DATA SUPPLEMENT

Table of contents

I. Search strategy

carotid artery	stent
carotid stenosis[MeSH]	stents[MeSH]
carotid	(stent OR stents) AND ((open AND closed) OR hybrid OR design OR type OR pore size OR nitinol OR stainless)
carotis	(stent OR stents) AND (wallstent OR X-act OR Xact OR nexstent OR precise OR precision OR exponent OR protégé OR acculink OR zilver OR GORE OR smart OR “cristallo ideale” OR “new stent” OR vivexx OR adapt)
Both colums were linked with “AND”, while subsequent rows were linked with “OR”.	

II. Papers describing duplicate patient populations

	Excluded paper	Title	Substudy of…	Included paper with similar population
1.	Eckstein 2008, Lancet Neurol	Results of the Stent-Protected Angioplasty versus Carotid Endarterectomy (SPACE) study to treat symptomatic stenoses at 2 years: a multinational, prospective, randomised trial	SPACE	Jansen 2009, Stroke
2.	Ringleb 2007, Nervenarzt	[Stent and surgery for symptomatic carotid stenosis. SPACE study results]		
3.	Stingele 2008, Lancet Neurol	Clinical and angiographic risk factors for stroke and death within 30 days after carotid endarterectomy and stent-protected angioplasty: a subanalysis of the SPACE study		
4.	Featherstone 2016, Heath Technol Assess	Carotid artery stenting compared with endarterectomy in patients with symptomatic carotid stenosis (International Carotid Stenting Study): a randomised controlled trial with cost-effectiveness analysis	ICSS	Doig 2016, Eur J Vasc Endovasc Surg
5.	Huibers 2015, Eur J Vasc Endovasc Surg	Mechanism of Procedural Stroke Following Carotid Endarterectomy or Carotid Artery Stenting Within the International Carotid Stenting Study (ICSS) Randomised Trial		
6.	Brown 2009, Ann Vasc Surg	Carotid stenting using tapered and nontapered stents: associated neurological complications and restenosis rates	n.a.	Eskandari 2010, J Vasc Surg
7.	Eskandari 2007, J Vasc Interv Radiol	Restenosis after carotid stent placement in patients with previous neck irradiation or endarterectomy		
8.	Keldahl 2012, Ann Vasc Surg	Does a Contralateral Carotid Occlusion Adversely Impact Carotid Artery Stenting Outcomes?		
9.	Tang 2008, Arch Surg	Carotid angioplasty and stenting vs carotid endarterectomy for treatment of asymptomatic disease: single-center experience		
10.	Hart 2006, J Vasc Surg	Do device characteristics impact outcome in carotid artery stenting?	n.a.	Bosiers 2007, Eur J Vasc Endovasc Surg
11.	Iyer 2007, J Vasc Surg	The type of embolic protection does not influence the outcome in carotid artery stenting		
12.	Setacci 2006, J Endovasc Ther	Is carotid artery stenting in octogenarians really dangerous?	n.a.	De Donato 2013, Eur J Vasc Endovasc Surg
13.	Nonaka 2005, Neurosurgery	Prediction of prolonged postprocedural hypotension after carotid artery stenting	n.a.	Nonaka 2006, Interv Neuroradiol

14.	Pieniazek 2008, J Endovasc Ther	Carotid artery stenting with patient- and lesion-tailored selection of the neuroprotection system and stent type: early and 5-year results from a prospective academic registry of 535 consecutive procedures (TARGET-CAS)	n.a.	Pieniazek 2012, Kardiol Pol
15.	Veselka 2012, Archives of Medical Science	Comparison of mid-term outcomes of carotid artery stenting for moderate versus critical stenosis	n.a.	Veselka 2009, Catheter Cardiovasc Interv
16.	Siewiorek 2011, Eur J Vasc Endovasc Surg	The association of clinical variables and filter design with carotid artery stenting thirty-day outcome	n.a.	Loghmanpour 2013, J Vasc Surg
17.	Mokin 2013, World Neurosurg	Proximal versus distal protection during carotid artery stenting: analysis of the two treatment approaches and associated clinical outcomes	n.a.	Fanous 2015, Neurosurgery
18.	Theiss 2008, Stroke	Predictors of death and stroke after carotid angioplasty and stenting: a subgroup analysis of the Pro-CAS data	n.a.	Hornung 2015, EuroIntervention

Abbreviations: n.a. = not applicable.

III. Patient and study characteristics for each stent design

Study	Journal	Design	Patients (n)	Age (y)			Males (%)			Symptomatic patients (%)			Double antiplatelet medication (%)		
				Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid
Alparslan 2016	Cardiovasc Intervent Radiol	R	155	65	64	-	76	75	-	80	75	-	100	100	-
Bijuklic 2013	Circ Cardiovasc Interv	R	808	± 69	± 69	± 69	± 86	± 64	± 77	± 26	± 26	± 31	100	100	100
Blasel 2009	Cardiovasc Intervent Radiol	R	84	69	71	-	73	59	-	100	100	-	100	100	-
Borhani Haghighi 2015	J Vasc Interv Neurol	P	170	71 in total			67 in total			83 in total			100	100	100
Bosiers 2007	Eur J Vasc Endovasc Surg	R	3179	73	72	-	72	69	-	41	42	-	100	100	-
Chang 2011	J Vasc Surg	R	109	69 in total		-	70 in total		-	37 in total		-	100	100	-
Coppi 2010	J Vasc Surg	P	323	74 in total			74 in total			26 in total			100	100	100
Cremonesi 2002	J Endovasc Ther	P	31	72 in total		-	58 in total		-	58 in total		-	100	100	-
Cremonesi 2005	EuroIntervention	P	377	71 in total		-	70 in total		-	65 in total		-	100	100	-
Criado 2007	J Vasc Surg	P	97	72 in total		-	80 in total		-	38 in total		-	100	100	-
Csobay-Novak 2015	J Endovasc Ther	R	528	70	67	-	58	69	-	38	37	-	100	100	-
Dahm 2011	Vasa	P	17	-	74 in total		-	65 in total		-	65 in total		-	100	100
De Donato 2008	J Vasc Surg	R	3179	73	72	-	72	69	-	41	42	-	100	100	-
De Donato 2013	Eur J Vasc Endovasc Surg	P	40	73	74	72	62	65	70	15	65	40	100	100	100
Diehm 2008	J Vasc Interv Radiol	P (reg)	256	72 in total		-	70 in total		-	37 in total		-	100	100	-
Doig 2016	Eur J Vasc Endovasc Surg	P	738	70	70	-	69	71	-	100	100	-	± 72	± 86	-
Du Mesnil de Rochemont 2006	AJNR Am J Neuroradiol	R	48	70 in total		-	73 in total		-	100	100	-	100	100	-
Eskandari 2010	J Vasc Surg	R	388	71 in total		-	76 in total		-	31 in total		-	100	100	-
Faggioli 2006	Vascular Disease Management	P	187	± 76 in total		-	± 62 in total		-	± 23 in total		-	NR	NR	-
Garcia-Toca 2012	Cardiovasc Intervent Radiol	R	NR	71 in total		-	NR	NR	-	NR	NR	-	100	100	-
Gensicke 2013	Stroke	P	109 [1]	69	72	-	68	66	-	100	100	-	83	95	-

				Age (y)			Males (%)			Symptomatic patients (%)			Double antiplatelet medication (%)		
Study	**Journal**	**Design**	**Patients (n)**	**Open**	**Closed**	**Hybrid**	**Open**	**Closed**	**Hybrid**	**Open**	**Closed**	**Hybrid**	**Open**	**Closed**	**Hybrid**
Giri 2014	JACC Cardiovasc Interv	P (reg)	8820	71	70	-	63	62	-	38	36	-	U	U	-
Gray 2009	Circ Cardiovasc Interv	P	6320	73	73	-	62	63	-	13	10	-	NR	NR	-
Grunwald 2011	Eur J Vasc Endovasc Surg	R	194	68	69	-	NR	NR	-	66	81	-	100	100	-
Guadagnoli 2015	Revista de la Federacion Argentina de Cardiologia	R	94	65	69	-	70	72	-	67	42	-	100	100	-
Hernandez-Fernandez 2014	Cardiovasc Intervent Radiol	R	286	70	68	-	77	85	-	81	80	-	100	100	-
Hopf-Jensen 2014	Int J Angiol	P	101	-	74	71	-	25	29	-	100	100	-	100	100
Hornung 2015	Journal of the American College of Cardiology	P	123	72	72	-	75	77	-	21	21	-	100	100	-
Hornung 2016	EuroIntervention	P	20	72 in total		-	60 in total		-	35 in total		-	100	100	-
Hussain 2011	Ann Vasc Surg	P	205	71	74	-	59	62	-	37	42	-	NR	NR	-
Jansen 2009	Stroke	P	563	± 68 in total [2]		-	± 72 in total		-	100	100	-	100	100	-
Jim 2011	J Vasc Surg	P (reg)	4317	71	71	-	60	65	-	47	49	-	NR	NR	-
Kessler 2013	Journal of neuroradiology	R	55	70 in total		-	84 in total		-	100	100	-	100	100	-
Kono 2014	Acta Neurochir (Wien)	R	118	72	74	-	87	95	-	62	48	-	100	100	-
Latacz 2017	Neurologia i neurochirurgia polska	R	367	68	68	70	56	49	54	50	51	48	100	100	-
Leal 2012	J Vasc Surg	P	64	68 in total		-	91 in total		-	69 in total		-	100	100	-
Ledwoch 2017	Int J Cardiol	P	749	72	70	-	69	61	-	33	40	-	100	100	-
Liu 2016	J Huazhong Univ Sci Technolog Med Sci	R	212	63	62	-	63	67	-	87 in total		-	100	100	-
Maleux 2009	J Cardiovasc Surg (Torino)	R	132	75	74	-	73	72	-	32	49	-	100	100	-
Mammo 2017	Cardiovasc Revasc Med	R	175	72 in total		-	65% in total		-	46% in total		-	NR	NR	-
Montorsi 2016	J Endovasc Ther	P	193	72	72	71	73	69	91	3	7	0	100	100	100
Mukherjee 2001	J Invasive Cardiol	R	178	70	69	-	61	63	-	56	60	-	100	100	-
Nii 2011	Neurol Med Chir (Tokyo)	P	95	76	75	-	88	75	-	65	54	-	100	100	-

				Age (y)			Males (%)			Symptomatic patients (%)			Double antiplatelet medication (%)		
Study	**Journal**	**Design**	**Patients (n)**	**Open**	**Closed**	**Hybrid**	**Open**	**Closed**	**Hybrid**	**Open**	**Closed**	**Hybrid**	**Open**	**Closed**	**Hybrid**
Nolz 2012	Eur J Radiol	P	36	68	62	-	71	67	-	17	50	-	U	U	-
Nonaka 2006	Neurosurgery	R	40	70 in total		-	85 in total		-	NR	NR	-	NR	NR	-
Ohki 2002	J Vasc Surg	P	30	71 in total		-	U	U	-	85 in total		-	100	100	-
Park 2009	J Vasc Surg	R	157	71 in total		-	61 in total		-	20 in total		-	100	100	-
Park 2013	Journal of neurosurgery	RCT	96	69	69	-	90	75	-	75	83	-	100	100	-
Piazza 2018	J Vasc Surg	R	278	73	74	-	74	73	-	0	0	-	100	100	-
Pieniazek 2012	Kardiol Pol	P (reg)	1081	66 in total			68 in total			52 in total			100	100	100
Pierce 2009	J Vasc Surg	R	139	NR	NR	-	87 in total		-	46 in total		-	100	100	-
Radak 2014	J Vasc Surg	P	301	± 66	± 64	± 67	± 55	± 63	± 56	± 31 in total			100	100	100
Randall 2010	Circ Cardiovasc Interv	P	561	69 in total		-	68 in total		-	100	100	-	74 in total		-
Rasiova 2017	Int Angiol	R	490	67	65	68	46	77	76	19	45	39	100	100	100
Rhee-Moore 2008	Ann Vasc Surg	P	193	73 in total		-	61 in total		-	74 in total		-	NR	NR	-
Sahin 2013	Postepy w Kardiologii Interwencyjnej	R	282	67	67	-	71	80	-	60	52	-	100	100	-
Schillinger 2008	Stroke	R	1684	71	72	-	64	70	-	46	34	-	100	100	-
Setacci 2010	Stroke	P	2065	76 in total			64 in total			48 in total		-	100	100	100
Simonte 2017	Ann Vasc Surg	R	1368	72	71	71	63	70	75	17	23	28	100	100	100
Stabile 2016	EuroIntervention	R	1604	72	72	72	67	70	68	26	34	19	100	100	100
Tadros 2012	J Vasc Surg	R	173	70	73	-	56	65	-	38	31	-	100	100	-
Tatli 2017	Postepy Kardiol Interwencyjnej	R	234	-	69	67	-	67	68	0	84	68	-	100	100
Tietke 2010	Neuroradiology	R	337	69 in total			± 74 in total			± 73 in total			100	100	-
Timaran 2011	J Vasc Surg	RCT	40	67	65	-	100	100	-	45	40	-	100	100	-
Varcoe 2008	J Endovasc Ther	P	51	72 in total		-	75 in total		-	41 in total		-	NR	NR	-
Ventoruzzo 2012	J Endovasc Ther	P	35	69	68	-	53	81	-	5	13	-	100	100	-
Wholey 2003	J Endovasc Ther	R	496	71 in total		-	± 61 in total		-	± 48 in total		-	100	100	-
Younis 2007	Catheter Cardiovasc Interv	R	363	± 70 in total		-	± 67 in total		-	± 31 in total		-	100	100	-

Study	Journal	Design	Patients (n)	Age (y)			Males (%)			Symptomatic patients (%)			Double antiplatelet medication (%)		
				Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid

Abbreviations and symbols: n = number; NR = not reported; P = prospective; R = retrospective; RCT = randomized controlled trial; reg = registry; U = unavailable (as indicated by the authors in e-mail correspondence); y = year; - = not applicable.

