Appendix A: Study Protocol

Inclusion criteria:

a) clinical studies with a study design that included retrospective patient chart reviews, single–arm non-randomized clinical trials, clinical registries, prospective multi-center data surveys, and prospective non-randomized studies.

b) clinical studies involving patients treated for prosthetic aortic graft infection with or without PDF.

c) clinical studies involving the use of extra-anatomic by-pass, Rifampicin-bonded or Silver-coated prostheses, cryopreserved allografts, or autogenous veins.

d) articles that are full-length and in English

Exclusion criteria:

a) case studies.

b) clinical studies involving patients treated for infected aortic aneurysms* or involving patients with thoracic aortic graft infection.

c) studies that exclusively involve patients within a narrow age range (<15 years difference), whether exclusively young or old patients**

d) clinical studies published in a language other than English

e) clinical studies that document the exclusive or disproportionate involvement of highly virulent micro-organisms in the aortic graft infection**

f) clinical studies with poor documentation of patient characteristics and the relevant outcome data g) in-vitro studies

h) if two studies included the same population, only one study was included based on relevance and study size.

*studies with exclusively infected aortic aneurysms had different bacteriology and results from those with aortic graft infection.

**studies with exclusively young or exclusively old patients (small age range) or exclusive or disproportionate presence of highly virulent micro-organisms (e.g., Staphylococcus aureus, Enterobacteriaceae, beta-hemolytic Streptococcus and pseudomonas aeruginosa) are likely to bias the pooled event rates for that specific treatment modality.

PDF: protheto duodenal fistula.

Appendix B: Inclusion and exclusion criteria used to determine selection of clinical studies from MEDLINE and EMBASE database.

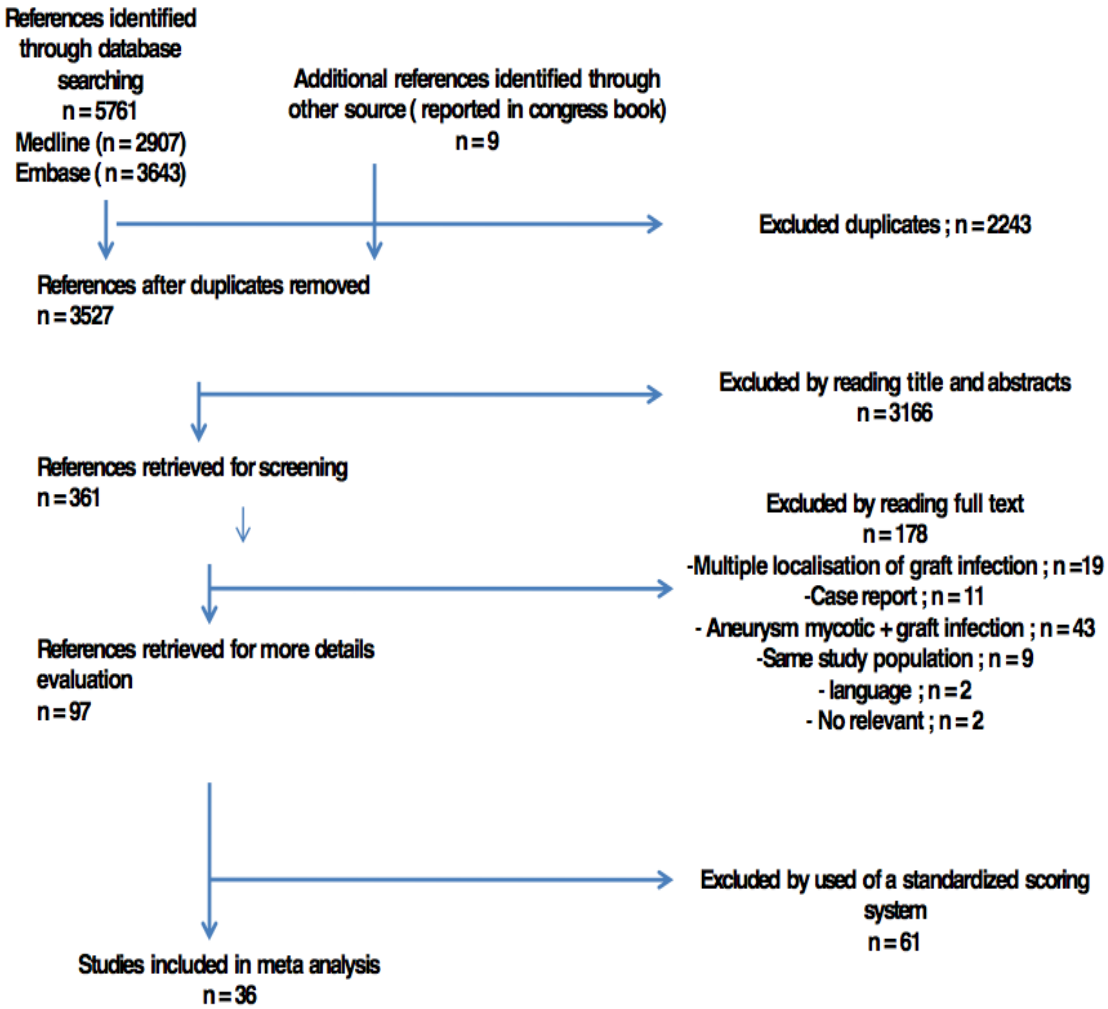
Batt, Feugier, Camou, Coffy, Senneville, Caillon, Calvet, Chidiac, Laurent, Revest, Daures.
Outcomes of in situ reconstruction for aortic graft infection.

Source of the information	1.	Was the paper published in a peer-reviewed journal or, if not, was the study reviewed by some other group?	Score/4
	2.	Is the purpose of the study presented in the publication applicable to the metaanalysis to be performed?	
	3.	If unpublished information from the investigator is required, are there problems recalling data or missing information?	
	4.	Are the data provided complete enough for inclusion in this meta-analysis?	
Study design	5.	Is the design described?	Score/5
	6.	Is the design appropriate to the study questions?	
	7.	Are there clear inclusion and exclusion criteria?	
	8.	Are the procedures for randomization (if applicable) and blinding described?	
	9.	Are experimental methods clearly defined?	
Study out comes	10.	Are the outcomes clearly defined?	Score/3
	11.	Are the methods of measurement clearly defined?	
	12.	Do the outcome measures answer the study questions?	
Study subjects	13.	Did subjects meet the inclusion and exclusion criteria?	Score/3
	14.	Are the methods of diagnosis defined and reliable?	
	15.	Are demographics included for all subject groups?	
Checks	16.	If there are parallel checks, are they comparable to the subjects?	Score/2
	17.	If historical checks are used, is the data of good quality and from a known source?	
Study Implementation	18.	Were inclusion and exclusion criteria strictly adhered to?	Score/4
	19.	Are non-compliant or drop-out subjects accounted for?	
	20.	In a multi-group study, were the groups comparable at the baseline for prognostic factors?	
	.	Have treatment methods, population demographics and/or reporting methods changed significantly since the study was performed?	
Treatment protocol	22.	Were treatment regimens followed?	Score/3
	23.	Were there any concomitant treatments?	
	24.	Was there a high rate of drop-outs or non-compliant subjects?	
Methods	25.	Are the laboratory/surgical methods used in the study known to be accurate and still considered valid today?	Score/2
	26.	Are the surgical procedures that were used in the study still applicable?	

