

Supplemental Table 1. CTO PCI studies including >100 patients that were published between 2000 and August 2013.

	Year	Author	Center	Number of Patients (Lesions)	Age (years)	Diabetes (%)	Previous MI (%)	Previous CABG (%)	Lesion Length (mm)	Calcification (%)	Tortuosity (%)	In-stent Restenosis (%)	Technical Success (%)	Procedural Success (%)	MACE (%)
	2013	Christopoulos et al.	VA North Texas Health Care System	497 (497)	64.7±9.9	42	37	36	30 (22-55)	15 (severe)	6 (severe)	12	455/497 (91.5)	451/497 (90.7)	8/497 (1.8)
1	2000	Noguchi et al. (1)	National Cardiovasc Center, Japan	226 (226)	61±9 (success) 61±11 (failure)	26 (success) 32 (failure)	36 (success) 51 (failure)	-	11.3±8.3 (success) 14.1±8.1 (failure)	37 (success) 56 (failure)	0 (success) 7 (failure)	-	134/226 (59.3)	-	-
2	2000	Serruys et al. (2)	Multicenter, Europe	303 (303)	84.7 (laser) 72.9 (mechanical)	15.3 (laser) 13.2 (mechanical)	58.3 (laser) 54.1 (mechanical)	9.7 (laser) 5.0 (mechanical)	-	-	-	-	196/303 (64.7)	-	-
3	2001	Suero et al. (3)	Mid America Heart Institute, USA	2007 (2074)	60.6±11.4	20.7	54.9	17.8	-	-	-	-	1448/2007 (72.3)	1448/2007 (69.9)	-

4	2003	Olivari et al. (4)	Multicenter, Italy	376 (390)	58.3±10.2	17.8	68.6	5.0	13.4±9.13	5.9 (moderate to severe)	-	-	301/376 (77.2)	286/376 (73.3)	4/376 (1.1)
5	2004	Baim et al. (5)	Multicenter, USA	116 (116)	62.4±10.6	28	53	26	27.1±14.06	51	-	-	63/116 (54.3)	-	3/116 (2.6)
6	2005	Dong et al. (6)	Hadassah Medical Center, Israel	253 (283)	62.7±11.0	31.6	55.5	18.4	≥15 in 43.5%	97.2	2.1 (severe)	-	215/253 (85.0)	-	-
7	2006	Han et al. (7)	Sheyang General Hospital, China	1263 (1596)	60 (25-86)	20.7	51.1	-	>15 in 57.9%	16.5 (moderate to severe)	16,7 (moderate to severe)	-	1445/1625 (88.9)*	-	-
8	2006	Drozd et al. (8)	Medical University in Poland, Poland	459 (459)	57.3±9.4	11.3	70.6	-	-	-	-	-	298/459 (64.9)	293/459 (63.8)	4/459 (0.9)
9	2007	Aziz et al. (9)	Royal Blackburn Hospital, UK	543 (570)	58.8 (52-67) (success) 58.8 (52-65.4) (failure)	13.5 (success) 9 (failure)	58.1 (success) 57.8 (success)	3.7 (success) 6.6 (failure)	>20 in 64.9% (success) 31.9% (failure)	-	-	-	377/543 (69.4)	-	-

10	2007	Prasad et al. (10)	Mayo Clinic, USA	1262 (1277)	63.1±11.4 (success) 63.7±11.3 (failure)	-	33 (success) 42 (failure)	-	-	-	-	-	-	879/1262 (69.7)	65/1262 (5.2)
11	2008	Barlis et al. (11)	Royal Brompton Hospital, UK	202 (203)	64.4±10.1	25.2	58.9	11.4	21.0±10.1	44.6 (severe)	12.4	-	167/202 (82.7)	-	1/202 (0.5)
12	2008	Valenti et al. (12)	Careggi Hospital, Italy	486 (527)	64.7±11.1 (success) 69.8±10.9 (failure)	24 (success) 21 (failure)	45 (success) 54 (failure)	8 (success) 18 (failure)	>20 in 70% (success) 67% (failure)	-	-	-	344/486 (71)	-	2/486 (0.4)
13	2008	Mitsudo et al. (13)	Multicenter, Japan	110 (116)	66.3±10.6	39	41	10	17.6±15.6	-	-	-	-	103/116 (88.7)*	2/110 (1.8)
14	2008	Tiroch et al. (14)	Multicenter, USA	125 (125)	62.8±11.4	26.4	40.0	19.2	23.4±13.0	24.8 (severe)	3.2	-	76/125 (60.8)	-	3/125 (2.4)
15	2008	Sianos et al. (15)	Multicenter, Europe	175 (175)	61.4±10.8	29.5	38.9	10.9	27.73±18.51	34.9 (severe)	28.6	-	146/175 (83.4)	-	1/175 (0.6)