Footnote:

[1] Authors provided detailed additional data of 109 out of 124 patients included in the original publication, data of these 109 patients was used for meta-analysis.

[2] Data from Eckstein et al. 2008, *Lancet Neurol.*

IV. Procedure characteristics for each stent design

Study	Stents (n)	Stent cell type (n)			Stent types (n)			Access route	Timing[1]	EPD (%)			Pre-dilation (%)			Post-dilation (%)		
		Open	Closed	Hybrid	Open	Closed	Hybrid			Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid
Alparslan 2016	175	91	84	0	Protégé (91)	Xact (84)	-	F	NR	95 in total		-	23 in total		-	100	100	-
Bijuklic 2013	808	447	66	295	Acculink (369), Precise (38), Vivexx (14), Conformexx (11), Protégé (6), Exponent (4), Omnilink (2), Herculink (2), Dynalink (1), Megalink (1)	Wallstent (61), Xact (4), Easy Wallstent (1)	Cristallo Ideale (295)	NR	U	97 in total			± 40	*± 85*	± 11	U	U	U
Blasel 2009	84	52	32	0	Acculink (52)	Wallstent (32)	-	F	U	100	100	-	63	41	-	100	100	-
Borhani Haghighi 2015	170	12	97	61	Protégé (12)	Wallstent (97)	Cristallo Ideale (61)	F	NR	NR	NR	NR	17 in total			89 in total		
Bosiers 2007	3179	937	2242	0	Acculink (409), Precise (293), Protégé (201), Exponent (34)	Wallstent (2107), Xact (105), Nexstent (30)	-	F	U	98	95	-	17	13	-	100	100	-
Chang 2011	116	59	57	0	Acculink (26), Vivexx (17), Precise (15), Express (1)	Xact (41), Wallstent (14), Nexstent (1), Cypher (1)	-	F	NR	100	100	-	100	100	-	100	100	-
Coppi 2010	345	122	200	23	Vivexx (86), Acculink (17), Conformexx (8), Precise (5), Protégé (4), Vascuflex (2)	Xact (173), Wallstent (27)	Cristallo Ideale (23)	F	NR	100	100	100	1 in total			100	100	100

Study	Stents (n)	Stent cell type (n)			Stent types (n)			Access route	Timing[1]	EPD (%)			Pre-dilation (%)			Post-dilation (%)		
		Open	Closed	Hybrid	Open	Closed	Hybrid			Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid
Cremonesi 2002	31	3	28	0	SMART (2), AVE (1)	Wallstent (28)	-	F	NR	100	100	-	26 in total		-	NR	NR	-
Cremonesi 2005	385	161	224	0	Acculink (133), Exponent (17), Protégé (9), Conformexx (1), Smart Precise (1)	Wallstent (197), Xact (27)	-	F	U	100	100	-	NR	NR	-	100	100	-
Criado 2007	104	5	99	0	Exponent (5)	Wallstent (99)	-	C	NR	100	100	-	33 in total		-	100	100	-
Csobay-Novak 2015	528	93	435	0	Precise (93)	Wallstent (338), Xact (97)	-	NR	U	± 100	± 100	-	19	15	-	100	100	-
Dahm 2011	17	0	8	9	-	Wallstent (5), Xact (3)	Cristallo Ideale (9)	R	U	-	100	100	-	24 in total		-	82 in total	
De Donato 2008	3179	937	2242	0	Acculink (409), Precise (293), Protégé (201), Exponent (34)	Wallstent (2107), Xact (105), Nexstent (30)	-	F	mean 23 days	98	95	-	17	13	-	100	100	-
De Donato 2013	40	13	17	10	Precise (9), Protégé (4)	Wallstent (13), Adapt (2), Xact (2)	Cristallo Ideale (10)	F	mean 18 days	100	100	100	3 in total			100	100	100
Diehm 2008	256	189	67	0	Acculink (81), Precise (68), SMART (31), Vivexx (9)	Wallstent (44), Xact (23)	-	F	NR	76 in total		-	100	100	-	100	100	-
Doig 2016	738	367	371	0	Precise (209), Protégé (82), Acculink (70), Exponent (3), Nexstent (3)	Wallstent (318), Xact (48), Invatec (5)	-	NR	mean 59 days	68	87	-	70	72	-	81	89	-

Study	Stents (n)	Stent cell type (n)			Stent types (n)			Access route	Timing[1]	EPD (%)			Pre-dilation (%)			Post-dilation (%)		
		Open	Closed	Hybrid	Open	Closed	Hybrid			Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid
Du Mesnil de Rochemont 2006	50	37	13	0	Acculink (37)	Wallstent (13)	-	F	NR	100	100	-	NR	NR	-	100	100	-
Eskandari 2010	388	331	57	0	Precise (212), Acculink (91), Vivexx (17), SMART (11)	X-act (57)	-	F	U	> 95 in total		-	100	100	-	100	100	-
Faggioli 2006	188	100	88	0	Acculink (100)	Wallstent (88)	-	F	NR	100	100	-	1 in total		-	100	100	-
Garcia-Toca 2012	106	80	26	0	Acculink, Precise, Vivexx (80 in total)	Xact (26)	-	F	NR	< 95 in total		-	NR	NR	-	NR	NR	-
Gensicke 2013	109 [2]	71	38	0	Protégé (38), Precise (17), Acculink (16)	Wallstent (36), Nexstent (2)	-	NR	U	34	50	-	76	50	-	77	89	-
Giri 2014	8820	5313	3507	0	Precise (2696), Acculink (2617)	Xact (3507)	-	NR	U	100	100	-	85	85	-	91	92	-
Gray 2009	6320	4175	2145	0	Acculink (4175)	Xact (2145)	-	F	NR	100	100	-	NR	NR	-	NR	NR	-
Grunwald 2011	194	158	36	0	Zilver (84), SMART (74)	Wallstent (36)	-	NR	<3 days	0	0	-	< 5	< 5	-	100	100	-
Guadagnoli 2015	94	6	88	0	Acculink (2), Memotherm (2), Protégé (1), Dynalink (1)	Wallstent (86), Xact (2)	-	F (97), R (3)	weeks-months	97 in total		-	83	49	-	83	65	-
Hernandez-Fernandez 2014	286	240	46	0	Acculink (222), Vivexx (14), Protégé (4)	Xact (27), Adapt (19)	-	F	median 28 days	100	100	-	100	100	-	100	100	-
Hopf-Jensen 2014	101	0	80	21	-	Wallstent (64), Xact (16)	Cristallo Ideale (21)	F	mean 10 days	-	0	0	-	2 in total		-	100	100

Study	Stents (n)	Stent cell type (n)			Stent types (n)			Access route	Timing[1]	EPD (%)			Pre-dilation (%)			Post-dilation (%)		
		Open	Closed	Hybrid	Open	Closed	Hybrid			Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid
Hornung 2015	125	84	41	0	Protégé (70), Precise (10), Zilver (4)	Xact (30), Wallstent (11)	-	F	mean 51 days	100	100	-	32	36	-	99	97	-
Hornung 2016	20	14	6	0	Protégé (11), Precise (3)	Wallstent (4), Xact (2)	-	NR	NR	100	100	-	10 in total		-	NR	NR	-
Hussain 2011	214	157	57	0	Acculink (116), Precise (29), Protégé (12)	Wallstent (44), Xact (8), Nexstent (5)	-	F	NR	100	100	-	NR	NR	-	NR	NR	-
Jansen 2009	563	127	436	0	Precise (35), Acculink (92)	Wallstent (436)	-	F	NR	55	17	-	36 in total		-	NR	NR	-
Jim 2011	4337	3457	880	0	Acculink (2381), Precise (959), Protégé (117)	Xact (737), Nexstent (117), Wallstent (26)	-	F	NR	97	99	-	NR	NR	-	NR	NR	-
Kessler 2013	55	40	15	0	Protégé (40)	Wallstent (15)	-	F (96), B (4)	NR	49 in total		-	42 in total		-	NR	NR	-
Kono 2014	118	78	40	0	Precise (78)	Wallstent (40)	-	NR	<10-14 days (in general)	100	100	-	±100	±100	-	±100	±100	-
Latacz 2017	371	153	151	67	Precise (86), Acculink (67)	Wallstent (101), Xact (50)	Cristallo Ideale (67)	F (98%)	<14d (in general)	100	100	100	20	19	39	100	100	100
Leal 2012	64	19	45	0	Protégé (19)	Wallstent (45)	-	F (52), C (48)	NR	100	100	-	8 in total		-	100	100	-
Ledwoch 2017	749	404	345	0	Acculink (202), Precise (202)	Xact (229), Wallstent (116)	-	NR	U	100	100	-	88	86	-	99	100	-
Liu 2016	212	170	42	0	unspecified (170)	unspecified (42)	-	F	<14 days	100	100	-	NR	NR	-	NR	NR	-
Maleux 2009	132	60	72	0	Acculink (37), Precise (18), Exponent (5)	Wallstent (72)	-	NR	<7 days (in general)	77	11	-	100	100	-	100	100	-

Study	Stents (n)	Stent cell type (n)			Stent types (n)			Access route	Timing[1]	EPD (%)			Pre-dilation (%)			Post-dilation (%)		
		Open	Closed	Hybrid	Open	Closed	Hybrid			Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid
Mammo 2017	175	133	42	0	unspecified (133)	unspecified (42)	-	NR	NR	NR	NR	-	NR	NR	-	NR	NR	-
Montorsi 2016	193	63	107	23	Precise (61), Protégé (2)	Wallstent (102), Adapt (5)	Cristallo Ideale (23)	R (72), B (28)	U	100	100	100	19	19	8	100	100	100
Mukherjee 2001	178	89	89	0	SMART (89)	Wallstent (89)	-	F	NR	0	0	-	100	100	-	100	100	-
Nii 2011	95	43	52	0	Precise (43)	Wallstent (52)	-	NR	NR	100	100	-	100	100	-	NR	NR	-
Nolz 2012	36	24	12	0	Acculink (24)	Wallstent (12)	-	NR	U	NR	NR	-	71	83	-	96	100	-
Nonaka 2006	44	29	15	0	SMART (29)	Wallstent (15)	-	NR	NR	100	100	-	100	100	-	NR	NR	-
Ohki 2002	30	7	23	0	Precise (7)	Wallstent (23)	-	F	U	100	100	-	100	100	-	100	100	-
Park 2009	157	123	34	0	Acculink (94), Smart Precise (29)	Xact (34)	-	NR	U	100	100	-	U	U	-	100	100	-
Park 2013	96	48	48	0	Precise (48)	Wallstent (48)	-	F	NR	90	100	-	85	90	-	100	100	-
Piazza 2018	278	211	67	0	Precise (211)	Wallstent (67)	-	F	-	100	100	-	0	0	-	98	84	-
Pierce 2009	141	100	41	0	Acculink (77), Precise (22), Protégé (1)	Wallstent (39), Xact (1), Nexstent (1)	-	F	NR	100	100	-	NR	NR	-	NR	NR	-
Radak 2014	301	125	160	16	Protégé (76), Precise (49)	Wallstent (158), Xact (2)	Cristallo Ideale (16)	F (mostly)	U	100	100	100	±18	±13	±19	±62	±42	±94
Randall 2010	561	91	470	0	Precise (38), unspecified (53)	Wallstent (439), unspecified (31)	-	NR	mean 96 days	65 in total		-	U	U	-	U	U	-

Study	Stents (n)	Stent cell type (n)			Stent types (n)			Access route	Timing[1]	EPD (%)			Pre-dilation (%)			Post-dilation (%)		
		Open	Closed	Hybrid	Open	Closed	Hybrid			Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid
Rasiova 2017	490	160	99	231	Precise (88), Sinus (40), Vascuflex (12), Zilver (9), Acculink (6), Istmus (3), Smart (1), Xpert (1)	Xact (99)	Cristallo Ideale (231)	NR	median 16d (R 9-45)	100	100	100	≤5%	≤5%	≤5%	100	100	100
Rhee-Moore 2008	201	134	67	0	Acculink (108), Precise (23), Exponent (3)	Wallstent (43), Nexstent (21), Xact (3)	-	F	NR	99 in total		-	100	100	-	100	100	-
Sahin 2013	282	144	138	0	Protégé (144)	Xact (138)	-	F	NR	100	100	-	11	20	-	89	92	-
Schillinger 2008	1684	825	859	0	Acculink (616), Precise (164), Protégé (23), Sinus (10), Vivexx (12)	Wallstent (830), Xact (18), Nexstent (11)	-	F	NR	88	87	-	52	78	-	99	99	-
Setacci 2010	2065	759	1276	30	Precise (448), Vivexx (111), Acculink (109), Protégé (91)	Wallstent (1138), Xact (138)	Cristallo Ideale (30)	F (mostly)	mean 17 days	100	100	100	8 in total			100	100	100
Simonte 2017	1368	340	948	80	Precise (236), Acculink (73), Protégé (26), Vivexx (2), Exponent (2), Tsunami (1)	Wallstent (638), Xact (302), Nexstent (4), Adapt (4)	Cristallo Ideale (80)	F (mostly)	U	100	100	100	11	11	9	100	100	100
Stabile 2016	1604	435	713	456	unspecified (435)	unspecified (713)	unspecified (456)	NR	NR	100	100	100	NR	NR	NR	NR	NR	NR