Statistics	27.	Are the analytical methods clearly described and appropriate for the data and study design?	Score/2
	28.	Are the conclusions of the study consistent with the descriptive and inferential statistical results?	
TOTAL			**Score/28**

Appendix C: Standardized scoring system used for the selection of publications

Batt, Feugier, Camou, Coffy, Senneville, Caillon, Calvet, Chidiac, Laurent, Revest, Daures.
Outcomes of in situ reconstruction for aortic graft infection.



Appendix D: The flow-diagram

	Year															
Sharp[18]	1994	USA	EAR	27	33	89	66	62,5	NA	3,7	3,7	3,7	22	7,4	3,7	44
Kuestner[19]	1995	USA	EAR	33	100	64	69,5	73,2	52,8	18,2	25,5	9,1	18,2	15,2	3,2	13
Hannon[20]	1996	UK	EAR	25	64	NA	68	60	24	20	NA	16	NA	2,6	36	32
Bergqvist[21]	1996	Sweden	EAR	14	100	80	56,5	90	35	28	30	3,7	14,2	29,6	NA	NA
Mingoli[22]	1997	Italy	EAR	18	28	NA	NA	NA	30	39	NA	9	NA	25	NA	NA
Menawatt[23]	1997	USA	EAR	40	100	69.2	66	79	39	23	60	15	17,5	35	12,5	NA
Speziale[24]	1997	Italy	ISR standard	18	50	94	64,7	46	37	11	NA	0	12,5	0	22	44
Belair[25]	1998	Canada	EAR	8	33	87	68,7	43	48	66	87	11	55	50	27	44
Eugene[26]	1998	France	ISR CryoAll	22	0	100	63,4	NA	9	13,6	NA	NA	9	NA	45	18
Young[13]	1999	USA	ISR standard	16	60	NA	68	NA	36	8	NA	0	6	25	12	33
Hayes[27]	1999	UK	ISR Rifam.	11	36	73	66	32	12	18,2	36,4	0	18,2	0	18	27
Seeger[28]	2000	USA	EAR	36	0	71	61,8	56,5	NA	11,1	NA	11	34,4	2,8	NA	27
Verhels[10]	2000	Belgium	ISR CryoAll	90	41	93	64	34	36	17,8	NA	1,4	8,1	4	NA	17
Bandyk[29]	2001	USA	ISR Rifamp	19	0	81	68	48	17	9,1	NA	0	0	8	19	59

Batt, Feugier, Camou, Coffy, Senneville, Caillon, Calvet, Chidiac, Laurent, Revest, Daures.
Outcomes of in situ reconstruction for aortic graft infection. **2**

1rst Author	publ.of	of origin	Country	Treatment	N (PD	%F)	(%H)	(Mean year	Age)	Meaninterval	(Mo)	Follow-up	(Mo)	mortalityEarly	(%)
	mortality Late	(%)	Amput	(%) . occlusion	Graft	(%)	ReInfect	(%)	organisms	Virulent *	Non organi	Virusm			
Chiesa[30]	2002		Italy	ISR Cryo	68	32	89	65	36	30	16	25	4,4	16	13,6	50	NA
				All													

Cardozo[31]	2002	Brazil	ISR Veins	12	0	92	61,2	23	22	15,3	15,3	16,7	NA	0	50	50
Dorigo[32]	2003	Italy	EAR	30	100	93	70	37	10	26,7	40	3,3	10	6,7	NA	NA
Lavigne[33]	2003	Belgium	EAR	26	18	90	65	NA	NA	16	NA	21	NA	12.5	45	23
			ISR CryoAll													
Lavigne[33]	2003	Belgium		22	18	90	65	NA	18	14	16	4,5	0	27	45	23
Daemens[34]	2003	Belgium	ISR Veins	49	0	92	65	59	41	8	NA	2	4	0	39	55
Batt[35]	2003	France	ISR Silver	24	48	93	69	78	17	16,6	16,6	0	0	3,7	24	24
			ISR CryoAll													
Gabriel[36]	2004	Poland		39	9	85	61	27	NA	15	NA	8,1	7,7	10,3	34	13
			ISR CryoAll													
Kieffer[12]	2004	France		179	30	89	65	73,2	46	20,1	28	0	29,7	7	NA	NA
Hart[37]	2005	USA	EAR	15	40	90	70	67	15	40	45	6	NA	13	NA	NA
Armstrong[5]	2005	USA	EAR	25	100	66	70	47	NA	21	NA	6,9	NA	13,8	4	25
Baril[38]	2006	USA	EAR	7	100	71	66,3	38,4	23	28,6	NA	NA	NA	0	22	11
Oderich[6]	2006	USA	EAR	43	56	74	66,3	NA	41	11,6	NA	9	37,2	11,6	14	33
			ISR Rifamp	52	56	77	69,4	63,6	41	8	16	0	8,8	11,5	14	33
Mirzaie[39]	2007	Germany	ISR Silver	11	0	73	70	42	30	0	0	0	0	0	35	27
Batt[40]	2008	France	ISR Silver	24	28	92	67	73	32,5	20,8	25	4	8,3	12,5	25	58
Aavik[41]	2008	Estonia	ISR Veins	11	0	100	63,5	43	59	0	0	18,2	9,1	0	9	46
Ali[11]	2009	USA	ISR Veins	165	14	64	63	NA	32	10	33	7,4	0	5	27	33
Pupka[14]	2011	Poland	ISR Silver	27	33	100	58,4	NA	22,8	11	NA	4	0	4	23	37
Batt[4]	2012	France	ISR Veins	6	NA	96	69,7	91	41	NA	NA	0	0	16	18	9

			ISR Rifamp	8	38	96	69,7	91	41	31,8	40	NA	0	0	18	9
			ISR Cryo-All	21	45,4	100	69,7	91	41	45,5	72,7	0	18,2	27,3	18	9
Lyons[7]	2013	UK	EAR	10	15	100	71	NA	29	30	50	10	10	NA	10	5
Harlander-Locke[42]	2014	USA	ISR CryoAll	220	15	62	65	NA	30	9	30	1,8	4	4	21	38
Garot[43]	2014	France	ISR CryoAll	22	18	100	67	NA	12	48	48	NA	23	0	22	31
Charlton - Ouw[44]	2014	USA	EAR	5	100	68	69	42	72	20	40	0	NA	20	36	36
			ISR Veins	11	43	68	69	42	72	0	9	27	NA	14	16	13
			ISR standard	11	NA	68	69	42	72	9	18	18	NA	27	36	36

