Drug Coated Balloon vs Drug Eluting Stent: A Long-Term Comparison

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Background

Peripheral artery disease (PAD) affects more than 200 million people worldwide and carries significant morbidity and mortality. Endovascular treatment of critical femoral-popliteal PAD has advanced in recent years. Drug eluting stents (DES) and drug coated balloons (DCB) have demonstrated improved primary patency compared to balloon angioplasty or bare metal stenting. The current literature lacks any long-term direct comparison between the two modalities.

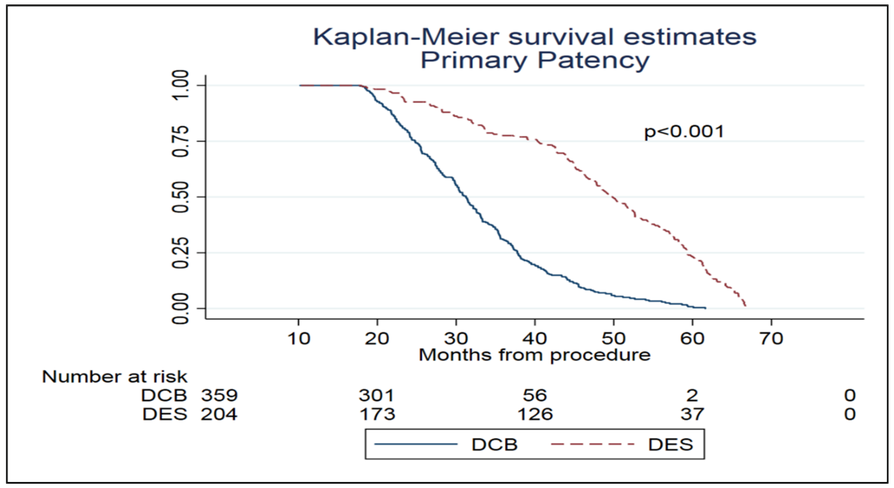
Methods

- A retrospective analysis from June 2014 to June 2018
- A single high-volume center
- Reviewed all DCB or DES for Femoral Popliteal Interventions
- Patient medical data and lesion characteristics were retrieved using Vascular Quality Initiative database.
- Outcomes were analyzed through December 2019
- Primary endpoint of time to clinical event driven target lesion reintervention (TLR) and secondary endpoint of all-cause mortality

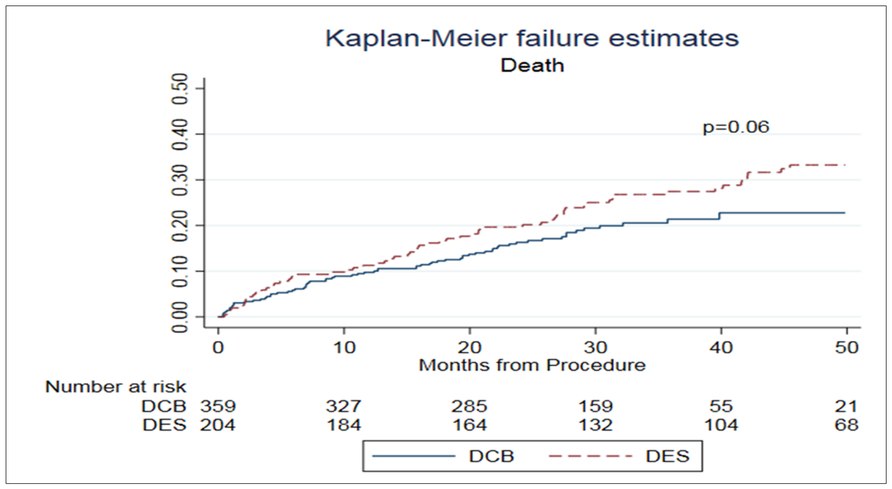
Results

483 patients with a total of 563 interventions met the inclusion criteria in the designated time frame. 359 DCB and 204 DES were performed. Of those who underwent DCB, 132 required bailout stenting at the time of procedure, majority for residual stenosis. For the endpoint of TLR: DES had a higher reintervention rate 19.6% DES vs 16.2% DCB, which was not statistically significant. In the beginning years of the study there was significant higher use of DES with a paradigm shift in the final three years to DCB use. All patients requiring TLR were examined; mean time for TLR in DES group was 1277 days (SD 546), while DCB mean time for maintaining patency was 904 days (SD 330.1). For patients requiring target lesion reintervention, DES remained patent significantly longer than those with DCB (373 days longer on average) (p value: < 0.001). For all-cause mortality there was no significant difference at 50 months between DCB and DES (p value: 0.06).

Time to Target Lesion Reintervention



All Cause Mortality



Conclusion

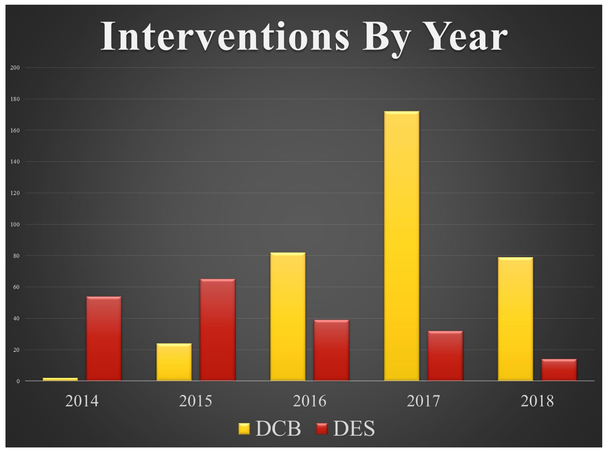
In patients who required target lesion reintervention DES had a significantly longer length of time to reintervention (average of 373 days), although no difference in mortality was observed.

Discussion

This is the first comparison of DES and DCB for femoral popliteal PAD out to five years. Findings suggest that DES may have a longer patency than DCB for the treatment of PAD. No difference in mortality was seen between the two modalities. A dedicated randomized control study comparing DES vs DCB would be beneficial.

Demographics

Factor	DES n=177	DCB n=306	p-value
Age at Procedure, mean (SD)	68.53 (11.71)	68.65 (11.10)	0.91
Gender			
Female	88 (49.7%)	146 (47.7%)	
Male	89 (50.3%)	160 (52.3%)	0.67
Diabetes	108 (61.0%)	163 (53.3%)	0.10
Hypertension	167 (94.4%)	271 (88.6%)	0.04
Pre-op statin	143 (80.8%)	241 (78.8%)	0.59
CAD	50 (28.2%)	101 (33.0%)	0.28
CVD	140 (79.1%)	85 (27.8%)	<0.001
Smoking			
Current	60 (33.9%)	102 (33.3%)	
Never	36 (20.3%)	45 (14.7%)	
Prior	81 (45.8%)	159 (52.0%)	0.22
Creatinine, mean (SD)	1.19 (.53)	.99 (.40)	<0.001
Artery Treated Side 1			
Left	100 (56.5%)	163 (53.3%)	
Right	77 (43.5%)	143 (46.7%)	0.49



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