Study	Stents (n)	Stent cell type (n)			Stent types (n)			Access route	Timing[1]	EPD (%)			Pre-dilation (%)			Post-dilation (%)		
		Open	Closed	Hybrid	Open	Closed	Hybrid			Open	Closed	Hybrid	Open	Closed	Hybrid	Open	Closed	Hybrid
Tadros 2012	173	125	48	0	Acculink (74), Protégé (36), Precise (15)	Wallstent (37), Xact (8), Nexstent (3)	-	F	NR	100	100	-	100	100	-	100	100	-
Tatli 2017	234	0	146	88	-	Xact (146)	Cristallo Ideale (88)	F	>30 days	-	100	100	-	29	19	-	69	82
Tietke 2010	367	16	317	34	Driver (7), Omnilink (4), Acculink (2), Precise (2), AVE (1)	Wallstent (316), Nexstent (1)	Sinus-Carotid-RX (33), Cristallo Ideale (1)	F (95%), B (5%)	<10 days (in general)	0	0	0	U	U	U	94 in total		-
Timaran 2011	40	20	20	0	Acculink (20)	Xact (20)	-	F	NR	100	100	-	NR	NR	-	NR	NR	-
Varcoe 2008	53	49	4	0	Precise (48), Exponent (1)	Wallstent (4)	-	F (96%), B/R (4%)	NR	96 in total		-	55 in total		-	83 in total		-
Ventoruzzo 2012	35	19	16	0	Acculink (19)	Wallstent (16)	-	F (60%), B (40%)	mean 12 days	100	100	-	26	19	-	100	100	-
Wholey 2003	508	253	255	0	SMART (148), Precise (82), Acculink (16), Cordis 747 (7)	Palmaz (235), Wallstent (15), Nexstent (5)	-	F	NR	14 in total		-	100	100	-	100	100	-
Younis 2007	383	301	82	0	Precise (265), SMART (25), Acculink (11)	Wallstent (82)	-	NR	NR	86 in total		-	100	100	-	NR	NR	-

Abbreviations and symbols: B = brachial; C = cervical; F = femoral; n = number; NR = not reported; R = radial; U = unavailable (as indicated by the authors in e-mail correspondence); - = not applicable.

Footnotes:

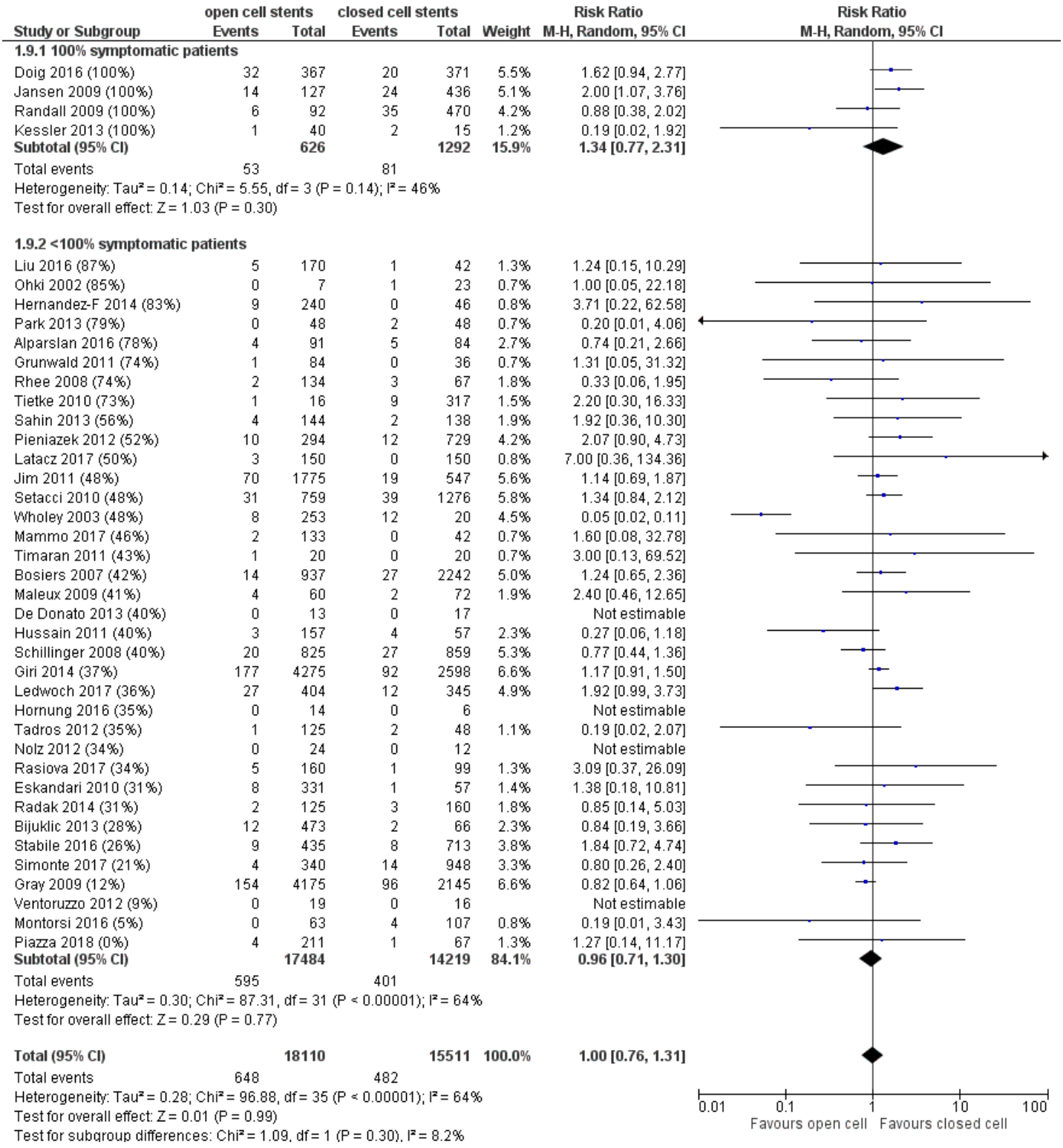
[1] Defined as time period between most recent cerebral event and carotid artery stenting.

[2] Authors provided detailed additional data of 109 out of 124 patients included in the original publication, thus data of 109 patients was used for meta-analysis.

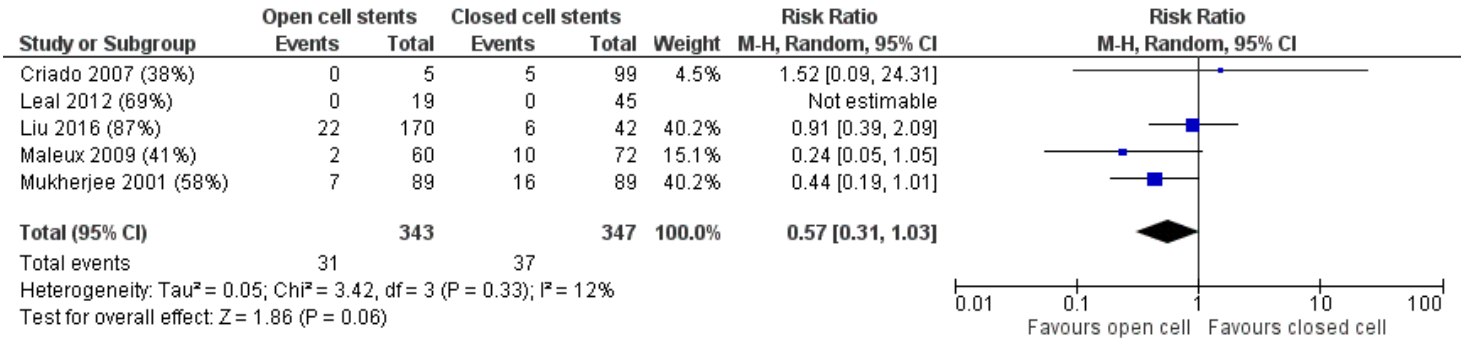
V. Supplemental figures

General comment: The percentages within brackets after each study ID represent the percentage of symptomatic patients. Risk ratios are shown with 95% confidence intervals. CVA = cerebrovascular accident; TIA = transient ischemic attack.

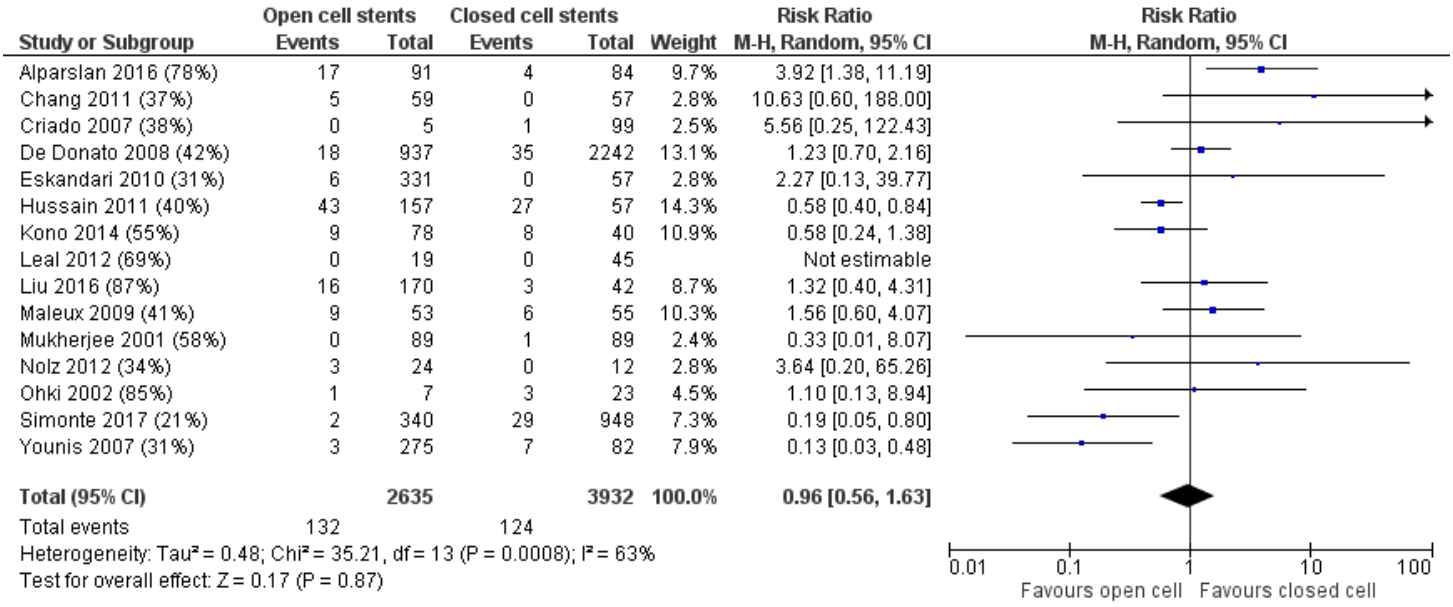
a. Open vs closed cell stents



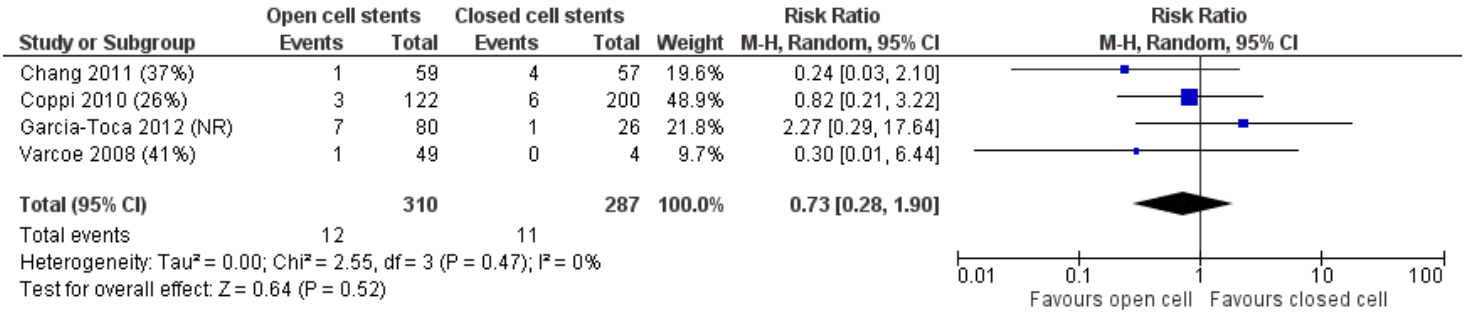
Supplemental figure 1. Difference in <u>30-day any stroke or mortality</u> rate between patients treated with <u>open and closed cell</u> stents.