Appendix E: Study details

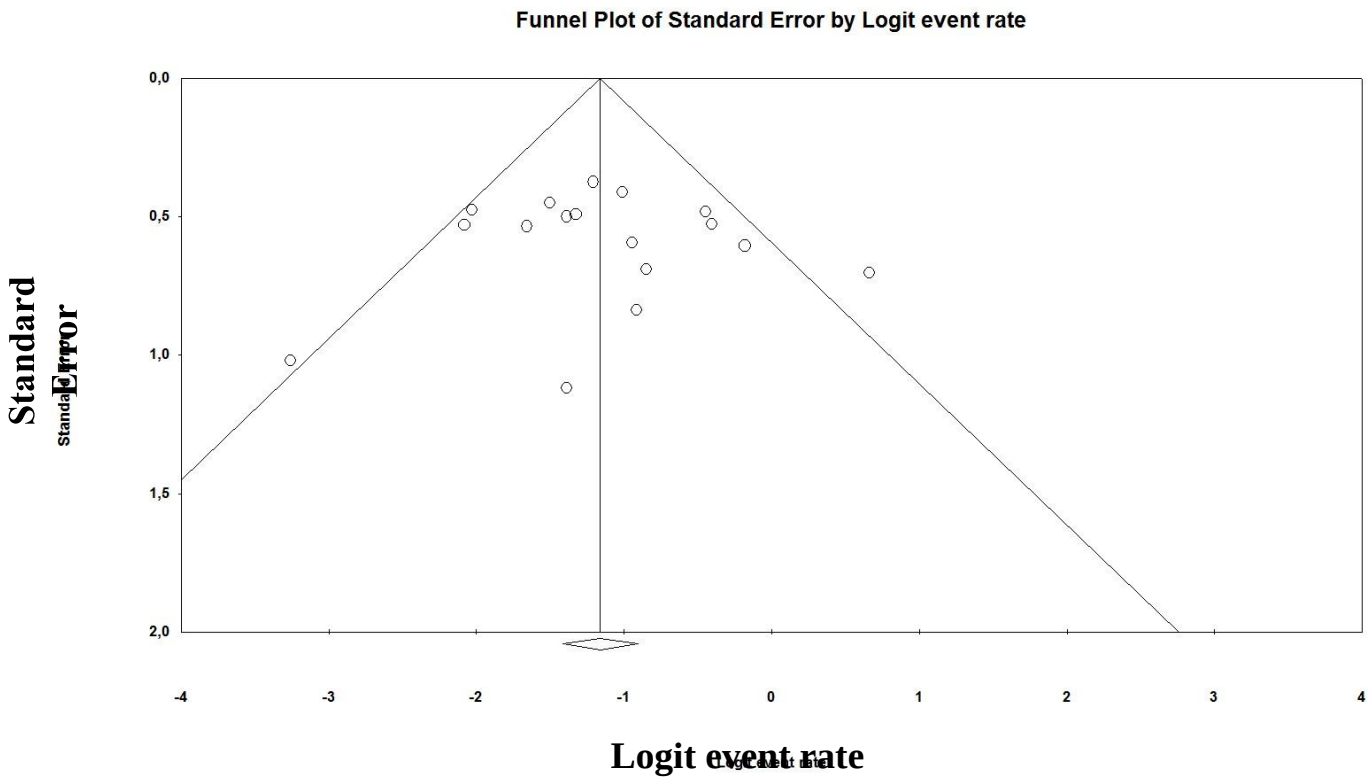
N=number of patients with aortic graft infection; PDF= prosthetic-duodenal fistula; EAR: extra-anatomic reconstruction; ISR standard: in situ reconstruction with standard polyester/PTFE; ISR cryo-all: in situ reconstruction with cryopreserved allografts; ISR veins: in situ reconstruction with autogenous veins; ISR Rifamp: in situ reconstruction with Rifampicin-bonded prostheses; ISR Silver: in situ reconstruction with Silver-coated prostheses. Amput: amputation; RI: reinfection; Mean internal: between the initial intervention and EAR or ISR; NA: not available. *virulent organisms, i.e., aureus Staphylococcus, Enterobacteriaceae, beta-hemolytic Streptococcus, Pseudomonas.

**non- virulent organisms, i.e., commensal organisms or negative bacteriological cultures.

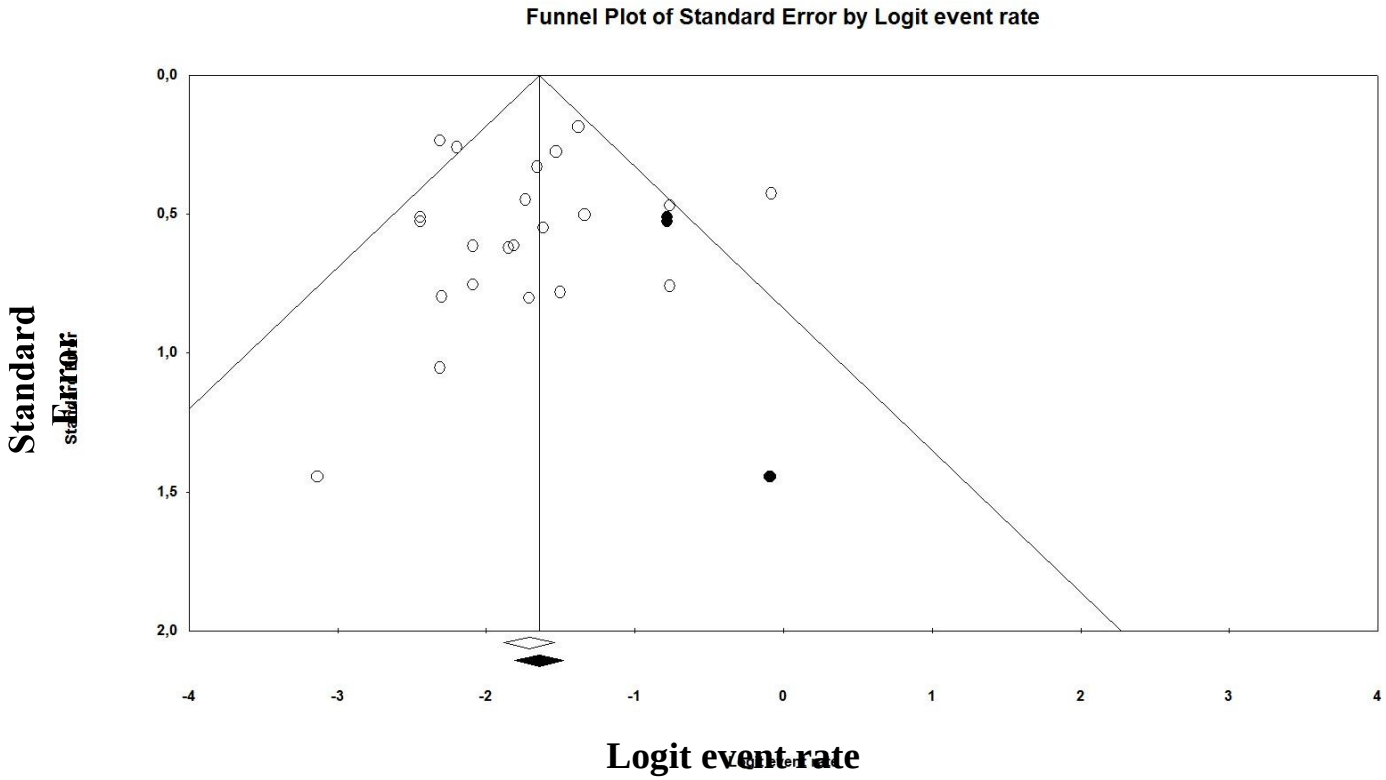
		VARIABLES			
		Age	PDF	Virulent Organisms	Non Virulent Organisms
EVENTS	Operative Mortality	Silver	Standard Silver Rifamp. Cryo-all. Veins	Standard Rifamp. Cryo-all. Veins	Cryo-all.
	Reinfection	Standard Silver Rifamp. Cryo-all.	Silver Rifamp. Cryo-all.	Veins	Veins

Appendix F: Selection of conduit with matching events and variables.

