

TABLE E-1 Study Characteristics

First Author	Journal	Year	Level of Evidence	Study Design	Country	No. of Surgeons	Procedure Date Range*	Determination of Treatment	Independent Examiners	No. of Eligible Patients	No. of Patients with Follow-up	Duration of Follow-up† (mo)
Barrett ³⁶	Am J Sports Med	2005	III	Retrospective comparative	United States	1	1994 to 2000	Patient choice	No	63	63	41 (24 to 99)
Chang ³⁷	Arthroscopy	2003	III	Retrospective comparative	United States	1	1992 to 1995	Patient choice	Yes	89	79	37 (24 to 56)
Edgar ³⁸	Clin Orthop Relat Res	2008	II	Prospective comparative	United States	1	1997 to 2000	Patient choice (25%), randomization (75%)	Yes	104	83	50 (36 to 70)
Gorschewsky ³⁹	Am J Sports Med	2005	II	Prospective comparative	Switzerland	2	1995 to 1998	Chronological division	Yes	268	186	71 (54 to 80)
Harner ⁴⁰	Clin Orthop Relat Res	1996	III	Retrospective comparative	United States	2	1986 to 1989	Patient choice and allograft availability	No	244	90	45 (30 to 75)
Kleipool ⁴¹	Knee Surg Sports Traumatol Arthrosc	1998	II	Prospective comparative	Netherlands	1	1989 to 1991	Allograft availability	Yes	68	62	49 (30 to 74)
Peterson ⁴²	Arthroscopy	2001	II	Prospective comparative	United States	1	1991 to 1992	Patient choice	No	119	60	63 (55 to 78)
Saddemi ⁴³	Arthroscopy	1993	III	Retrospective comparative	United States	1	1988 to 1990	Patient choice	No	57	50	24
Victor ⁴⁴	Int Orthop	1997	II	Prospective comparative	Belgium	1	NR	Allograft availability	Yes	73	73	24
Total										1085	746	49 (24 to 99)

*NR = not reported. †The values are given as the mean, with the range in parentheses.

TABLE E-2 Surgical Technique*

First Author	Autograft Technique				Allograft Technique				Allograft Properties		
	Graft Type	Approach	Femoral Fixation	Tibial Fixation	Graft Type	Approach	Femoral Fixation	Tibial Fixation	Donor Age (yr)	Sterilization Method	Storage
Barrett ³⁶	Bone-patellar tendon-bone	Endoscopic	Interference screw or Endobutton	Multiple	Bone-patellar tendon-bone	Endoscopic	Interference screw and/or Endobutton	Multiple	NR	Non-irradiated	Fresh frozen
Chang ³⁷	Bone-patellar tendon-bone	Two-incision; iliotibial band tenodesis	Interference screw	Interference screw	Bone-patellar tendon-bone	Two-incision; iliotibial band tenodesis	Interference screw	Interference screw	NR	30 non-irradiated 10 irradiated (dose unknown)†	Fresh frozen
Edgar ³⁸	Hamstring (quadruple)	Endoscopic	Endobutton and interference screw	Interference screw and washer	Hamstring (quadruple)	Endoscopic	Endobutton and interference screw	Interference screw and washer	NR	Non-irradiated	20 cryopreservation, 27 fresh frozen
Gorschewsky ³⁹	Bone-patellar tendon-bone	Endoscopic	Interference screw	Interference screw	Bone-patellar tendon-bone	Endoscopic	Interference screw	Interference screw	NR	Acetone solvent drying; irradiation (1.5 Mrad)	NR
Harner ⁴⁰	Bone-patellar tendon-bone	Two-incision	NR	NR	60 bone-patellar tendon-bone, 4 Achilles	Two-incision	NR	NR	NR	Non-irradiated	Fresh frozen
Kleipool ⁴¹	Bone-patellar tendon-bone	Endoscopic	Interference screw	Interference screw or staple	Bone-patellar tendon-bone	Endoscopic	Interference screw	Interference screw or staple	<50	Non-irradiated	Fresh frozen
Peterson ⁴²	Bone-patellar tendon-bone	Endoscopic	Interference screw	Interference screw	Bone-patellar tendon-bone	Endoscopic	Interference screw	Interference screw	NR	Non-irradiated	Fresh frozen
Saddemi ⁴³	Bone-patellar tendon-bone	Two-incision	NR	NR	Bone-patellar tendon-bone	Two-incision	NR	NR	NR	Irradiated (2.0 Mrad)	Fresh frozen
Victor ⁴⁴	Bone-patellar tendon-bone	Endoscopic	NR	NR	Bone-patellar tendon-bone	Endoscopic	NR	NR	<45	NR	NR

*NR = not reported. †Data on allograft preparation were only available for forty of the forty-six cases.

