Clinical experience with autologous endothelial cell-seeded PTFE coronary artery bypass grafts

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Objective:
To improve the patency of 4mm poly-tetra-fluoro-ethylene vascular prostheses autologous endothelial cell seeding was used.

Methods:
Since 1995 14 patients with coronary artery disease received 21 autologous endothelial cell seeded poly-tetra-fluoro-ethylene vascular bypass grafts for coronary artery revascularization. The poly-tetra-fluoro-ethylene grafts were seeded with the endothelial cells in a multiple step procedure including cell culture techniques prior the coronary bypass operation. Using extracorporal circulation and cardioplegic arrest bypass surgery was performed by conventionel surgical techniques.

Results:
After a mean postoperative follow-up of 27.7 (7.5 - 48) months the graft patency rate is 90.5%. Follow-up angiographic controls of the aorto-coronary poly-tetra-fluoro-ethylene bypass grafts showed patent bypasses in all cases except two. All 19 patent endothelial cell seeded poly-tetra-fluoro-ethylene bypass grafts showed angiographically a smooth luminal borderline without stenotic regions. The percutaneous transluminal angioscopic evaluation showed a glossy white and smooth endoluminal graft surface without any fibrin, platelet or erythrocyte deposits. Intravascular ultrasound examinations confirmed the results. Conclusion: Autologous endothelial cell seeded 4mm poly-tetra-fluoro-ethylene vascular prostheses revealed a much better patency as coronary artery bypass than unseeded PTFE grafts. Further evaluations and a larger population of patients will prove if the encouraging patency will last.

Key words:
Coronary artery bypass surgery - Endothelial cell seeded poly-tetra-fluoro-ethylene grafts - bFGF