Age: Age of the patients; PDF: Prosthetic-duodenal fistula; Standard: Standard polyester/PTFE; Cryo-all: Cryopreserved allograft; Rifamp: Rifampicin-bonded polyester; Veins: autogenous vein; Silver: Silver-coated polyester.

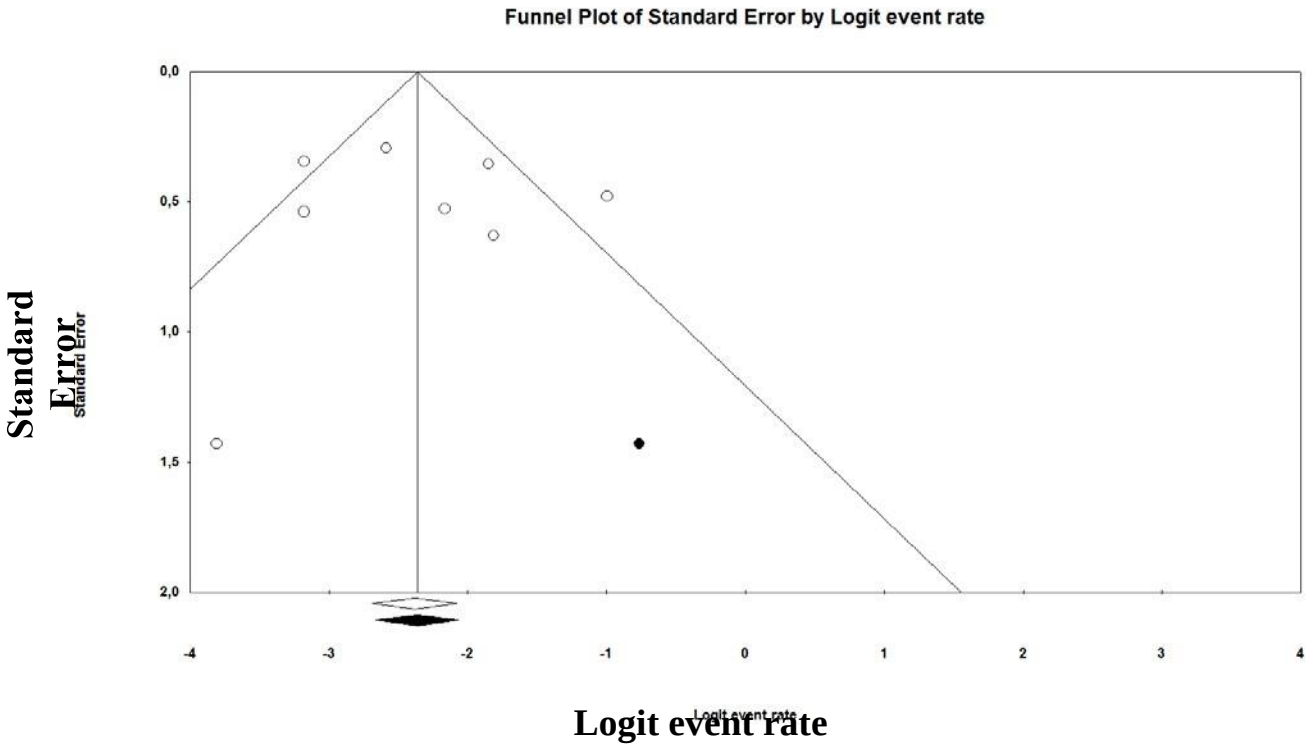


Appendix G: Funnel plot of the recorded mortality rates for extra-anatomic treatment. These results are based on the 17 studies included. Egger's test does not show any publication bias (p=0.89), which is coherent with the shape of the funnel plot as it shows no asymmetry.



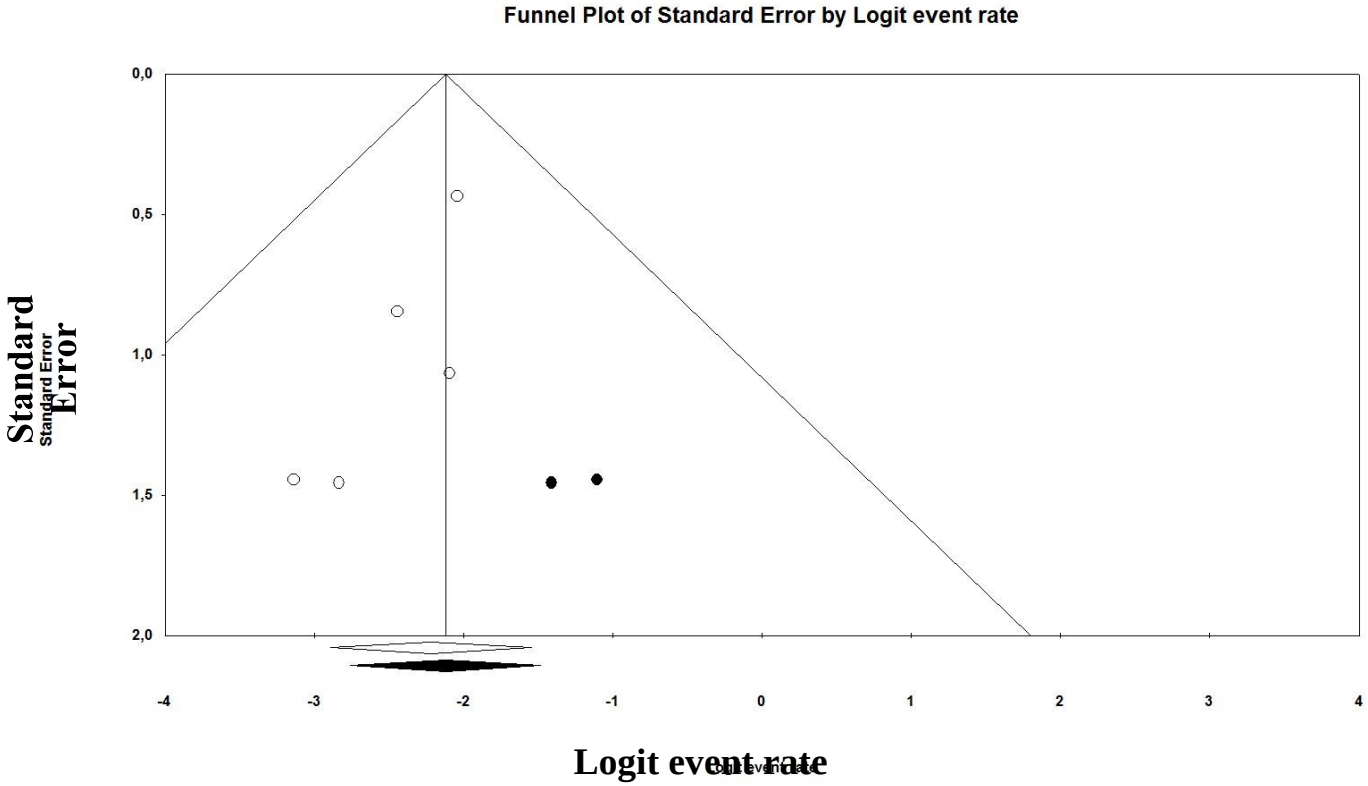
Appendix H: Funnel plot of the recorded mortality rates for in situ treatment.