TABLE E-3 Demographic Characteristics According to Graft Source*

First Author	Autograft						Allograft					
	Patient Age† (yr)	Male: Female Ratio	Time from Injury to Reconstruction ‡	Sports Mechanism (%)	Duration of Follow-up† (mo)	Percentage of Patients at Follow-up (%)	Patient Age† (yr)	Male: Female Ratio	Time from Injury to Reconstruction ‡	Sports Mechanism (%)	Duration of Follow-up† (mo)	Percentage of Patients at Follow-up (%)
Barrett ³⁶	45 (40 to 54)	15:10	28 (0.2 to 301)	NR	48 (24 to 99)	100% (25 of 25)	47 (40 to 58)	20:18	25 (0.3 to 319)	NR	36 (24 to 74)	100% (38 of 38)
Chang ³⁷	29 (13 to 51)	19:14	25 (0.5 to 196)	88% (29 of 33)	41 (34 to 47)	89% (33 of 37)	33 (16 to 52)	41:5	18 (0.4 to 118)	91% (42 of 46)	34 (24 to 56)	88% (46 of 52)
Edgar ³⁸	27	20:17	<12 wk (18 patients) >12 wk (19 patients)	NR	52 (38 to 70)	80% total (37 of NR)	31	26:20	<12 wk (24 patients) >12 wk (22 patients)	NR	48 (36 to 64)	80% total (46 of NR)
Gorschewsky ³⁹	NR	NR	NR	NR	NR	74% (101 of 136)	NR	NR	NR	NR	NR	64% (85 of 132)
Harner ⁴⁰	NR	21:5	<4 wk (1 patient) >4 wk (25 patients)	85% (22 of 26)	NR	32% (26 of 82)	NR	51:13	<4 wk (52 patients) >4 wk (12 patients)	84% (54 of 64)	NR	40% (64 of 162)
Kleipool ⁴¹	28 (16 to 38)	9:17	30 (1 to 128)	96% (25 of 26)	52 (42 to 72)	90% (26 of 29)	28 (14 to 43)	17:19	55 (0.25 to 240)	97% (35 of 36)	46 (30 to 64)	92% (36 of 39)
Peterson ⁴²	25 (15 to 43)	14:16	<3 mo (21 patients) >3 mo (9 patients)	70% (21 of 30)	65 (57 to 78)	42% (30 of 71)	28 (15 to 55)	19:11	<3 mo (14 patients) >3 mo (16 patients)	83% (25 of 30)	63 (55 to 73)	63% (30 of 48)
Saddemi ⁴³	23	NR	<4 wk (9 patients) >4 wk (22 patients)	NR	NR	86% (31 of 36)	21	NR	<4 wk (6 patients) >4 wk (13 patients)	NR	NR	90% (19 of 21)
Victor ⁴⁴	NR	NR	NR	NR	24	100% (48 of 48)	NR	NR	NR	NR	24	100% (25 of 25)

*Significant differences ($p < 0.05$) are shown in bold. NR = not reported. †The values are given as the mean, with the range in parentheses (when available). ‡Unless otherwise specified, the values are given as the mean (in months), with the range in parentheses.