16	2009	Paizis et al. (16)	Onassis Cardiac Surgery, Greece	106 (106)	59±10	26	-	-	15±6	37	30	-	-	82/106 (77.0)	-
17	2009	Rathore et al. (17)	Toyohashi Heart Center, Japan	806 (904)	65.42±10.7 (success) 66.01±11.2 (failure)	40.2 (success) 37.4 (failure)	85.8 (success) 87.6 (failure)	11.9 (success) 17.7 (failure)	30.53±13.68 (success) 24.72±6.01 (failure)	Severe in 9.9 (success) 19.2 (failure)	Severe in 4.4 (success) 10.3 (failure)	12.1 (success) 8.3 (failure)	791/904 (87.5)*	779/904 (86.2)*	18/806 (2.2)
18	2009	Thompson et al. (18)	Yale, St Joseph's, USA	636 (636)	62.9 (nonretrograde operator) 65.1 (retrograde operator)	27.0 (nonretrograde operator) 30.0 (retrograde operator)	32.0 (nonretrograde operator) 23.2 (retrograde operator)	12.9 (nonretrograde operator) 35.5 (retrograde operator)	-	-	-	-	439/636 (69.0)	-	-
19	2009	Park et al. (19)	Catholic University of Korea	134 (136)	62.6±11.3	41.0	-	0	32.66±16.80	-	-	-	-	89/134 (86.4)	-

20	2009	Chen et al. (20)	Multicenter, China	152 (152)	63.92±14.74 67.68±7.29	25.8 25.0	45.5 65.0	-	27.61±22.85 42.32±22.08	-	-	-	132/152 (86.8)	-	11/152 (7.2)
21	2010	Morino et al. (21)	Multicenter, Japan	498 (528)	66.9±11.0	43.3	44.9	9.6	13.5±13.0	54.9	44.9	6.4	457/528 (86.6)*	-	5/498 (1.0)
22	2010	Werner et al. (22)	Germany	674 (714)	67 (58-72)	21.4	-	12.6	-	-	-	12.6	405/674 (60.1)	-	-
23	2010	Yang et al. (23)	Chang Gung Memorial, Taiwan	419 (419)	61.5±10.7 (radial) 60.6±13.2 (femoral)	32 (radial) 21 (femoral)	44.75 (radial) 57.89 (femoral)	-	-	-	-	11.75 (radial) 36.84 (femoral)	-	292/419 (69.7)	10/419 (2.4)
24	2011	Liu et al. (24)	Toho University, Japan	116 (120)	65±10	27.5	40	7.8	>20 in 47.5%	20.1	29.2	-	97/120 (80.8)*	-	2/116 (1.7)
25	2011	Tomasello et al. (25)	Ferrarotto, Italy	303 (328)	61.0±9.6	26.4	46.2	10.9	>20 in 56.5%	8.9 (severe)	10.1 (severe)	9.8	283/328 (86.3)*	-	-