These results are based on the 26 studies included. Egger's test does not show any publication bias (p=0.52). There are 5studies missing, identified by the «Trim and fill» method. The addition of these 5 studies tends to give a higher mortality rate: 16.6%; 95%, CI: 13-20%.



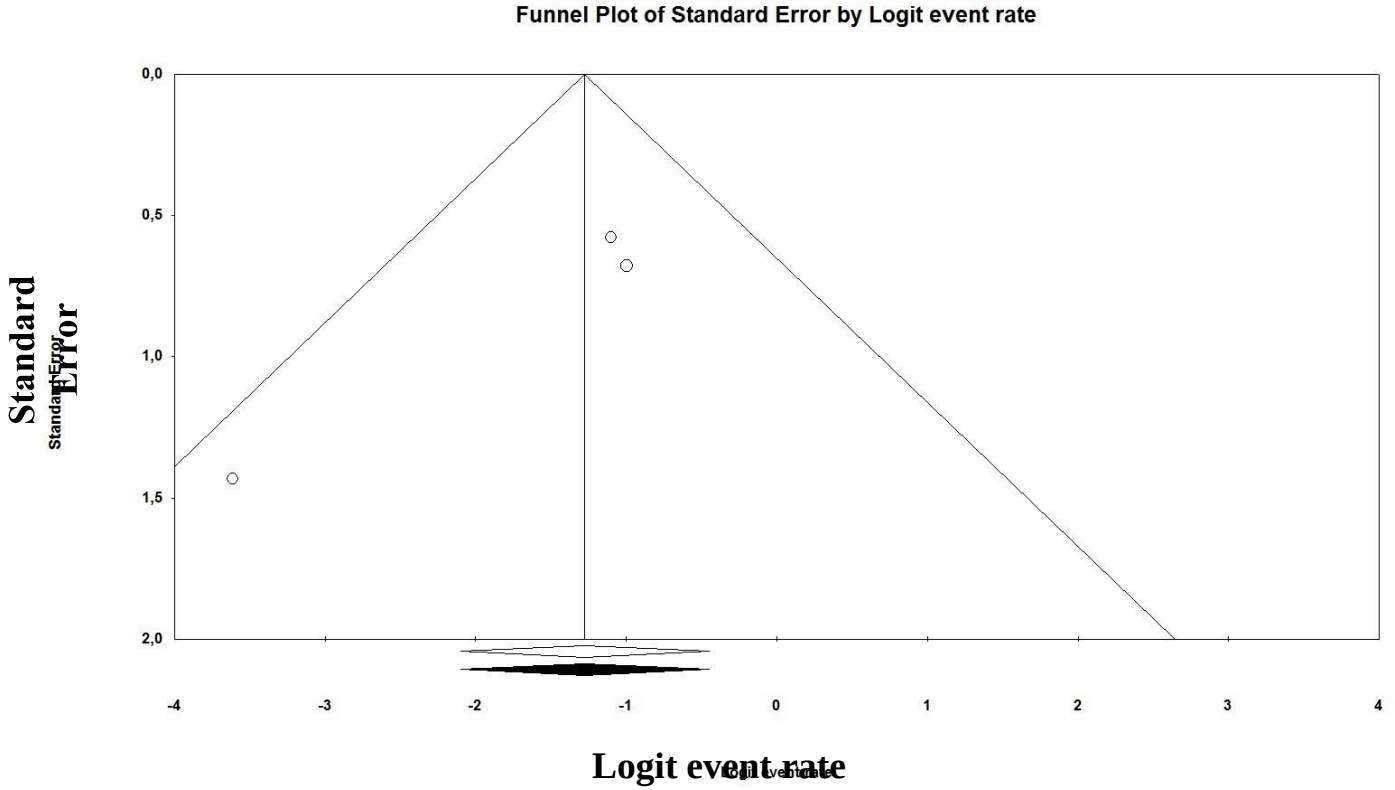
Appendix I: Funnel plot of the recorded infection rates for in situ treatment using cryopreserved allograft.

These results are based on the 8 studies included and the additional study identified by the «Trim and fill» analysis. Egger's test does not show any publication bias (p=0.89). The addition of this study tends to give a higher infection rate: 9.2%; 95%, CI: 5.5-15.



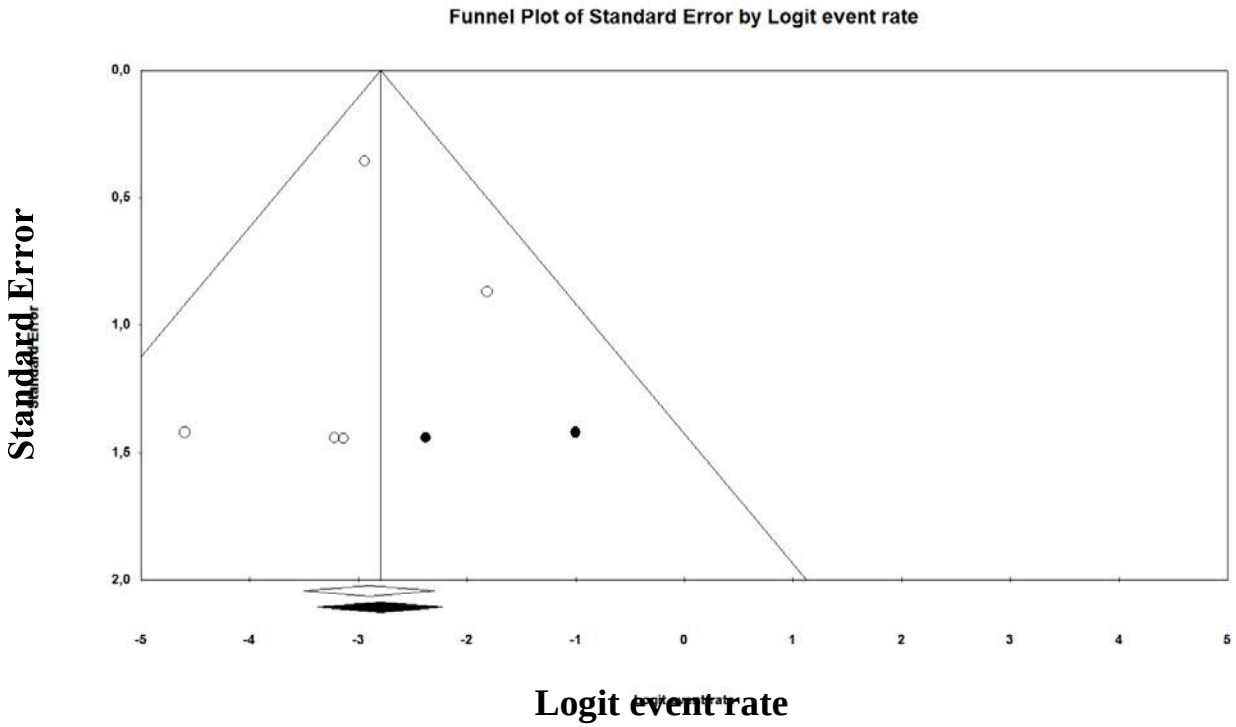
Appendix J: Funnel plot of the recorded infection rates for in situ treatment using Rifampicin-bonded polyester.