TABLE E-4 Patient-Oriented Outcomes and Composite Scales*

First Author	Symptom Scales				IKDC Final Rating									Tegner		
					Autograft				Allograft							
	Form	Autograft	Allograft	P Value	Normal	Near Normal	Abnormal	Severely Abnormal	Normal	Near Normal	Abnormal	Severely Abnormal	P Value	Autograft	Allograft	P Value
Barrett ³⁶	Lysholm	92	91	NS	48% (12 of 25)	48% (12 of 25)	4% (1 of 25)	0% (0 of 25)	50% (19 of 38)	37% (14 of 38)	13% (5 of 38)	0% (0 of 38)	0.614	4.3	4.1	NS
Chang ³⁷	Lysholm	96	94	0.25	Not studied									Not studied		
Edgar ³⁸	Lysholm	91	93	0.75	32% (12 of 37)	51% (19 of 37)	11% (4 of 37)	5% (2 of 37)	41% (19 of 46)	41% (19 of 46)	13% (6 of 46)	4% (2 of 46)	NS	6.8	6.9	NS
Gorschewsky ³⁹	Lysholm	94	78	0.012	83% (84 of 101)		9% (9 of 101)†	8% (8 of 101)†	36% (31 of 85)		14% (12 of 85)†	49% (42 of 85)†	NR	Not studied		
Harner ⁴⁰	Cincinnati	85	86	NS	4% (1 of 26)	35% (9 of 26)	54% (14 of 26)	8% (2 of 26)	5% (3 of 64)	44% (28 of 64)	42% (27 of 64)	9% (6 of 64)	NS	Not studied		
Kleipool ⁴¹	Lysholm	95	94	NS	27% (7 of 26)	42% (11 of 26)	31% (8 of 26)	0% (0 of 26)	47% (17 of 36)	36% (13 of 36)	14% (5 of 36)	3% (1 of 36)	NS	6	5	NS
Peterson ⁴²	Lysholm	89	90	NS	Not studied									6.1	5.4	NS
Saddemi ⁴³	Not studied				Not studied									Not studied		
Victor ⁴⁴	Lysholm	93	85	0.27	Not studied									4.8	4.4	0.5

*IKDC = International Knee Documentation Committee, NR = not reported, NS = not significant. †Estimated from graphical depiction.

TABLE E-5 Physical Examination—Laxity*

First Author	Lachman									Pivot Shift								
	Autograft				Allograft				P Value	Autograft				Allograft				P Value
	0	1	2	3	0	1	2	3		0	1	2	3	0	1	2	3	
Barrett ³⁶	96% (24 of 25)	4% (1 of 25)	0% (0 of 25)	—	82% (31 of 38)	16% (6 of 38)	3% (1 of 38)	—	0.096	100% (25 of 25)	0% (0 of 25)	0% (0 of 25)	0% (0 of 25)	89% (34 of 38)	8% (3 of 38)	3% (1 of 38)	0% (0 of 38)	0.245
Chang ^{37,†}	82% (23 of 28)	18% (5 of 28)	0% (0 of 28)	0% (0 of 28)	68% (26 of 38)	32% (12 of 38)	0% (0 of 38)	0% (0 of 38)	0.2	100% (28 of 28)	0% (0 of 28)	0% (0 of 28)	0% (0 of 28)	95% (36 of 38)	5% (2 of 38)	0% (0 of 38)	0% (0 of 38)	0.2
Edgar ³⁸	Not studied									Not studied								
Gorschewsky ³⁹	76% (77 of 101)	24% (24 of 101)			25% (21 of 85)	75% (64 of 85)			0.024	84% (85 of 101)‡	16% (16 of 101)‡			36% (31 of 85)‡	64% (54 of 85)‡			0.013
Harner ⁴⁰	NR	NR	NR	NR	NR	NR	NR	NR	NS	92% (24 of 26)		8% (2 of 26)		89% (57 of 64)		11% (7 of 64)		NS
Kleipool ⁴¹	65% (17 of 26)	19% (5 of 26)	15% (4 of 26)	0% (0 of 26)	58% (21 of 36)	28% (10 of 36)	14% (5 of 36)	0% (0 of 36)	NS	73% (19 of 26)	23% (6 of 26)	4% (1 of 26)	0% (0 of 26)	78% (28 of 36)	14% (5 of 36)	8% (3 of 36)	0% (0 of 36)	NS
Peterson ⁴²	77% (23 of 30)	20% (6 of 30)	3% (1 of 30)	—	80% (24 of 30)	10% (3 of 30)	10% (3 of 30)	—	NS	90% (27 of 30)	7% (2 of 30)	3% (1 of 30)	—	83% (25 of 30)	13% (4 of 30)	3% (1 of 30)	—	NS
Saddemi ⁴³	NR	NR	NR	NR	NR	NR	NR	NR	NS	NR	NR	NR	NR	NR	NR	NR	NR	NS
Victor ⁴⁴	Not studied									Not studied								

*Significant differences (p < 0.05) are shown in bold. NR = not reported, NS = not significant. †Excludes the three patients in the allograft group with postoperative traumatic ruptures as well as five patients in the autograft group and five patients in the allograft group who did not return to clinic for final examination. ‡Estimated from graphical depiction.