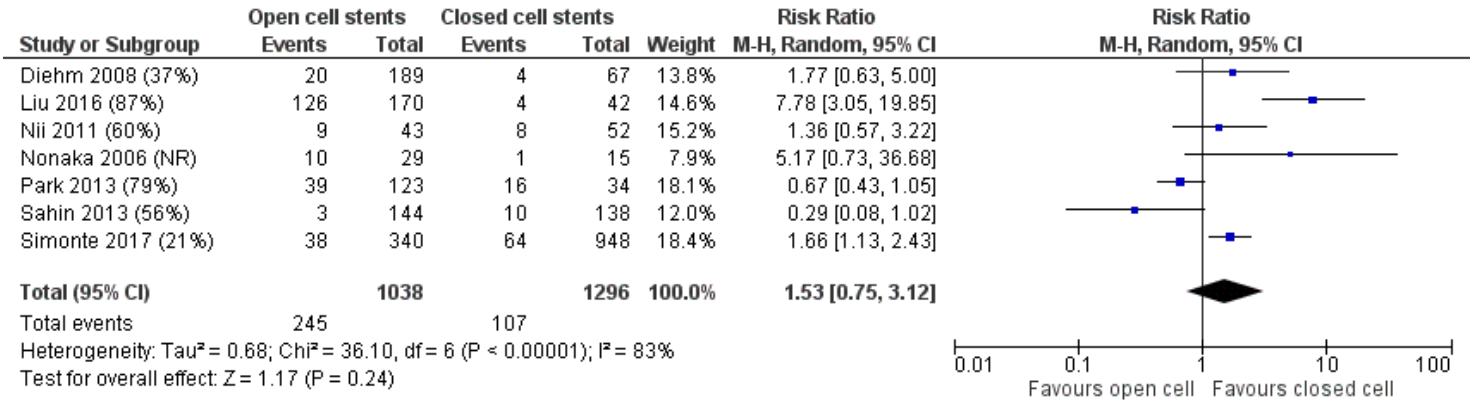
Supplemental figure 2. Difference in 1-year any stroke or mortality rate between patients treated with open and closed cell stents.



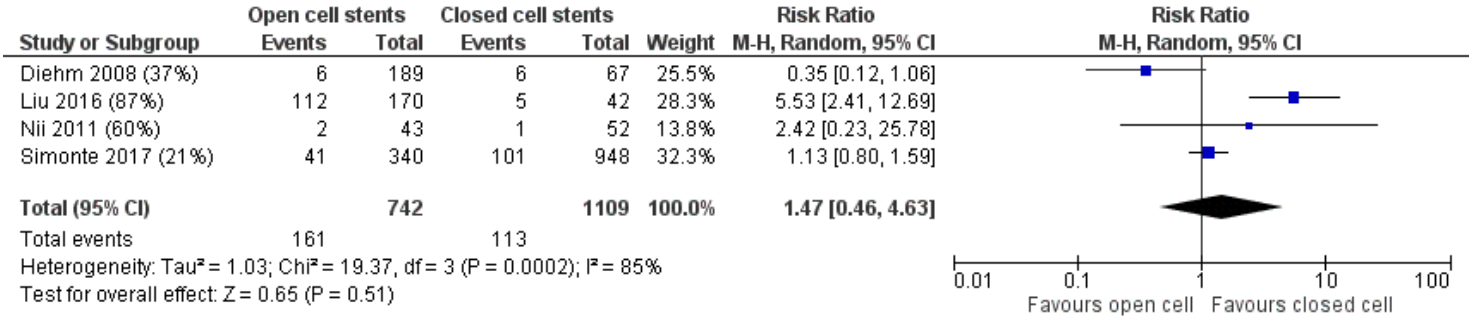
Supplemental figure 3. Difference in restenosis rate between patients treated with open and closed cell stents.



Supplemental figure 4. Difference in stent fracture rate between patients treated with open and closed cell stents.

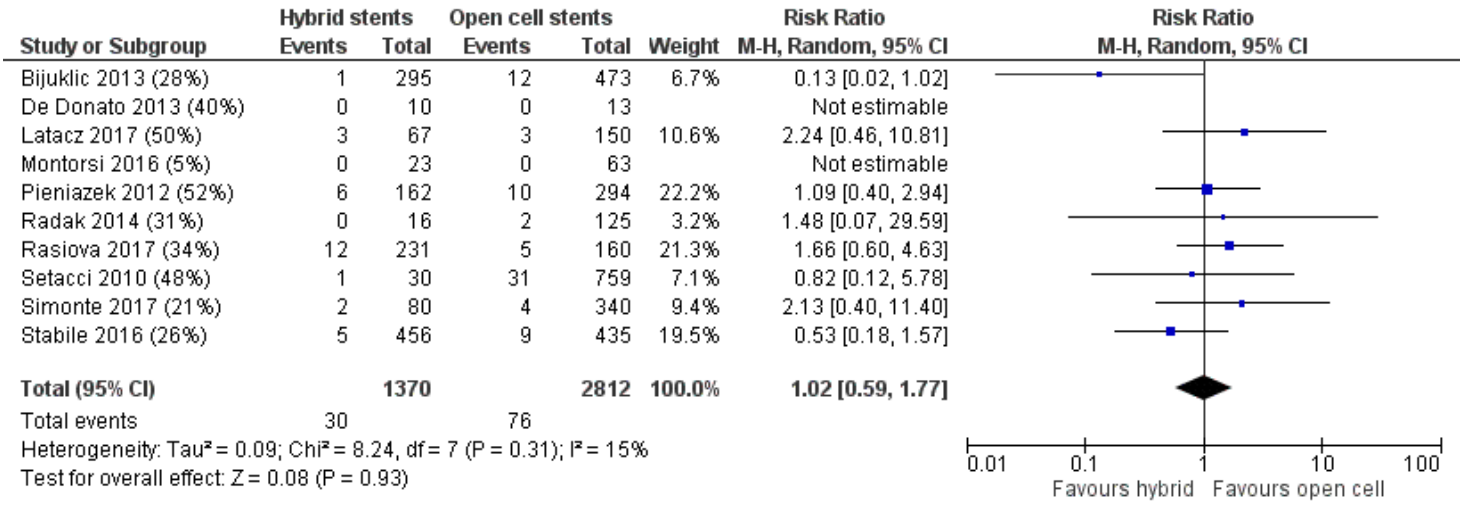


Supplemental figure 5. Difference in intraprocedural hypotension rate between patients treated with open and closed cell stents.



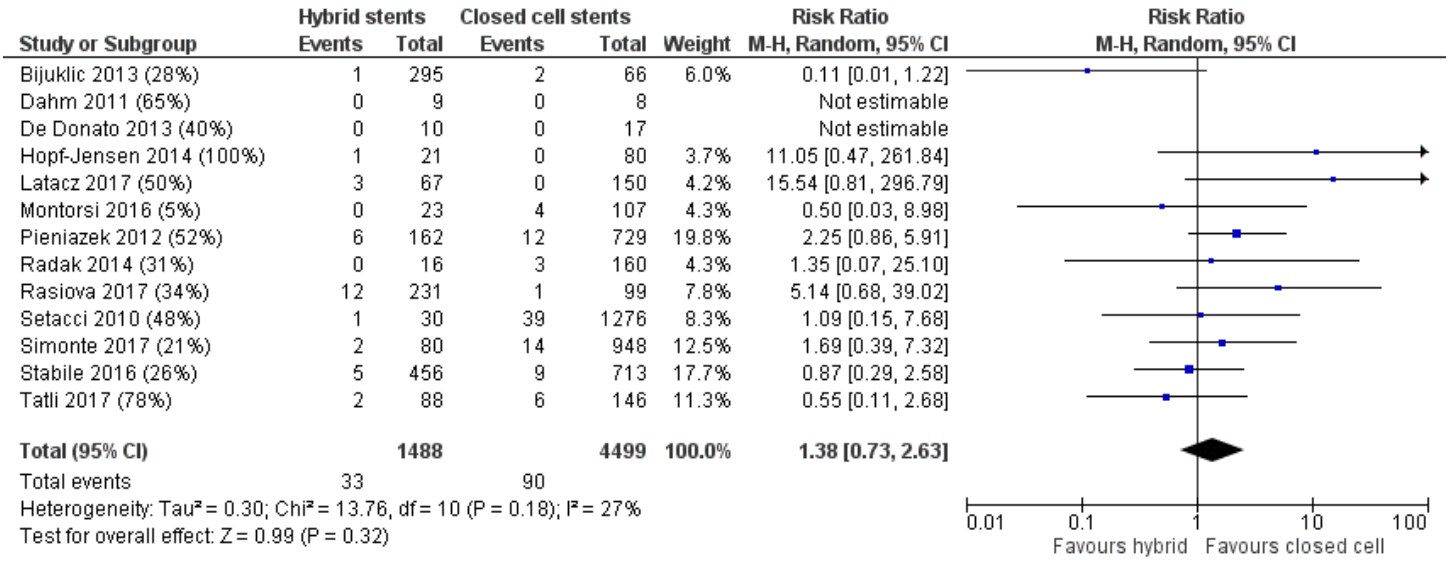
Supplemental figure 6. Difference in intraprocedural bradycardia rate between patients treated with open and closed cell stents.

b. Hybrid vs open cell stents



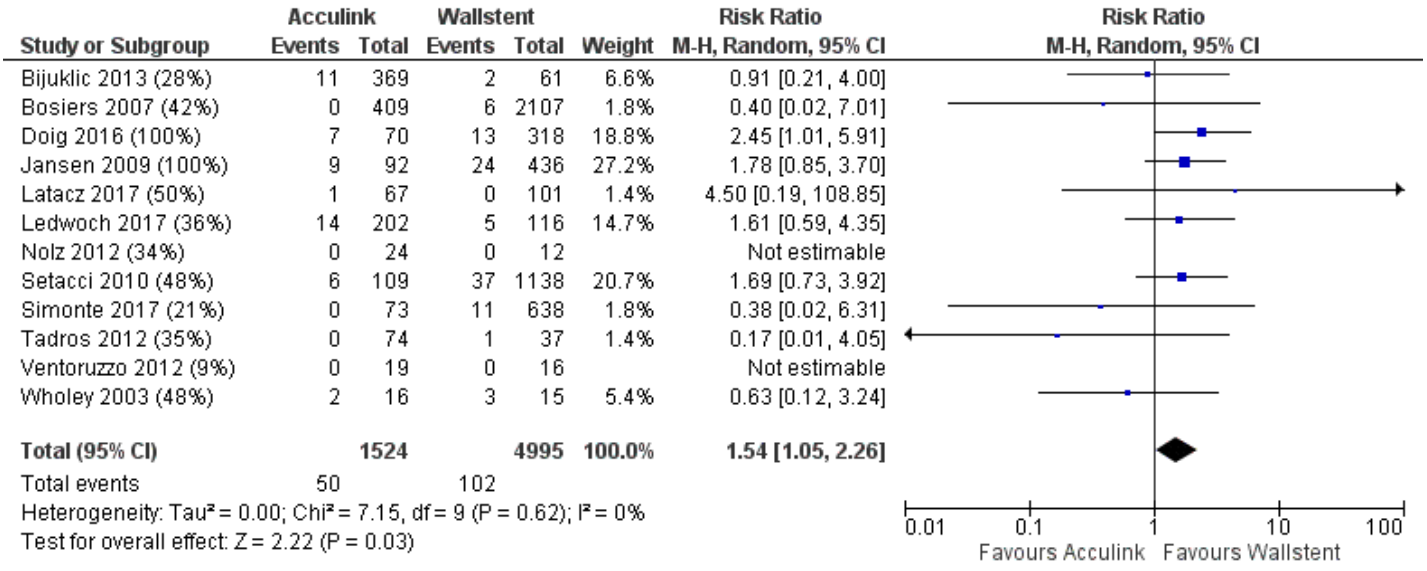
Supplemental figure 7. Difference in 30-day any stroke or mortality rate between patients treated with hybrid and open cell stents.

c. Hybrid vs closed cell stents

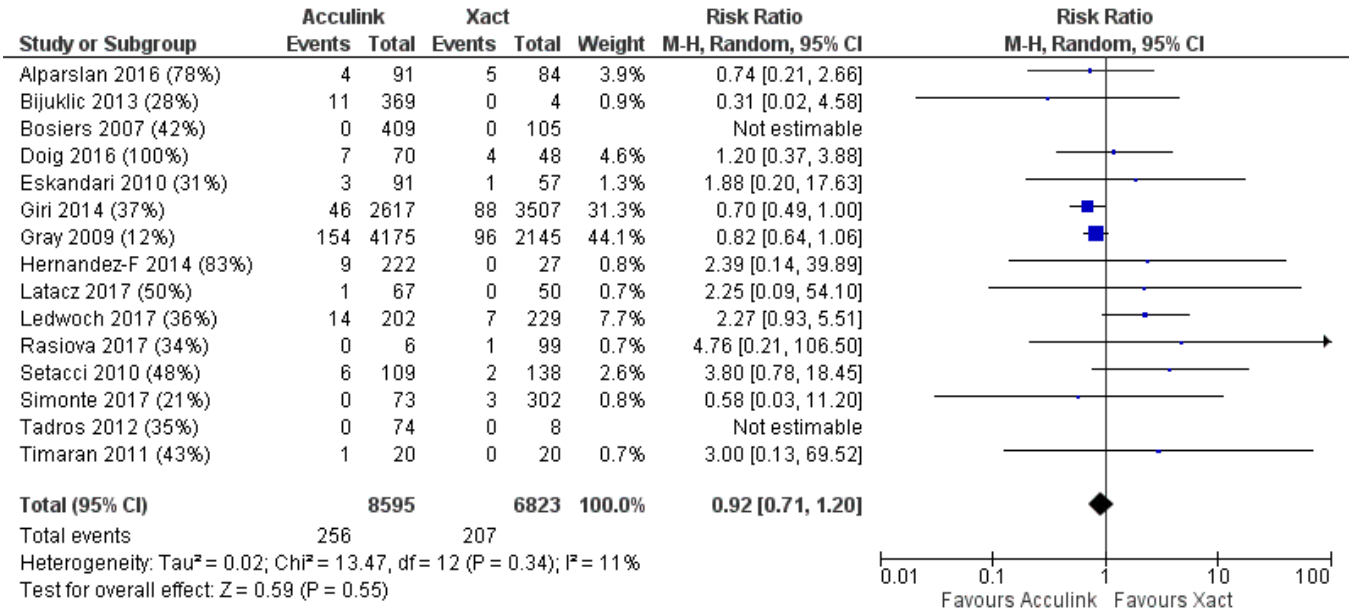


Supplemental figure 8. Difference in 30-day any stroke or mortality rate between patients treated with hybrid and closed cell stents.