These results are based on the 5 studies included and the 2 additional studies identified by the «Trim and fill» analysis. Egger's test does not show any publication bias (p=0.065). The addition of these 2 studies tends to show a higher infection rate: 10.7%; 95%, CI: 6-18.



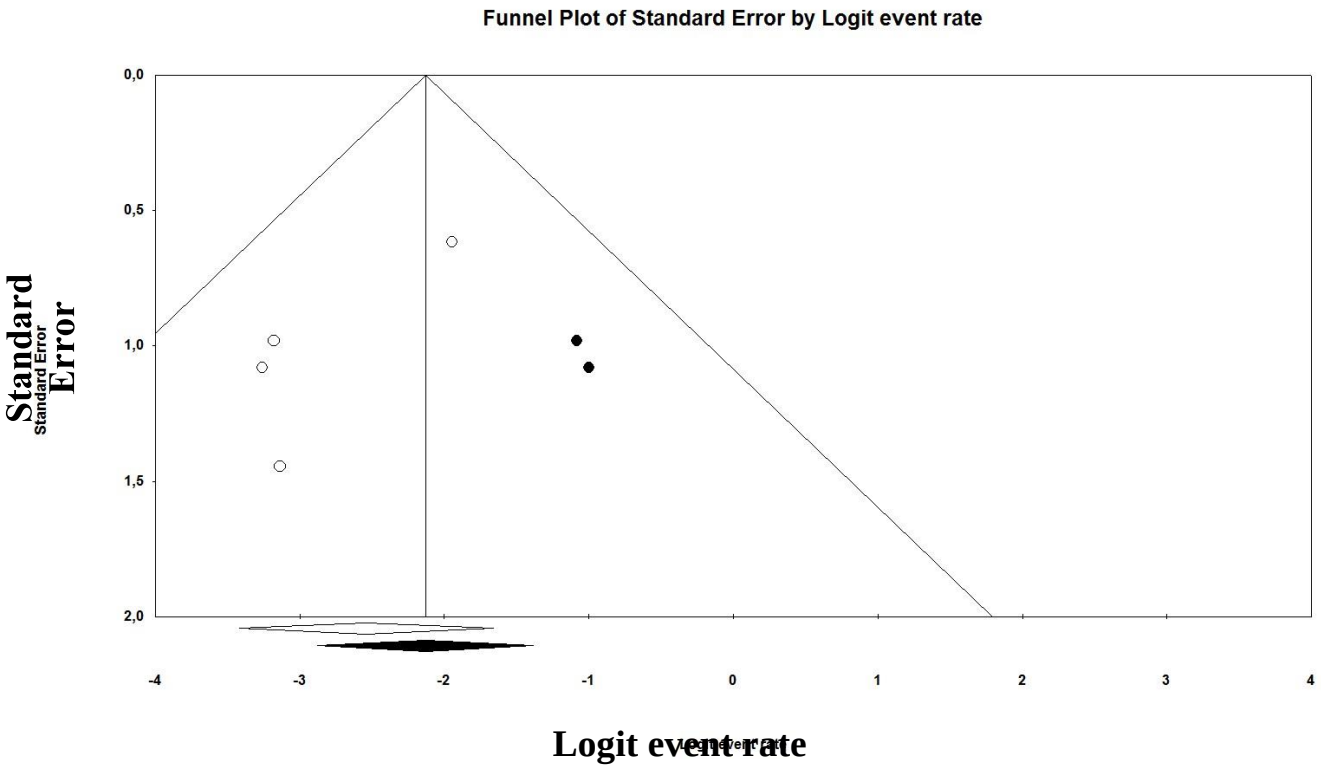
Appendix K: Funnel plot of the recorded infection rates for in situ treatment using standard polyester/PTFE.

These results are based on the 3 studies included. Egger's test does not show any publication bias (p=0.17).



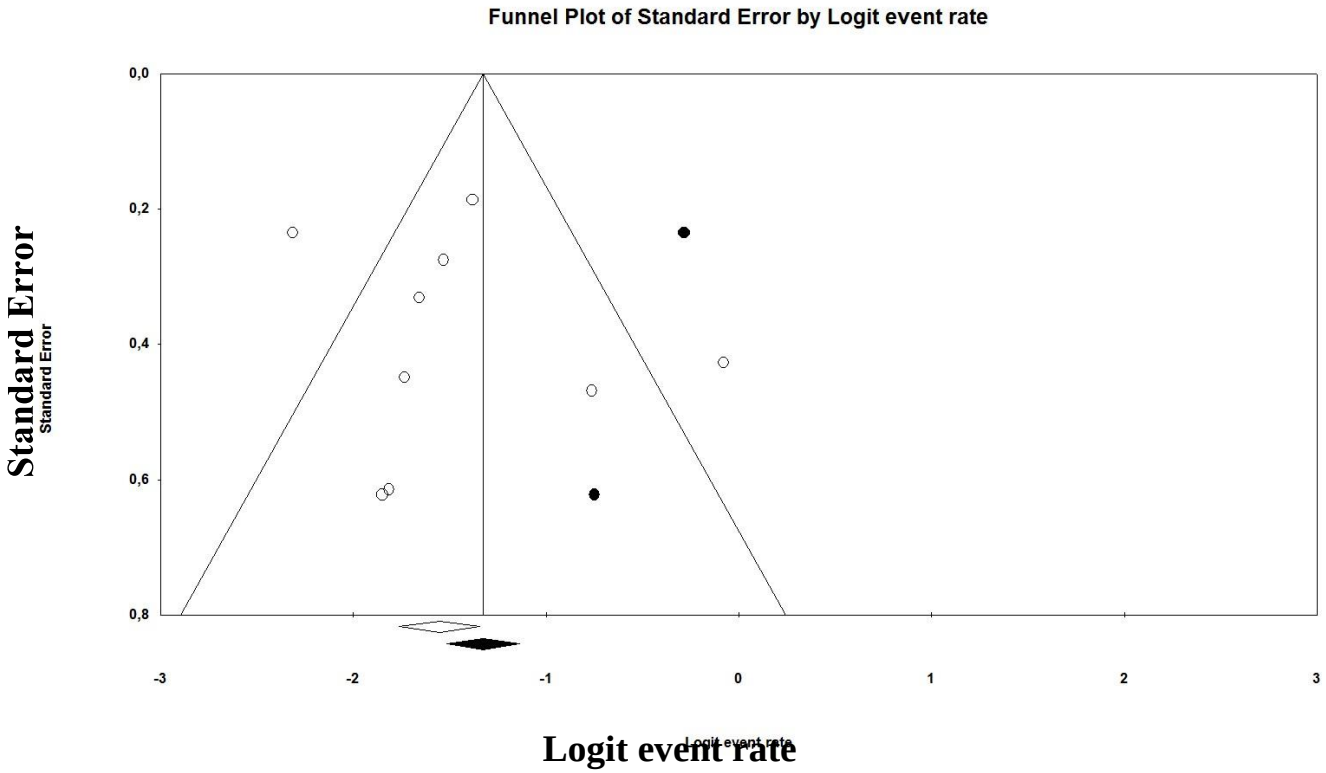
Appendix L: Funnel plot of the recorded infection rates for in situ treatment using autogenous veins.

These results are based on the 6 studies included and the 2 additional studies identified by the «Trim and fill» analysis. Egger's test does not show any publication bias (p=0.74). The addition of these 2 missing studies tends to provide a higher infection rate: 5.7%; 95%, CI: 3.3-9.7.