TABLE E-6 Physical Examination—Other*

First Author	Extension Deficit (<i>deg</i>)			Flexion Deficit (<i>deg</i>)			One-Leg Hop Test (<i>percentage of knees with >90% of value for contralateral side</i>)			Thigh Circumference Difference (<i>cm</i>)		
	Autograft	Allograft	P Value	Autograft	Allograft	P Value	Autograft	Allograft	P Value	Autograft	Allograft	P Value
Barrett ³⁶	0.4	0.4	0.915	3.4	3.8	0.756	Not studied			0.74	0.23	0.381
Chang ³⁷	0	0.6	0.2	1.8	4.7	0.07	Not studied			0.4	0.3	0.7
Edgar ³⁸	Not studied			Not studied			Not studied			Not studied		
Gorschewsky ³⁹	Categorized	Categorized	NS	Categorized	Categorized	NS	79% (80 of 101)	36% (31 of 85)	<0.001	Not studied		
Harner ⁴⁰	3.0	1.2	0.05	NR	NR	NS	88% (23 of 26)	75% (48 of 64)	NR	Not studied		
Kleipool ⁴¹	Cat	cat	NS	cat	cat	NS	96% (25 of 26)	92% (33 of 36)	NS	0.27	0.22	NS
Peterson ⁴²	2.5	1.1	0.027	0.5	0.8	NS	Not studied			Not studied		
Saddemi ⁴³	NR	NR	NS	NR	NR	NS	Not studied			0.4†	0.4†	NS
Victor ⁴⁴	Not studied			Not studied			NR	NR	0.41	NR	NR	NS

*Significant differences ($p < 0.05$) are shown in bold. NR = not reported, NS = not significant. †Estimated from graphical depiction.

TABLE E-7 Instrumented Laxity Measurements*

First Author	Instrument	Force	Mean R/L diff (mm)			Grouped Frequency Distribution						
			Autograft	Allograft	P Value	Autograft			Allograft			P Value
						<3 mm	3 to 5 mm	>5 mm	<3 mm	3 to 5 mm	>5 mm	
Barrett ³⁶	KT-1000	Maximum manual	0.1	1.5	0.398	96% (24 of 25)	4% (1 of 25)	0% (0 of 25)	87% (33 of 38)	5% (2 of 38)	8% (3 of 38)	NS
Chang ³⁷ †	KT-1000	Maximum manual	1.1	1.2	0.9	86% (19 of 22)	5% (1 of 22)	9% (2 of 22)	82% (28 of 34)	9% (3 of 34)	9% (3 of 34)	0.7
Edgar ³⁸	KT-1000	Maximum manual	1.6	1.4	NS	86% (32 of 37)	5% (2 of 37)	8% (3 of 37)	87% (40 of 46)	11% (5 of 46)	2% (1 of 46)	0.33
Gorschewsky ³⁹	KT-1000	Maximum manual	2.4 ‡	4.9 ‡	0.027	NR	NR	NR	NR	NR	NR	NR
Harner ⁴⁰	KT-1000	30 lb	1.9	1.8	NS	92% (24 of 26)		8% (2 of 26)	94% (60 of 64)		6% (4 of 64)	NS
Kleipool ⁴¹	KT-1000	NR	NR	NR	NR	69% (18 of 26)	23% (6 of 26)	8% (2 of 26)	75% (27 of 36)	19% (7 of 36)	6% (2 of 36)	NS
Peterson ⁴²	KT-1000	NR	NR	NR	NR	67% (20 of 30)	27% (8 of 30)	7% (2 of 30)	73% (22 of 30)	27% (8 of 30)	0% (0 of 30)	NS
Saddemi ⁴³ §	Knee Signature System	40 lb	0.2	0.3	NS	80% (20 of 25)#	20% (5 of 25)#	0% (0 of 25)#	83% (15 of 18)#	11% (2 of 18)#	6% (1 of 18)#	NS
Victor ⁴⁴	KT-1000	20 lb	7.4**	8.3**	NS	NR	NR	NR	NR	NR	NR	NR

*Significant differences ($p < 0.05$) are shown in bold. NR = not reported, NS = not significant. †Excludes three patients in the allograft group with postoperative traumatic ruptures as well as five patients in the autograft group and five patients in the allograft group who did not return to clinic for final examination. Also excludes six patients in the autograft group and four patients in the allograft group with contralateral anterior cruciate ligament injuries. ‡Excludes ruptured transplants. §Excludes six patients in the autograft group and one patient in the allograft group with contralateral anterior cruciate ligament injuries. #Estimated from graphical depiction. **Values for the operatively treated knee are provided because differences between the operatively and nonoperatively treated knees were not available.