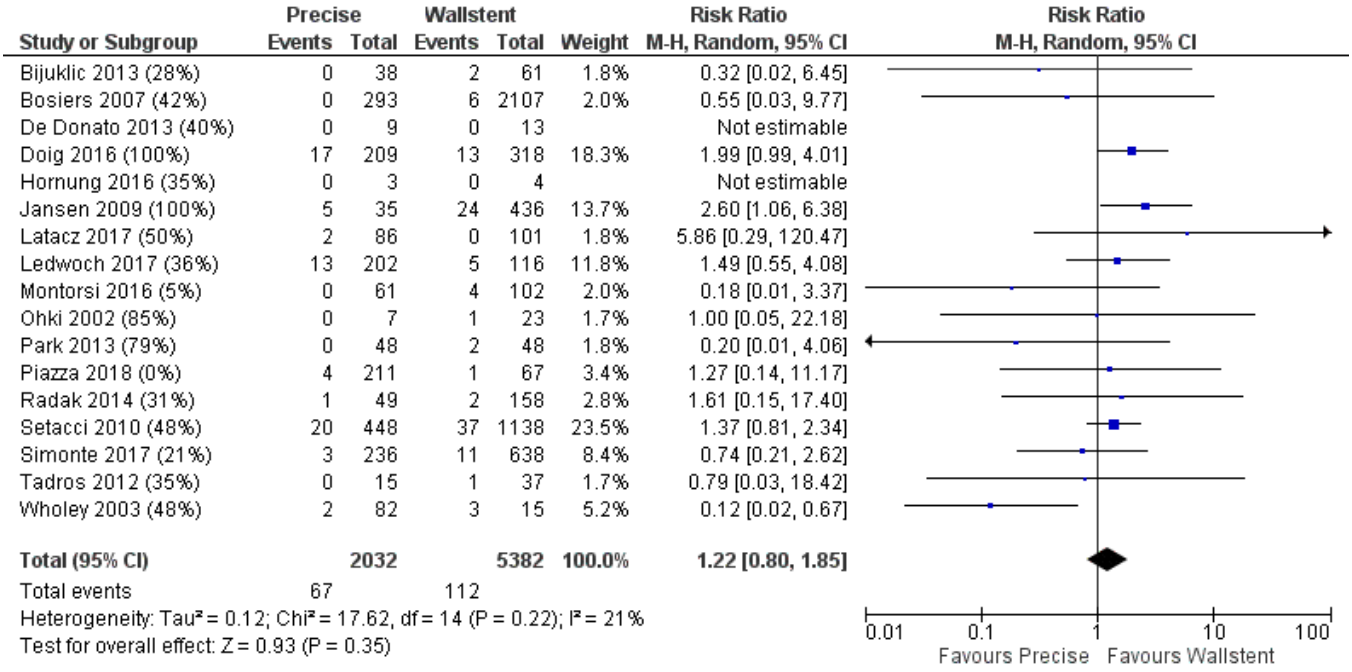
d. Per specific stent



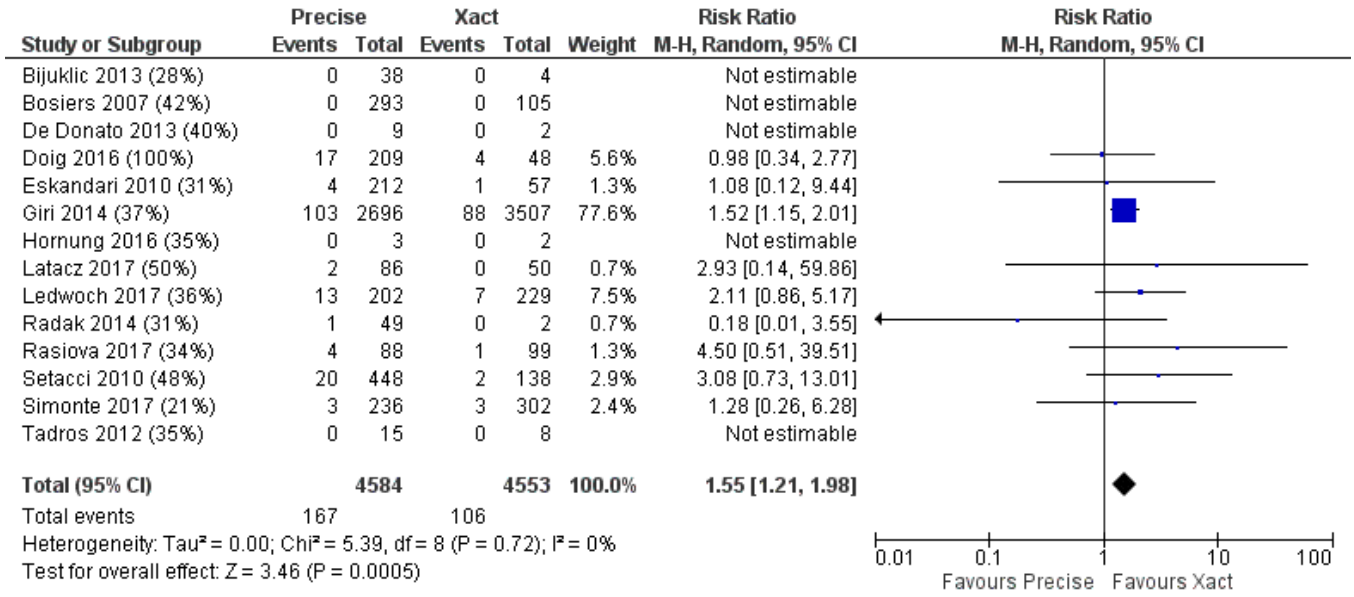
Supplemental figure 9. Difference in 30-day any stroke or mortality rate between patients treated with Acculink and Wallstent.



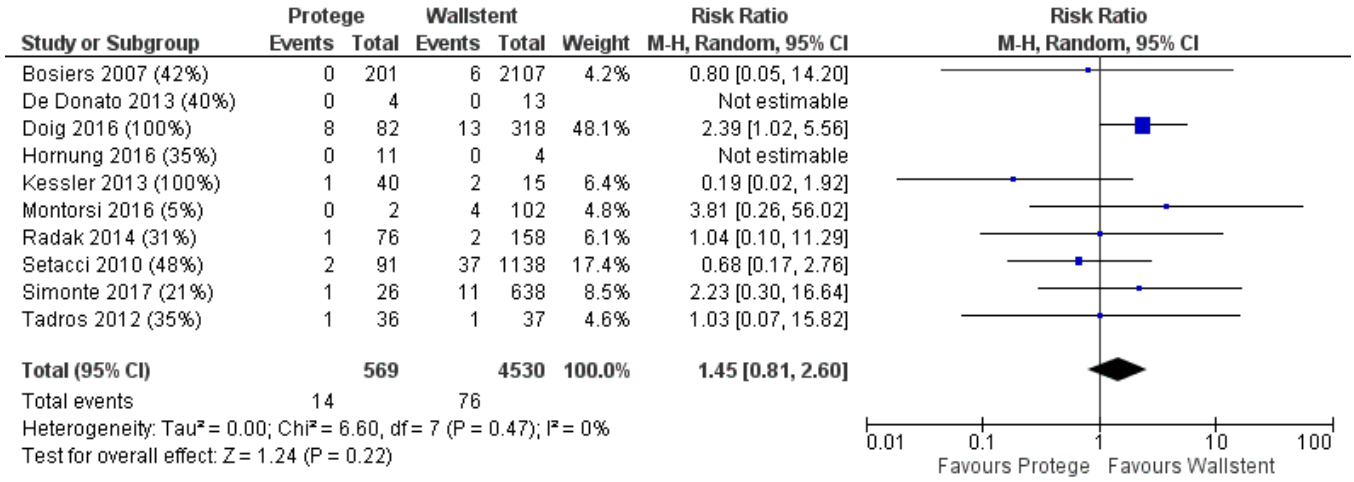
Supplemental figure 10. Difference in 30-day any stroke or mortality rate between patients treated with Acculink and Xact.



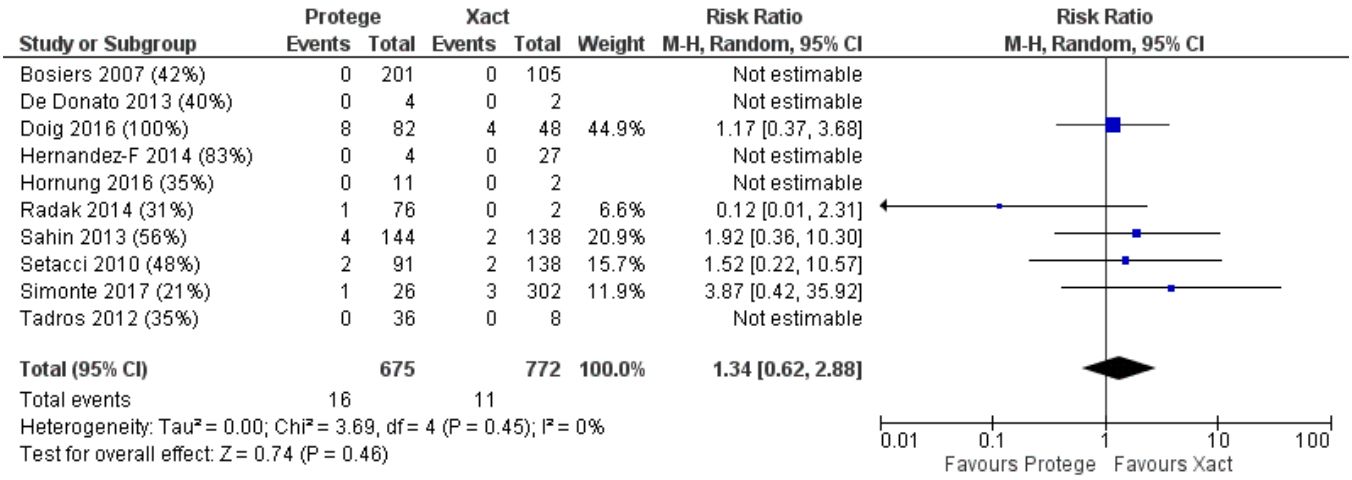
Supplemental figure 11. Difference in 30-day any stroke or mortality rate between patients treated with Precise and Wallstent.