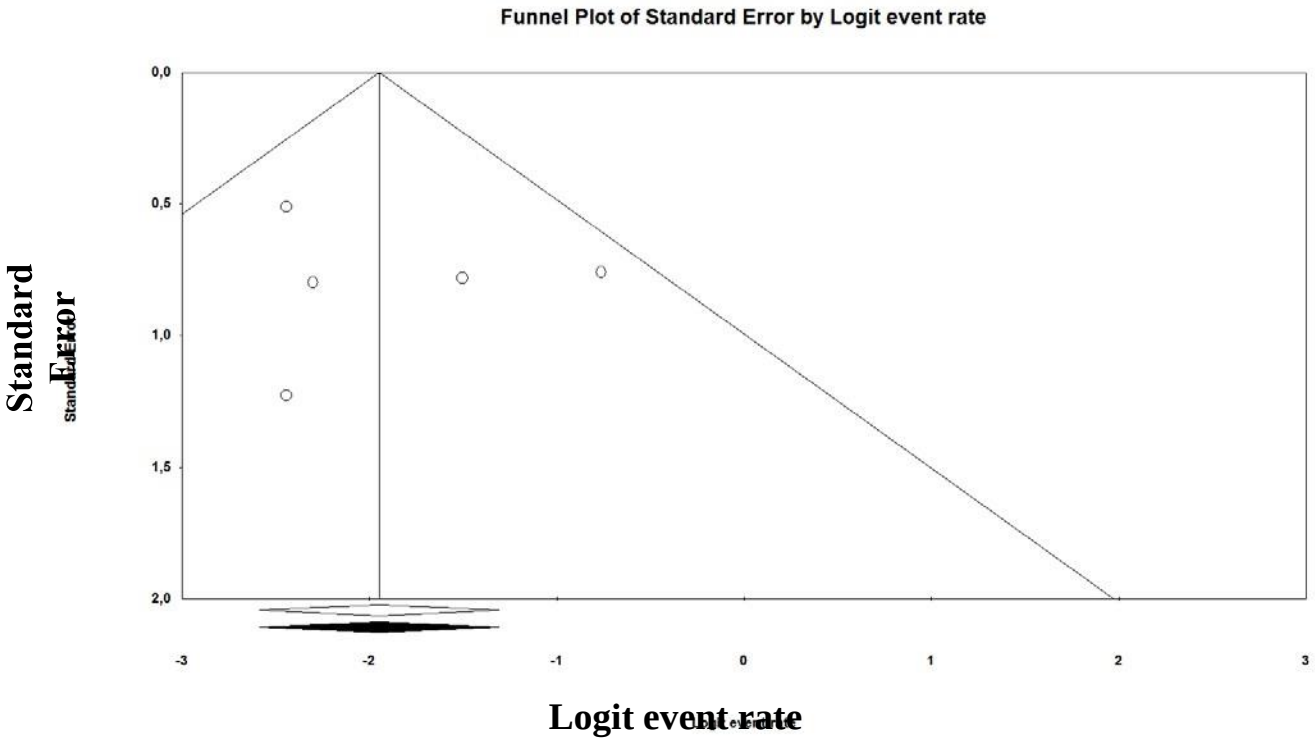
Appendix M: Funnel plot of the recorded infection rates for in situ treatment using Silver-coated polyester.

These results are based on the 4 studies included and the 2 additional studies identified by the «Trim and fill» analysis. Egger's test does not show any publication bias (p=0.111). The addition of these 2 studies tends to show a higher infection rate: 10.6%; 95%, CI: 5.3-20.



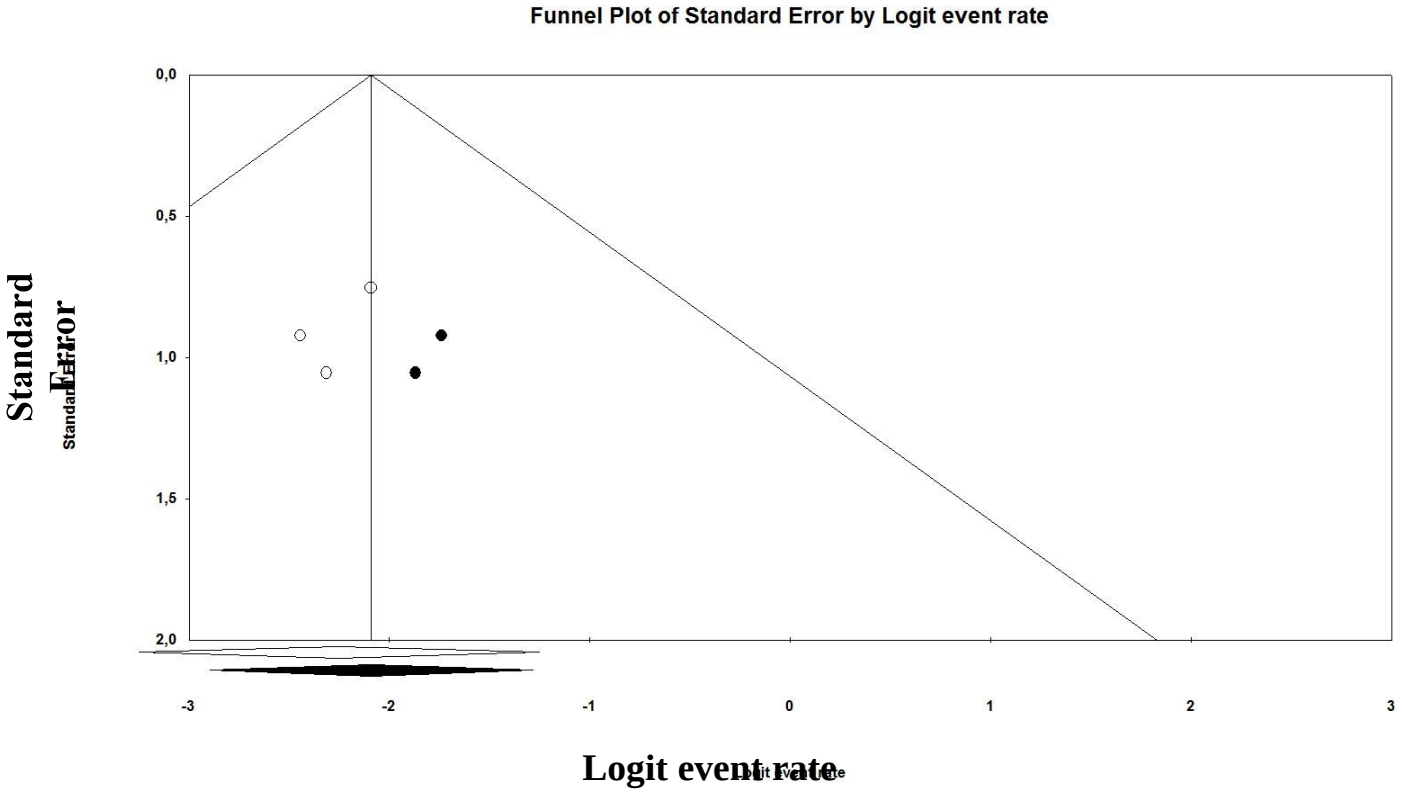
Appendix N: Funnel plot of the recorded mortality rates at 30 days for in situ treatment using cryopreserved allograft.