26	2011	Borgia et al. (26)	UK	302 (302)	63.7±9.9 (success) 65.15±11.3 (failure)	25.6 (success) 30.7 (failure)	57.6 (success) 60 (failure)	13.5 (success) 30.7 (failure)	18 (12.6-24.3) (success) 22.1 (17.7-27.9) (failure)	55.6 (success) 57.1 (failure)	-	-	237/302 (78.5)	-	3/302 (1.0)
27	2011	Galassi et al. (27)	Multicenter, Europe	1914 (1983)	64.1±11.6	28.8	43.4	14.6	>20 in 69.7%	11.8 (severe)	32.7 (severe)	2.3	1607/1983 (81.0)*	-	25/1914 (1.3)
28	2011	Jolicoeur et al. (28)	Duke, USA	346 (346)	58 (51–67) (success) 61 (55–70) (failure)	32.9 (success) 26.3 (failure)	21.1 (success) 28.6 (failure)	17.8 (success) 27.8 (failure)	10.2 (median, success) 12.3 (median, failure)	-	-	-	-	213/346 (64.5)	2/346 (0.6)

29	2011	Bufe et al. (29)	Univ Witten/Herdecke, German	331 (338)	63.1±10.1 (antegrade) 62.6±11.8 (retrograde)	30.1 (antegrade) 29.6 (retrograde)	12.9 (antegrade) 12.5 (retrograde)	-	41±15 (antegrade) 53±14 (retrograde)	Moderate to severe in 60.6 (antegrade) 83.9 (retrograde)	Severe in 15.9 (antegrade) 37.5 (retrograde)	-	274/338 (81.1)*	-	6/331 (1.8)
30	2011	Galassi et al. (30)	Ferrarotto Hospital, Italy	172 (179)	60.5±9.2	32.6	50.6	7	>20 in 50.2%	21.2	38	5.7	144/179 (80.4)*	-	-
31	2011	Lee et al. (31)	2 centers, Korea	333 (-)	59.2±10.5 (success) 63.8±9.2 (failure)	30.7 (success) 30.5 (failure)	17.6 (success) 29.3 (failure)	-	20.3±9.1 (success) 23.7±11.2 (failure)	-	-	-	251/333 (75.4)	-	-

32	2011	Mehran et al. (32)	Mutlicenter, USA, Italy, Korea	1791 (1852)	61.2±10.7 (success) 62.1±10.4 (failure)	23.1 (success) 21.9 (failure)	46.7 (success) 56.4 (failure)	13.6 (success) 20.9 (failure)	22.3±15.6 (success) 26.3±14.3 (failure)	-	-	-	1256/1852 (67.8)*	-	-
33	2012	Fefer et al. (33)	Multicenter, Canada	162 (-)	63±0.8	20	25	-	-	-	-	-	123/162 (75.9)	-	-
34	2012	Jones et al. (34)	UK	836 (836)	62.37±11.5 (success) 63.7±11.2 (failure)	27.0 (success) 28.6 (failure)	31.8 (success) 36.4 (failure)	7.4 (success) 16.5 (failure)	-	-	-	-	582/836 (69.6)	-	19/836 (2.3)
35	2012	Niccoli et al. (35)	2 centers Italy	317 (317)	64±11 (success) 66±10 (failure)	34 (success) 37 (failure)	32 (success) 26 (failure)	15 (success) 10 (failure)	-	-	-	-	196/317 (61.8)	-	-
36	2013	Valenti et al. (36)	Careggi Hospital, Italy	1035 (-)	68±11 (success)	25 (success)	50 (success)	11 (success)	38±21 (success)	-	-	-	-	802/1035 (77.5)	-

37	2013	Yamamoto et al. (37)	Multicenter, Japan	1524 (1584)	66.9±10.8 (success) 66.2±10.7 (failure)	42 (success) 42 (failure)	32 (success) 24 (failure)	-	-	-	-	-	1192/1524 (78.2)	-	30/1524 (2.0)
38	2013	Isaaz et al. (38)	France	156 (164)	67±10	27	-	18	25±19	26	8	10	137/164 (83.5)*	-	-
39	2013	Michael et al. (39)	Multicenter, USA	1361 (1361)	64.5±10.8	40.0	42.0	37.0	-	-	-	-	1163/1361 (85.4)	1146/1361 (84.2)	-

Data presented as mean ± standard deviation or median (interquartile range).

* Lesions

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