TABLE E-8 Complications*

First Author	Donor-Site Symptoms				Deep Infections			Arthrofibrosis			Reoperation rate			Failures		
	Symptom	Autograft	Allograft	P Value	Autograft	Allograft	P Value	Autograft	Allograft	P Value	Autograft	Allograft	P Value	Autograft	Allograft	P Value
Barrett ³⁶	Anterior knee pain	4% (1 of 25)	0% (0 of 38)	NS	0% (0 of 25)	0% (0 of 38)	NS	NR			NR			0% (0 of 25)	3% (1 of 38)	NS
Chang ³⁷	Retropatellar pain	9% (3 of 33)	16% (7 of 43)†	0.4	NR			4% (1 of 28)‡	11% (4 of 38)‡	0.3	0% (0 of 33)	4% (2 of 46)	NR	0% (0 of 33)	7% (3 of 46)	0.1
Edgar ³⁸	Not studied				0% (0 of 37)	0% (0 of 46)	NS	0% (0 of 37)	0% (0 of 46)	NS	NR			8% (3 of 37)	4% (2 of 46)	NS
Gorschewsky ³⁹	Kneeling pain or paresthesias	50% (50 of 101)	0% (0 of 85)	0.014	NR			NR			NR			6% (6 of 101)	45% (38 of 85)	0.005
Harner ⁴⁰	NR				NR			NR			NR			NR		
Kleipool ⁴¹	Anterior knee pain	50% (13 of 26)	53% (19 of 36)	NS	NR			NR			31% (8 of 26)	36% (13 of 36)	NS	0% (0 of 26)	0% (0 of 36)	NS
Peterson ⁴²	Incision site complaints	53% (16 of 30)	7% (2 of 30)	NR	0% (0 of 30)	0% (0 of 30)	NS	0% (0 of 30)	0% (0 of 30)	NS	NR			3% (1 of 30)	3% (1 of 30)	NS
Saddemi ⁴³	Patellofemoral pain	NR	NR	NS	0% (0 of 31)	0% (0 of 19)	NS	6% (2 of 31)	0% (0 of 19)	NS	16% (5 of 31)	26% (5 of 19)	NS	3% (1 of 31)	5% (1 of 19)	NS
Victor ⁴⁴	Anterior knee pain	42% (20 of 48)	40% (10 of 25)	NS	NR			NR			NR			0% (0 of 48)	12% (3 of 25)	NR

*Significant differences ($p < 0.05$) are shown in bold. NR = not reported, NS = not significant. †Excludes three patients in the allograft group with postoperative traumatic ruptures. ‡Excludes three patients in the allograft group with postoperative traumatic ruptures as well as five patients in the autograft group and five patients in the allograft group who did not return to clinic for final examination.

