

Polytetrafluoroethylene-Covered Stents: Indications, Advantages and Limitations

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Stents are the most important advance for percutaneous coronary revascularization. However, restenosis, peripheral embolism following stent implantation in old vein grafts and conditions in which there is a discontinuity of the coronary lumen (rupture or perforation, aneurysm and fistula) remain a problem in interventional therapy. Stent grafts with integration of a polytetrafluoroethylene (PTFE) membrane into a coronary stent represent an interesting concept to possibly prevent intraluminal proliferation, to seal degenerated vein grafts and to cover coronary artery perforation, symptomatic aneurysms and fistula with high success and acceptable rates of acute complications. Although the overall information about restenosis in stent grafts is limited, there are some promising long-term results in degenerated vein grafts.

Methods From 2/97 to 4/00 we implanted 70 SG in 61 patients (age 68.8 ± 9.9 years, female 11.5%, diabetes 23%). Mean age of the bypass grafts was 10.2 ± 5.3 years, in 15 cases the lesion was a restenosis (24.6%). Stable angina was present in 50 patients (81.9%), unstable angina in 10 patients (16.4%), acute MI in 1 patient (1.6%). Mean stent length was 17.0 ± 6.8 mm, mean balloon diameter 3.8 ± 0.6 mm, maximal expansion pressure 14.8 ± 3.3 atm. Medical therapy included Clopidogrel and aspirin in all patients additional IIb/IIIa-blockers in 25 patients (41%).

Results 69 out of 70 SG were successfully implanted (98.6%). *Acute events*: Stent occlusion n=2 (3.3%), acute MI n=1 (1.6%), repeat PTCA n=2 (3.3%), death n=1 (1.6%). *Quantitative Coronary Angiography*: RD 3.67 ± 0.66 mm, MLD pre PTCA 1.18 ± 0.69 mm, MLD post PTCA 3.33 ± 0.69 mm, MLD at follow-up 2.48 ± 1.22 mm. Clinical follow-up was obtained in 53/59 patients (89.8%) at 190 ± 160 days. Events during follow-up: CABG n=1 (1.9%), repeat-PTCA n=7 (13.2%), death n=3 (5.7%). Repeat angiography was obtained in 48/59 patients (81.4%). Angiographic restenosis rate was 18.8% (9/48).

Conclusion Coronary stents grafts can be regarded as the therapy of choice for acute coronary perforations and are favourable in the treatment of symptomatic coronary aneurysms.

Based on potentially delayed reendothelization of PTFE-covered stents, possibly leading to late thrombo-occlusive events, prolonged antiplatelet therapy seems to be necessary.

Coronary PTFE stent grafts represent a safe and effective treatment for degenerated saphenous vein grafts. The restenosis rate obtained on our series compares favourably with restenosis rates observed with conventional stents in this subset of lesions.