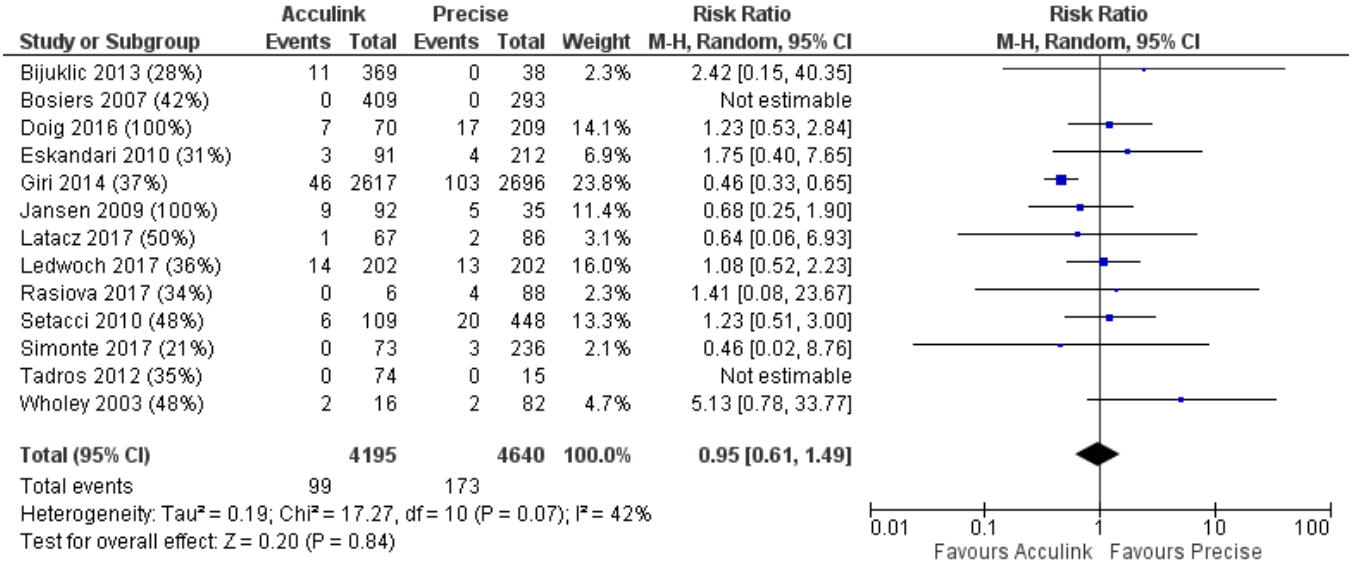
Supplemental figure 12. Difference in <u>30-day any stroke or mortality</u> rate between patients treated with <u>Precise and Xact</u>.



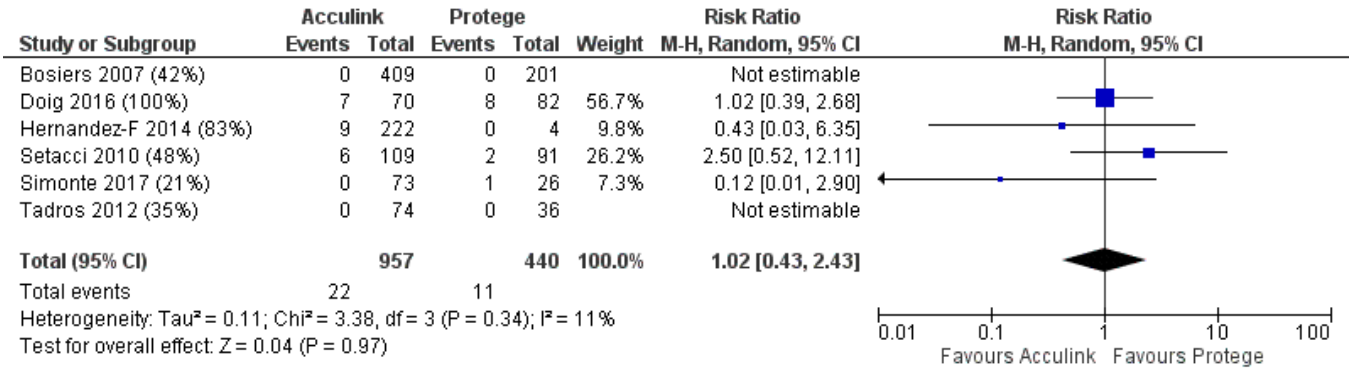
Supplemental figure 13. Difference in <u>30-day any stroke or mortality</u> rate between patients treated with <u>Protégé and Wallstent</u>.



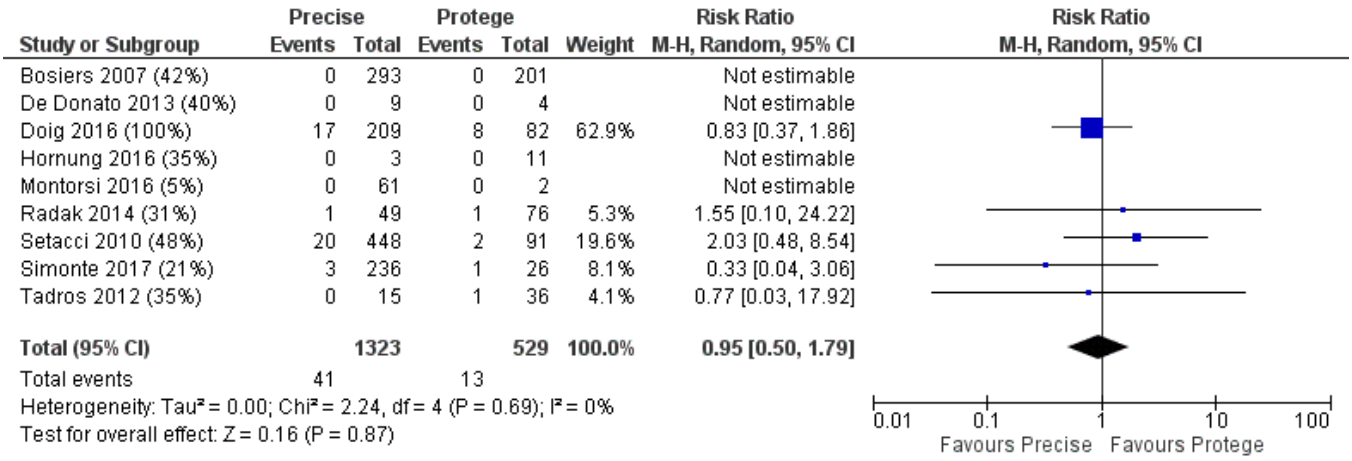
Supplemental figure 14. Difference in 30-day any stroke or mortality rate between patients treated with Protégé and Xact.



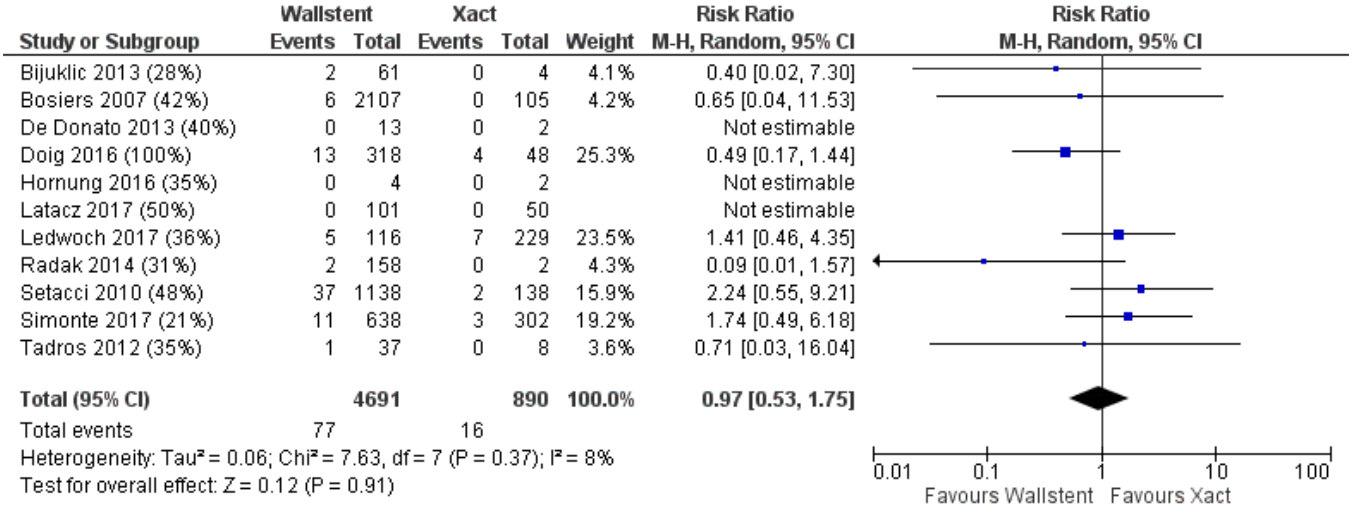
Supplemental figure 15. Difference in 30-day any stroke or mortality rate between patients treated with Acculink and Precise.



Supplemental figure 16. Difference in 30-day any stroke or mortality rate between patients treated with Acculink and Protégé.



Supplemental figure 17. Difference in 30-day any stroke or mortality rate between patients treated with Precise and Protégé.



Supplemental figure 18. Difference in 30-day any stroke or mortality rate between patients treated with Wallstent and Xact.

VI. Quality assessment

		Newcastle–Ottawa Scale for cohort studies									The Cochrane Collaboration's tool for randomized controlled trials							
Reference	**Design**	Representative cases	Selection of controls	Ascertainment of exposure	Outcome not present at start	Comparability of groups	Outcome assessment	Follow-up duration	Follow-up completeness	Total points	Random sequence generation	Allocation concealment	Blinding of participants and personnel	Blinding of outcome assessment	Incomplete outcome data	Selective reporting	Other sources of bias	Total points
Alparslan 2016	R	●	●	●	●	●	o	●	●	7								
Bijuklic 2013	R	●	-	●	o	-	o	●	●	4								
Blasel 2009	R	●	-	●	o	-	o	●	●	4								
Borhani Haghighi 2015	R	●	-	●	o	-	o	●	●	4								
Bosiers 2007	R	●	●	●	●	●●	o	●	●	8								
Chang 2011	R	●	-	●	o	-	o	●	●	4								
Coppi 2010	P	●	-	●	o	-	o	●	●	4								
Cremonesi 2002	P	●	-	●	●	-	o	o	●	4								
Cremonesi 2005	P	●	●	●	●	o	o	●	●	6								
Criado 2007	P	●	-	●	o	-	o	●	●	4								
Csobay-Novak 2015	R	●	-	●	o	-	o	●	●	4								
Dahm 2011	P	●	-	●	o	-	o	●	●	4								
De Donato 2008	R	●	-	●	o	-	o	●	●	4								
De Donato 2013	P	●	●	●	●	●	o	●	●	7								
Diehm 2008	P (reg)	●	●	●	●	●	o	●	●	7								
Doig 2016	P	●	-	●	●	-	o	●	●	5								
Du Mesnil de Rochemont 2005	R	●	-	●	●	-	o	●	●	5								
Eskandari 2010	R	●	-	●	o	-	o	●	o	3								
Faggioli 2006	P	●	-	●	o	-	o	●	●	4								
Garcia-Toca 2012	R	●	-	●	o	-	o	●	●	4								
Gensicke 2013	P	●	-	●	●	-	o	●	●	5								
Giri 2014	P (reg)	●	●	●	o	●●	o	●	●	7								
Gray 2009	P	●	●	●	●	●●	o	●	●	8								
Grunwald 2011	R	●	●	●	●	●	o	●	●	7								
Guadagnoli 2015	R	●	-	●	o	-	o	●	●	4								
Hernandez-Fernandez 2014	R	●	-	●	o	-	o	●	●	4								
Hopf-Jensen 2014	P	●	●	●	●	o	o	●	●	6								
Hornung 2015	P	●	-	●	●	-	o	●	●	5								
Hornung 2016	P	●	-	●	●	-	o	●	●	5								
Hussain 2011	P	●	●	●	o	●●	o	●	●	7								
Jansen 2009	P	●	●	●	●	o	o	●	●	6								
Jim 2011	P (reg)	●	●	●	o	●●	o	●	o	6								
Kessler 2013	R	●	-	●	●	-	o	●	●	5								
Kono 2014	R	●	●	●	●	●●	o	●	●	8								

Latacz 2017	R	●	-	●	o	-	o	●	●	4									
Leal 2012	P	●	-	●	●	-	o	●	●	5									
Ledwoch 2017	P	●	-	●	●	-	o	●	●	5									
Liu 2016	R	●	●	●	o	●●	o	●	●	7									
Maleux 2009	R	●	●	●	●	●	o	●	●	7									
Mammo 2017	R	●	-	●	●	-	o	●	●	5									
Montorsi 2016	P	●	-	●	●	-	o	●	o	4									
Mukherjee 2001	R	●	●	●	●	●●	o	●	●	8									
Nii 2011	P	●	●	●	●	●	o	●	●	7									
Nolz 2012	P	●	-	●	o	-	o	●	●	4									
Nonaka 2006	R	●	-	●	●	-	o	●	●	5									
Ohki 2002	P	●	-	●	●	-	o	●	●	5									
Park 2009	R	●	-	●	o	-	o	●	●	4									
Park 2013	RCT										●	●	o	●	●	o	●	5	
Piazza 2018	R	●	-	●	o	-	o	●	●	4									
Pieniazek 2012	P (reg)	●	●	●	o	o	o	●	●	5									
Pierce 2009	R	●	●	●	o	o	o	●	●	5									
Radak 2014	P	●	-	●	●	-	o	●	●	5									
Randall 2009	P	●	-	●	●	-	o	●	●	5									
Rasiova 2017	R	●	-	●	●	-	o	●	●	5									
Rhee 2008	P	●	-	●	o	-	o	●	●	4									
Sahin 2013	R	●	●	●	o	●●	o	●	●	7									
Schillinger 2008	R	●	●	●	●	●	o	●	●	7									
Setacci 2010	P	●	-	●	●	-	●	●	●	6									
Simonte 2017	R	●	-	●	o	-	o	●	●	4									
Stabile 2016	R	●	●	●	●	●	o	●	●	7									
Tadros 2012	R	●	●	●	o	●●	o	●	●	7									
Tatli 2017	R	●	●	●	o	●●	o	●	●	7									
Tietke 2010	R	●	-	●	●	-	o	●	●	5									
Timaran 2011	RCT										●	o	●	●	●	●	●	6	
Varcoe 2008	P	●	-	●	●	-	●	●	●	6									
Venturozzo 2012	P	●	-	●	o	-	o	●	●	4									
Wholey 2013	R	●	-	●	●	-	o	●	●	5									
Younis 2007	R	●	-	●	●	-	o	●	●	5									

Abbreviations: P = prospective; R = retrospective; RCT = randomized controlled trial; reg = registry.