These results are based on the 9 studies included and the 2 additional studies identified by the «Trim and fill» analysis. Egger's test does not show any publication bias (p=0.56).The addition of these 2 studies tends to show a higher mortality rate: 21.6%; 95%, CI: 14.8-30.



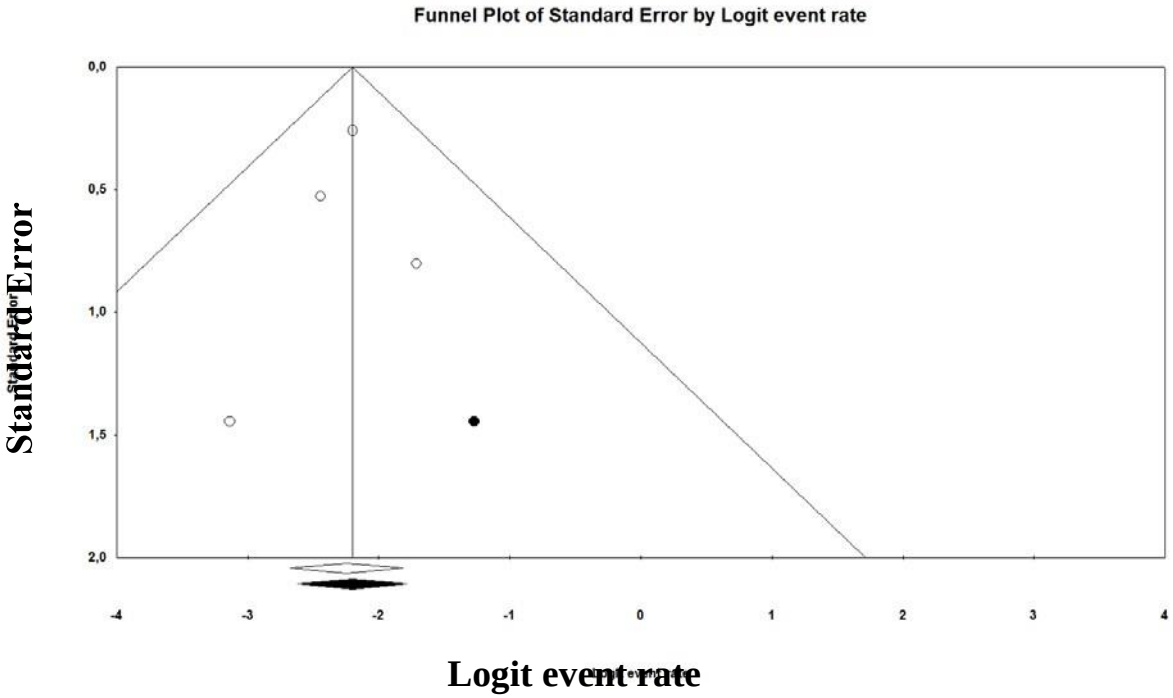
Appendix O: Funnel plot of the recorded mortality rates at 30 days for in situ treatment using Rifampicinbonded polyester.

These results are based on the 5 studies included. Egger's test does not show any publication bias (p=0.67). No missing studies were identified by the «Trim and fill» analysis. The mortality rate at 30 days was 12.5%; 95%, CI: 721.3.



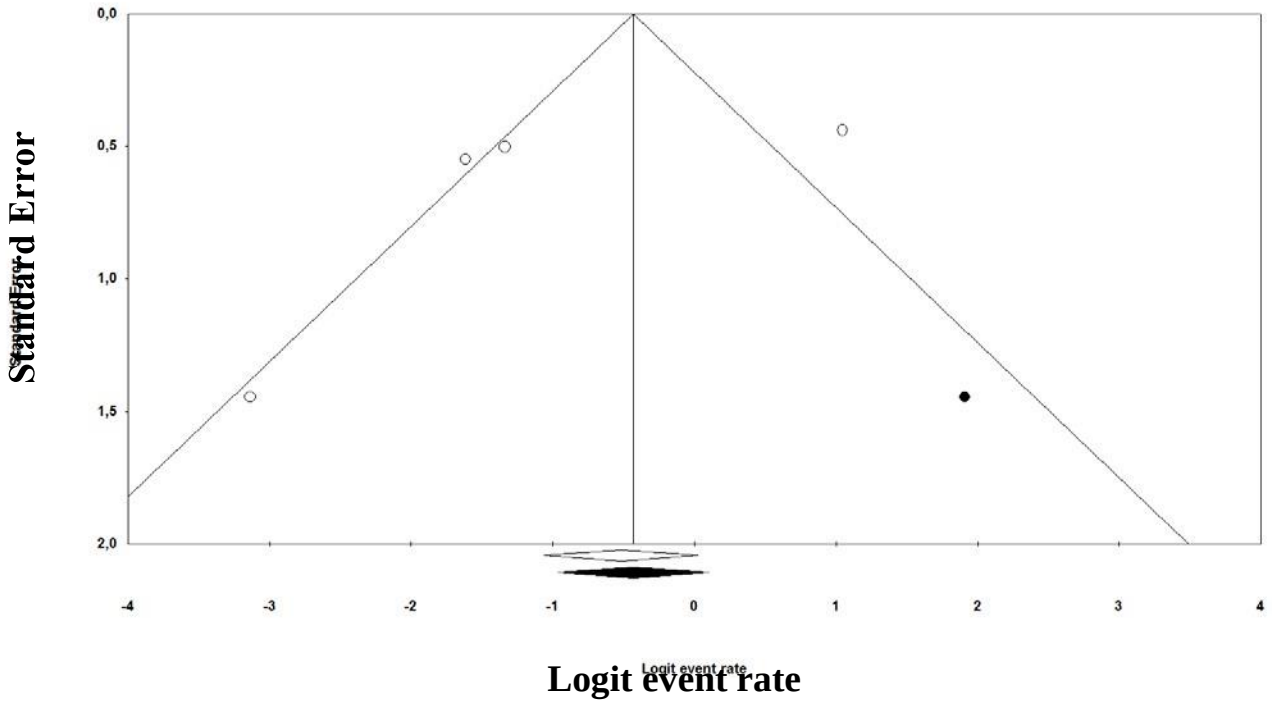
Appendix P: Funnel plot of the recorded mortality rates at 30 days for in situ treatment using standard polyester/PTFE.

These results are based on the 3 studies included and the 2 additional studies identified by the «Trim and fill» analysis. Egger's test does not show any publication bias (p=0.45). The addition of these 2 studies tends to show a higher mortality rate: 11%; 95%, CI: 5-21.



Appendix Q: : **Funnel plot of the recorded mortality rates at 30 days for in situ treatment using autogenous veins**.

These results are based on the 4 studies included and the 2 additional studies identified by the «Trim and fill» analysis. Egger's test does not show any publication bias. The addition of these 2 studies tends to show a higher mortality rate: 9.9%; 95%, CI: 6.7-14.3.



Appendix R: Funnel plot of the recorded mortality rates at 30 days for in situ treatment using Silver-coated polyester.

These results are based on the 4 studies included and the additional study identified by the «Trim and fill» analysis. Egger's test does not show any publication bias. The addition of this study tends to show a higher mortality rate: 16.3%; 95%, CI: 10-26%.