protein; WBC, White Blood Cell count; PJI, Periprosthetic Joint Infection; DAIR, Debridement, Antibiotics, and Implant Retention; NA, Not Available; n, Number