Symbols: ●, consistent with criteria; o, not consistent with criteria; -, not applicable.

VII. Specification of timing of adverse events occurring within 30 days of CAS

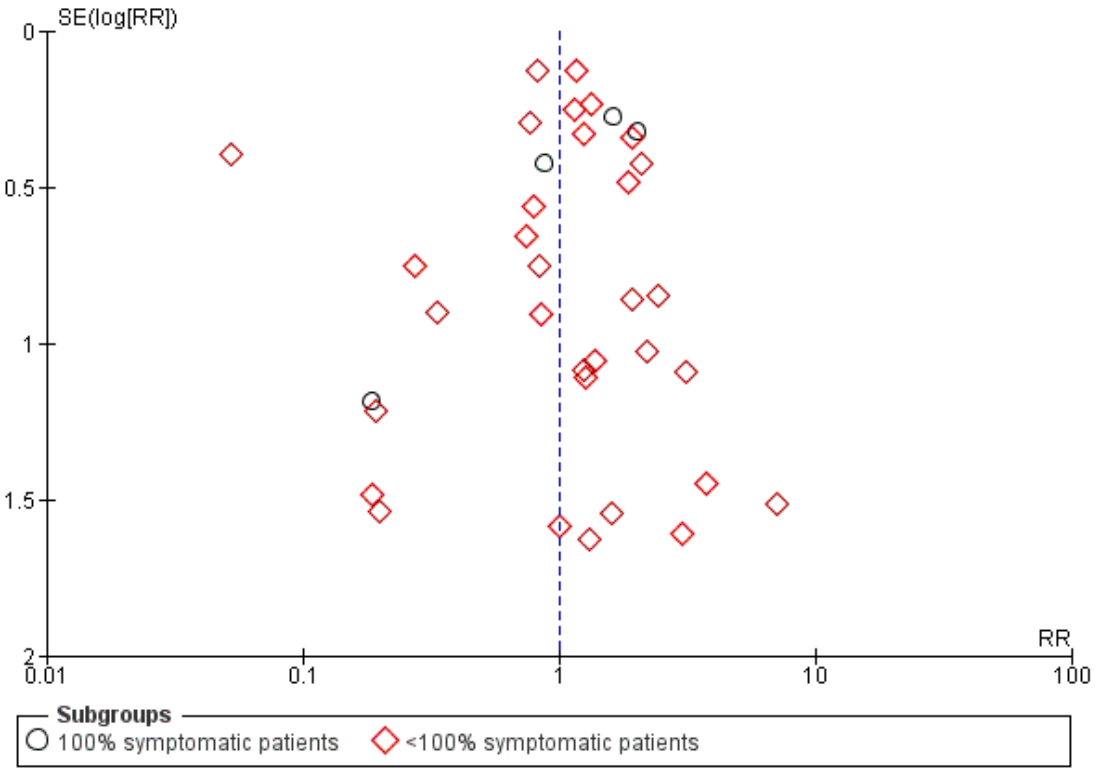
study	% of pts with AE (n/total)			% of procedural AEs occurring per stent type (n/total)	
	within 30 days	of which during procedure	of which on day of procedure	open cell	closed cell
Studies focusing on timing					
Bosiers 2007[1]	2.8 (90/3179)	32 (29/90)	-	24 (7/29)	76 (22/29)
Cremonesi 2005[1]	3.4 (13/377)	15 (2/13)	-	50 (1/2)	50 (1/2)
Doig 2016[2]	7.4 (61/828)	-	72 (44/61)	-	-
Jansen 2009[3]	6.9 (39/563)	59 (23/39)	-	-	-
Kessler 2013[3]	5.4 (3/55)	33 (1/3)	-	100 (1/1)	0 (0/1)
Schillinger 2008[3]	2.8 (47/1684)	-	70 (33/47)	33 (11/33)	67 (22/33)
Studies not focusing on timing (description in text)					
Criado 2007[1]	4.1 (4/97)	50 (2/4)	100 (4/4)	0 (0/4)	100 (4/4)
De Donato 2013[1]	5.0 (2/40)	0 (0/2)	-	NA	NA
Faggioli 2006[4]	8.0 (15/187)[6]	13 (2/15)	100 (15/15)	-	-
Hornung 2015[1]	0.8 (1/123)	0 (0/1)	0 (0/1)	NA	NA
Hornung 2016[5]	5.0 (1/20)	0 (0/1)	0 (0/1)	NA	NA
Maleux 2009[1]	7.6 (10/132)	10 (1/10)	50 (5/10)	80 (4/5)	20 (1/5)
Ohki 2002[3]	3.3 (1/30)	0 (0/1)	100 (1/1)	0 (0/1)	100 (1/1)
Piazza 2018[3]	1.8 (5/278)	40 (2/5)	100 (5/5)	-	-
Tatli 2017[3]	3.4 (8/234)	50 (4/8)	63 (5/8)	-	-
Wholey 2003[1]	6.8 (35/513)	77 (27/35)	77 (27/35)	-	-
Total percentage of events occurring during or on day of procedure		41 (93/227)	75 (139/185)		
Total percentage of procedural adverse events occurring in open or closed cell stents				32 (24/75)	68 (51/75)

In the second column the total number of 30-day adverse events is specified with the study sample size. The next two columns represent 'procedural AEs': the number of 30-day events occurring during (third column) or on the day of the procedure (fourth column). In case of sufficient data, the final columns indicate whether procedural AEs occurred in patients treated with open or closed cell stents.
NB. Studies reporting an event rate of 0% within 30-days of follow-up were not included in this table (23,32,51,52).

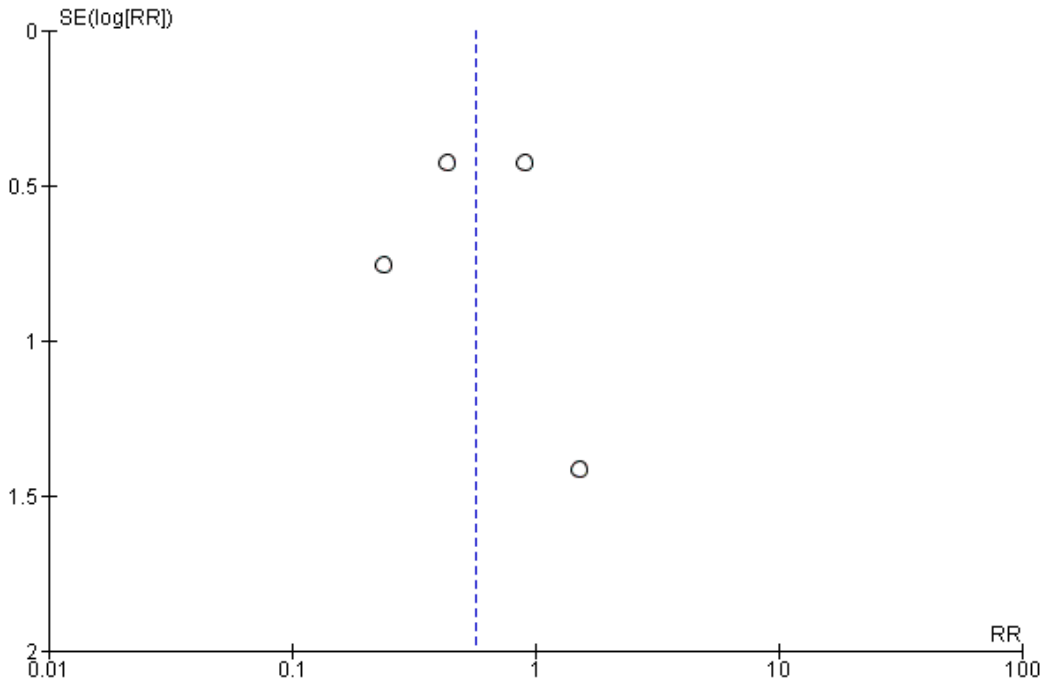
Footnotes: [1] definition AEs: death, stroke or transient ischemic attack. [2] definition AEs: death, stroke or myocardial infarction. [3] definition AEs: death or stroke. [4] definition AEs: 'temporary neurological complications'. [5] definition AEs: death, stroke, transient ischemic attack or myocardial infarction. [6] complications occurring in-hospital instead of within 30 days.

Abbreviations: AE = adverse event; n = number; NA = not applicable; - = no detailed information available.

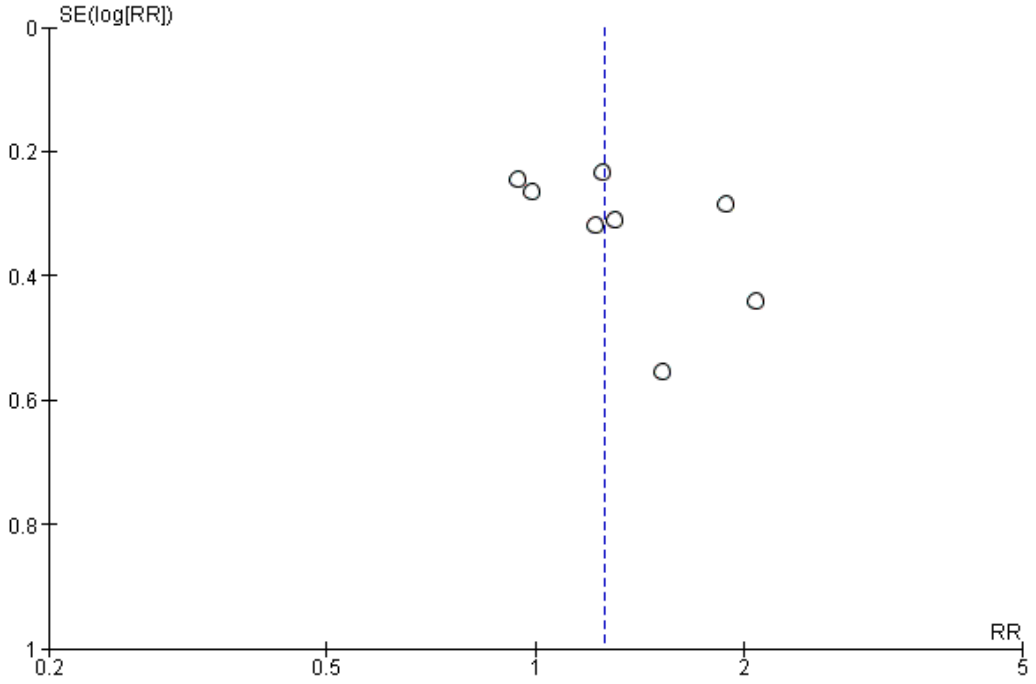
VIII. Funnel plots



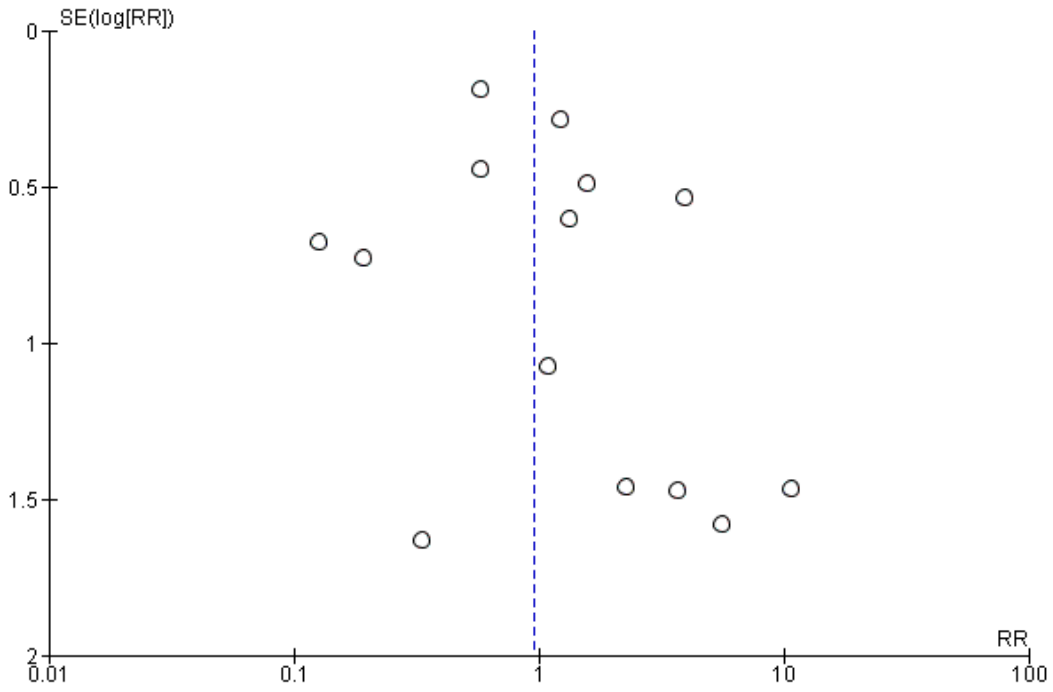
Funnel plot 1. Funnel plot of difference in 30-day any stroke or death rate between patients treated with open and closed cell stents.



