

Impact of Multi-Stenting (≥ 3) with DES on long-term clinical outcomes in real world patients: A single center experience.

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ICE 2012

14-15 Dec. GRAND SERAI HOTEL, Giannena, Greece



Background

➤ Drug Eluting Stent (DES) had been demonstrated to be safe and effective by reducing restenosis and the need for subsequent reintervention. However, knowledge regarding the safety and effectiveness of multiple stenting (≥ 3) with DES, is currently limited.



Objective

➤ The aim of this study was to analyze the patients who underwent PCI with implantation with DES and compare the clinical outcomes of simple stenting with multiple stent implantation.



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Methods

- A total 1050 consecutive patients underwent PCI with DES between January 2007 to June 2011 were enrolled.
- The long-term clinical outcomes were compared between:

the patients who received
≤3 stents (Simple
stenting group, n=740)

vs

the patients who received
≥3 stents (Multi-stenting
group, n=310)

- We assessed the cumulative incidence of major adverse cardiac events (death, acute myocardial infarction, and target-vessel revascularization)

Results

	ΣΥΝΟΛΟ ΑΣΘΕΝΩΝ n=1050				Multi Stenting n=310				Simple Stenting n=740				p value
	n	SD or %	Min	Max	n	SD or %	Min	Max	n	SD or %	Min	Max	
Baseline characteristics of the study population.													
Age (+SD)	63,9	11	29	92	64,1	11,2	35	92	63,8	10,9	29	88	0,6867
Men (number,%)	845	80			247	80			598	81			0,7727
BMI ((+SD))	29	5,5			29,4	7,9			28,8	4			0,1039
Smoker (number,%)	320	30,48%			95	30,65%			225	30,41%			0,9971
Hypertension (number,%)	632	60,19%			183	59,03%			449	60,68%			0,6678
Hyperlipidemia (number,%)	484	46,10%			141	45,48%			343	46,35%			0,9402
Diabetes Melitus (number,%)	287	27,33%			102	32,90%			185	25,00%			0,011
Chronic renal insufficiency (number,%)	36	3,43%			10	3,23%			26	3,51%			0,9669
Previous MI (number,%)	206	19,62%			63	20,32%			143	19,32%			0,7741
Previous PCI (number,%)	195	18,57%			55	17,74%			140	18,92%			0,7177
Unstable angina pectoris (number,%)	434	41,33%			116	37,42%			318	42,97%			0,1102
Left ventricular ejection fraction <40% (number,%)													
History of Peripheral Artery Disease (number,%)	31	2,95%			9	2,90%			22	2,97%			0,8896
History of Stroke (number,%)	40	3,81%			8	2,58%			32	4,32%			0,2431
COPD (number,%)	78	7,43%			25	8,06%			53	7,16%			0,7052
ST Elevation MI (number,%)	275	26,19%			92	29,68%			183	24,73%			0,1125
Cardiogenic Shock (number,%)													

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Results

PCI Data

	ΣΥΝΟΛΟ ΑΣΘΕΝΩΝ n=1050				Multi Stenting n=310				Simple Stenting n=740				p value
Baseline characteristics of the study population.	n	SD or %	Min	Max	n	SD or %	Min	Max	n	SD or %	Min	Max	
Total number of vessels(+ SD, range)	1504				617				887				
mean number of vessels treated per patient ((+ SD range)	1,43	0,6	1	4	1,99	0,64	1	4	1,2	0,4	1	2	<0,0001
Total number of Lesions(+ SD range)	1686				758				928				
mean number of lesion treated per patient ((+ SD, range)	1,61	0,8	1	6	2,45	0,84	1	6	1,25	0,4	1	2	<0,0001
total number of stents(+ SD range)	2127				1091				1036				
mean number of stents per vessel treated (+ SD (range)	1,41				1,77				1,17				
mean number of stents per lesion treated ((+ SD range)	1,28	0,51	1	5	1,6	0,65	1	5	1,15	0,36	1	2	<0,0001
mean stent length per patient ((+ SD range)	43,76	26,2	8	167	76,31	21,27	38	167	30,12	12,42	8	66	<0,0001
mean stent length per lesion treated ((+ SD range)	30,55		8	121	38,34		8	121	25,13		8	66	
mean stent diameter (+ SD (range)	2,92	0,41	2	4,5	2,84	0,3	2,25	3,75	2,95	0,45	2	4,5	<0,0001
mean period FU(+ SD, range)(months) ((+ SD range)	23,81	14,14	1	63	23,5	13,89	1	55	23,93	14,25	1	63	0,6533
Pro-Dilatations	896	53,1%			371	48,9%			525	56,6%			0,0004
Post-Dilatations	2001	94,1%			968	88,7%			1033	99,7%			<0,0001



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Results

- Clinical follow-up was completed in all patients and during a period of 23.81 ± 14.14 months,
- the cumulative incidence of MACE (death, AMI, or TVR) was lower in the simple stenting group than in the multiple stenting group but not reached statistical significance (9.5% vs 11.9%, p value 0.3)
- There was also a trend in favor of the simple stenting group in the rates of individual adverse events, but no single endpoint reached statistical significance.



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Results

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Baseline characteristics of the study population.	n	SD or %	Min	Max	n	SD or %	Min	Max	n	SD or %	Min	Max	
Follow up													
Ολοκλήρωση FU	1050	100%			310	100,00%			740	100,00%			
Death	40	3,81%			16	5,16%			24	3,24%			0,1915
Cardiac Death	10	0,95%			2	0,65%			8	1,08%			0,7595
Non-cardiac Death	30	2,86%			14	4,52%			16	2,16%			0,0586
MI													
TVR	68	6,48%			21	6,77%			47	6,35%			0,9086
RePCI	64	6,10%			20	6,45%			44	5,95%			0,867
CABG	4	0,38%			1	0,32%			3	0,41%			0,7398
RePCI (another vessel)	11	1,05%			6	1,94%			5	0,68%			0,1352
Total MACE	108	10,29%			37	11,94%			71	9,59%			0,302



CONCLUSION

- In our study, despite pts with multiple stenting, had worse baseline clinical and angiographic characteristics, showed similar long-term clinical outcomes as compared to those with simple stenting.
- Although the use of a single stent in coronary artery disease has less incidence of adverse cardiac events at 2 year as compared with the use of multiple stents, the difference was not statistically significant.
- However, the use of multiple stents in PCI should be undertaken with great caution.



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