

DEB in SVGD

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Saphenous Vein Graft Disease

- SVG have a progressive closure rate
 - 12%-20% at 1st year & \approx 50% by 10 years
 - thin-walled venous structure is devascularized & exposed to the higher wall stress

• SVG PCI is more attractive than reoperation

- have lower morbidity & mortality rate than reoperation
- limited by no-reflow, distal embolization & periprocedural MI
- use of embolic protection device improved the outcomes

• SVG PCI with DES

- safe with improved mid-term outcomes compared to BMS
- long term clinical benefit is not determined yet

Lei Ge et al. J Am Coll Cardiol 2005;45:989 Coolong A et al. Circulation 2008;117:790





TVR associated with DES vs BMS





Death associated with DES vs BMS



	DES	BMS	Odds ratio	Lower limit	Upper limit	Relative weight	
Assali et al.	68	43	1.31	0.31	5.52	6.11	· · · · · · · · · · · · · · · · · · ·
van Twisk et al.	122	128	0.70	0.30	1.66	17.16	
Okabe et al.	138	344	9.45	0.42	215.00	1.29	
BASKET	34	13	0.14	0.01	4.03	1.14	
Kaplan et al.	37	33	0.18	0.02	1.46	2.81	
Gioia et al.	106	119	2.02	0.21	19.37	2.47	
Ramana et al.	141	170	0.53	0.21	1.34	14.83	
Vignali et al.	72	288	1.65	0.61	4.50	12.53	
Minutello et al.	59	50	3.69	0.40	33.89	2.56	
DELAYED RRISC	38	37	4.17	0.77	22.70	4.39	
Lee et al.	139	84	0.17	0.06	0.45	12.53	
Ge et al.	61	89	0.88	0.27	2.85	9.11	
SOS	41	39	0.39	0.13	1.17	10.54	
Wohrle et al	13	26	0.61	0.02	15.91	1.19	
Guo et al	50	47	0.19	0.01	4.11	1.33	
	1119	1510	0.69	0.49	0.99		
							0.1 0.2 0.5 2 5 10
OR	0 69	9 94	5% C	104	9-0.9	ag i	E DEC E DMC

MI associated with DES vs BMS



Study name							Odds ratio and 95% CI			
	DES	BMS	Odds ratio	Lower limit	Upper limit	Relative weight				
Assali et al.	68	43	0.14	0.01	3.03	10.41				
van Twisk et al.	122	128	0.24	0.03	1.77	25.13				
Okabe et al.	138	344	1.00	0.14	7.28	25.27				
Bansal et al.	37	72	0.27	0.01	5.50	11.09				
DELAYED RRISC	38	37	4.92	0.23	107.09	10.49				
SOS	41	39	0.14	0.01	1.47	17.62				
	444	663	0.41	0.15	1 11	200000				

Stent thrombosis associated with DES vs BMS





DES is better than BMS for SVG PCI

However....



Long term safety of DES in SVG PCI



- Randomized clinical trials in SVGD
- 38 pts. with 60 SES vs. 37 pts. with 54 BMS
- Primary end point : Late loss at 6 month

	BMS		SES	p Value
Late loss (mm)				
In-segment	0.70 ± 0.61	0.4	0.40 ± 0.51	
Proximal edge	0.17 ± 0.55	0.1	0.17 ± 0.48	
In-stent	0.79 ± 0.66	0.3	0.38 ± 0.51	
Distal edge	0.24 ± 0.50	0.1	0.19 ± 0.51	
Binary angiographic restenosis				
In-stent	15 (30.6%)	5	5 (11.3%)	
In-segment	16 (32.6%)	6	6 (13.6%)	
Intravascular ultrasound volumetric analysis				
Follow-up	(n = 39)	(n = 34)	
Stent length (mm)	21.2 [17.1-30.9	23.4	23.4 [18.8-31.6]	
Stent volume (mm ³)	211 [143-282]	214	214 [174-325]	
Lumen volume (mm ³)	175 [125-243]	205	205 [174-310]	
Neointimal volume (mm ³)	24 [8-34]	1	[0-13]	< 0.001
	BI	MS (n = 37)	SES $(n = 38)$	p Valı
In-hospital				
Death		0	0	
Repeat revascularization		0	0	
Major periprocedural myocardial infarction		1 (2.7%)	2 (5 3%)	0.99*
Minor periprocedural myocardial damage		4 (10.8%)	9(23.7%)	0.14
Median cardiac troponin L increase (ng/d	11) [range] 4.7	1 [0 43-5 33]	2 18 [0 54-9.01]	0.82
From discharge to 30 days	ii) [range] 1.7	1 [0.15 5.55]	2.10 [0.54 7.01]	0.02
Death		0	0	
Depeat revecesslarization		0	0	
Mussandial information	0		0	
Returns 1 and 6 months		0	0	
Detter 1 and 6 months		0	1 (2 (04)	0.00*
March 11 Carl		0	1 (2.0%)	0.99
Myocardial infarction		0 (21 (11)	1 (2.6%)	0.99
TLR (per patient)		8 (21.6%)	2 (5.3%)	0.047
IVR (ner nation)		10 (2/%)	2 (5 (%)	0.012
Cumulative 6-month MACE		11 (29.7%)	6 (15.8%)	0.15
TVF (per patient)	(70)	11 (29.7%)	5 (13.2%)	0.08
TLR (per lesion)	10	0/49 (20.4%)	2/47 (4.3%)	0.017
TVR (per lesion)	1.	2/49 (24.5%)	2/47 (4.3%)	0.005
1				

DELAYED RRISC Trial

- Median FU : 32 month (26.5-36 month)
- Secondary post-hoc analysis of allcause mortality, MI & TLR



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Between 1 and 6 months				
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TVF (per lesion)	1	2/19 (24.570)	5/47 (10.6%)	0.005
I VI (per lesion)	1.	JITJ (20.370)	5/47 (10.0%)	0.040

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TVF (per lesion)		13/49 (26 5%)	5/47 (10.6%)	0.005
		10/ 47 (20.570)	5/4/ (10.070)	0.04

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CASE

- 77-year-old male patient
- Five years ago, CABG (SVG to LAD) was performed in Yeouido St. Mary's Hospital due to 3-vessel disease
- Six months ago, PTCA in SVG to LAD anastomosis site
- He had recurrent exertional chest pain for 1 month.
- Risk factors : Hypertension
- Echocardiogram: EF = 54%, Akinesia of inferior wall



CAG, 5 Years Ago



CABG (SVG to LAD)





CAG, 6 Months Ago





PTCA, 6 Months Ago





CAG





PCI with **DEB**



Ryujin 2.0 / 15 mm up to 8 atm Sequent Please 2.75 / 15 mm up to 14 atm



F/U CAG, 3 Months Later





Conclusions

- SVG lesions
 - more lipid-rich, softer and more prone to rupture than plaques in native coronary arteries.
 - may lead to an enhanced inflammatory & thrombotic reaction after deployment of stents
 - This can potentially be more pronounced with devices coated with drugs and polymers
- DEB in SVGD
 - may be alternative option to have comparable efficacy and improved long-term safety in DES era.