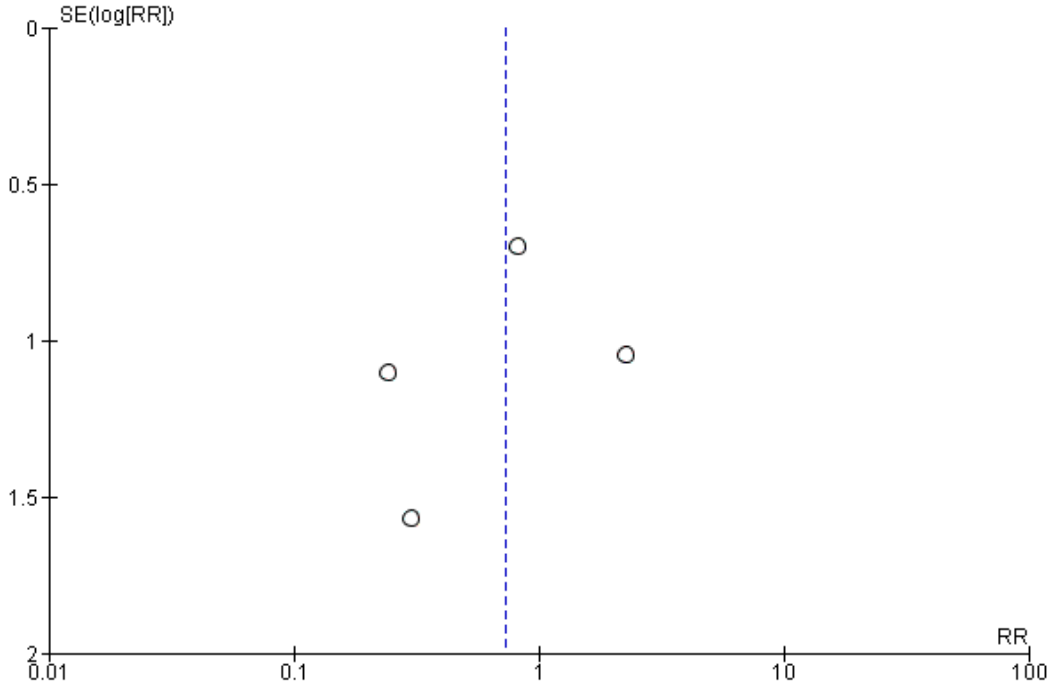
Funnel plot 2. Funnel plot of difference in one year any stroke or death rate between patients treated with open and closed cell stents.



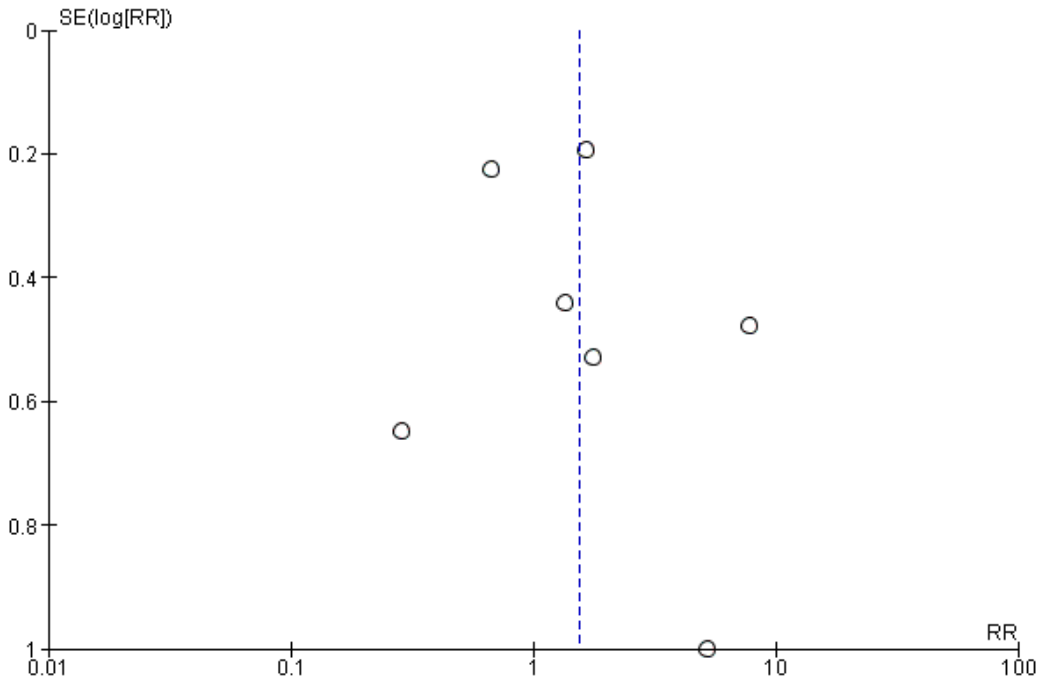
Funnel plot 3. Funnel plot of difference in incidence of new ischemic DWI lesions between patients treated with open and closed cell stents.



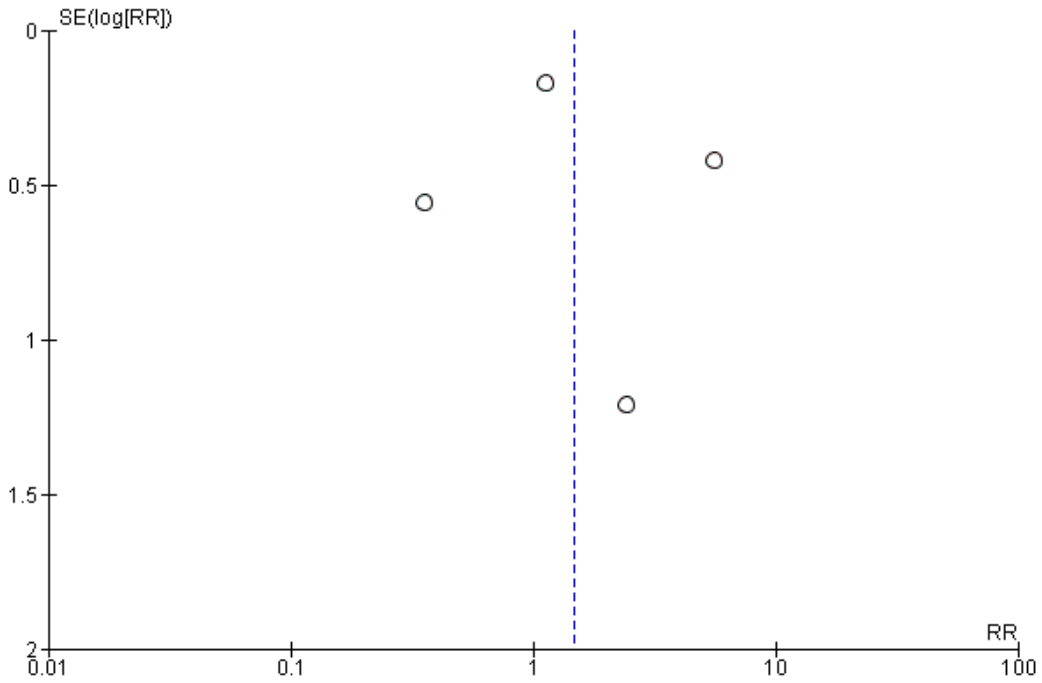
Funnel plot 4. Funnel plot of difference in incidence of restenosis between patients treated with open and closed cell stents.



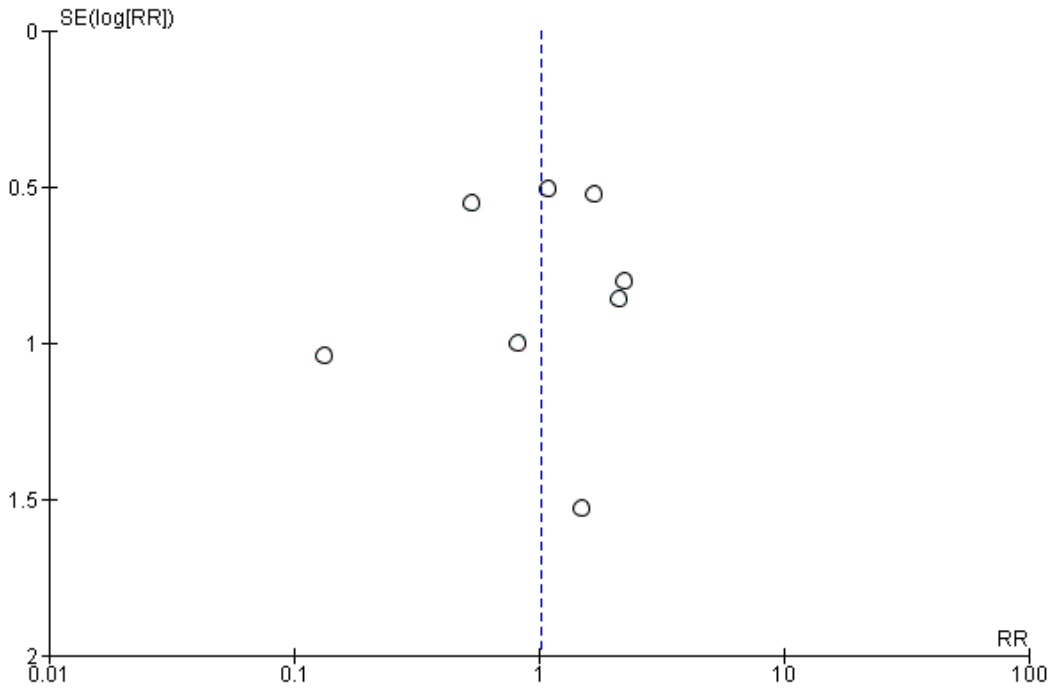
Funnel plot 5. Funnel plot of difference in incidence of stent fracture between patients treated with open and closed cell stents.



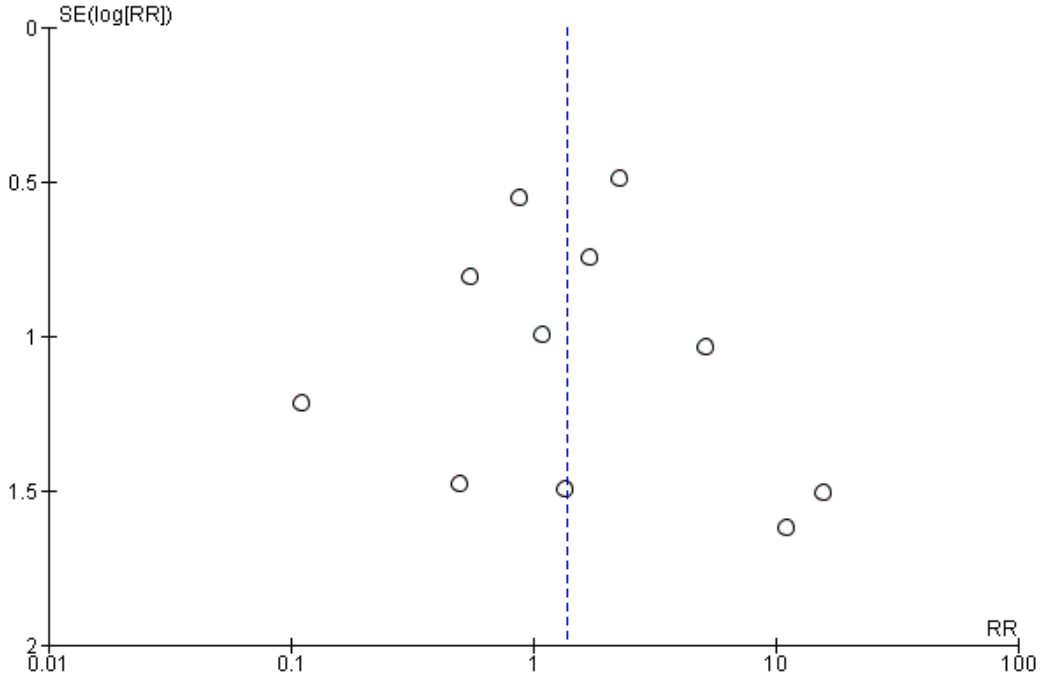
Funnel plot 6. Funnel plot of difference in incidence of intraprocedural hypotension between patients treated with open and closed cell stents.



Funnel plot 7. Funnel plot of difference in incidence of intraprocedural bradycardia between patients treated with open and closed cell stents.



Funnel plot 8. Funnel plot of difference in 30-day any stroke or death rate between patients treated with hybrid and open cell stents.



Funnel plot 9. Funnel plot of difference in 30-day any stroke or death rate between patients treated with hybrid and closed cell stents.