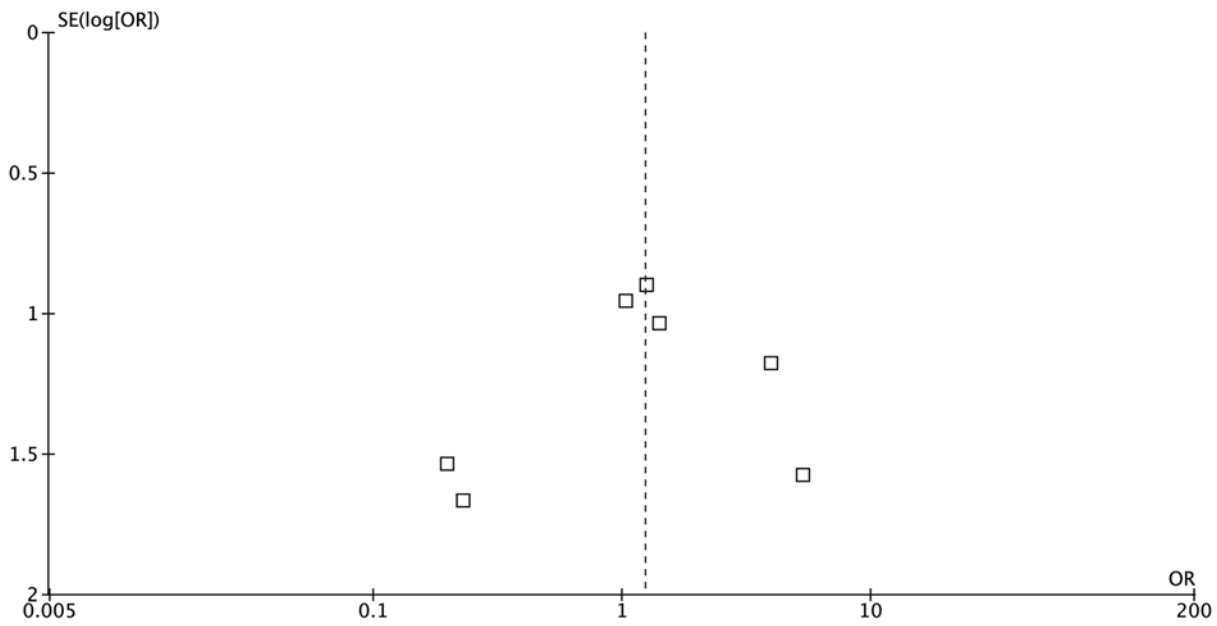


Fig. E-1
 Funnel plot of instrumented laxity of >5 mm, which visually represents the standard error of the log odds ratio (a measure of precision) as a function of the odds ratio (a measure of the treatment effect). This funnel plot appears essentially symmetrical about the pooled estimate from the meta-analysis and is shaped like an inverted funnel, indicating no gross publication bias. SE (log [OR]) = standard error of the log odds ratio, and OR = odds ratio.

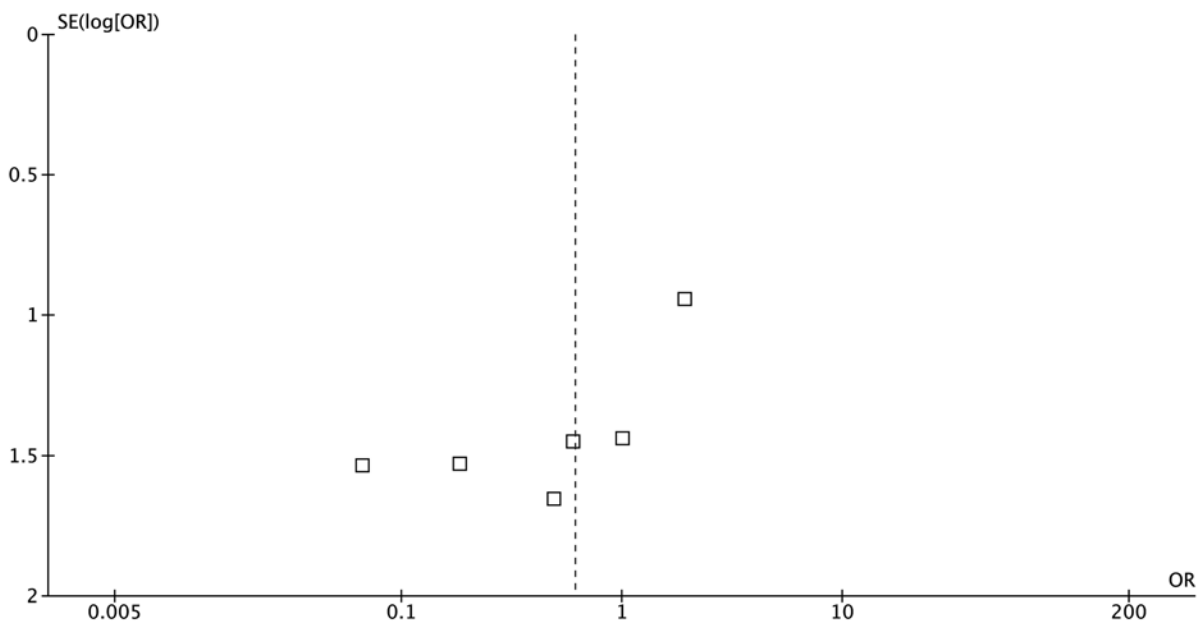


Fig. E-2
 Funnel plot of clinical failures. This funnel plot appears somewhat asymmetrical about the pooled estimate from the meta-analysis and does not have the characteristic inverted funnel shape, reflecting the very low number of events and also possibly reflecting a publication bias against small studies that favor allograft success. SE (log [OR]) = standard error of the log odds ratio, and OR = odds ratio.