No touch vein harvesting technique in coronary by-pass surgery
Impact on patency rate, development of atherosclerosis, left ventricular function and clinical outcome during 16 years follow-up

av

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Abstract


This thesis was based on a prospective randomized trial which was started in 1993 to compare the no touch (NT) with the conventional (C) technique of saphenous vein harvesting for CABG.

In paper I, was demonstrated superior patency for the NT grafts at short-term (1.5 years; 95.6% vs 89%; p < 0.05) and long-term follow-up (8.5 years; 90% vs 76%; p = 0.01).

In paper II, at long-term follow-up there were significantly more patients free from recurrent angina and in NYHA-class I in the NT group (67.3% vs 43.2%; p = 0.02). In addition there was no cardiac death and a trend towards improvement of hard clinical endpoints in the NT group.

In paper III, we tested the hypothesis that the NT harvesting technique could provide a reduced progression of the atherosclerotic disease in the vein graft wall by using cineangiography and an intravascular ultrasound (IVUS) assessment. At short-term follow-up, the cineangiogram showed more normal grafts in the NT group (89% vs 75%; p = 0.006). The IVUS assessment showed less mean intimal thickness (0.43 (0.07) mm vs 0.52 (0.08) mm; p = 0.03), less grafts with considerable intimal hyperplasia ($\geq$0.9 mm; 20% vs 78.6%; p = 0.011) and fewer patients with grafts containing considerable hyperplasia ($\geq$0.9 mm; 25% vs 100%; p = 0.007) for the NT vein grafts. At long-term follow-up the cineangiogram showed more normal grafts, 91.2% in the NT group compared with 83.1% in the C group; there were fewer grafts with significant stenosis, with 7.7% in the NT group compared with 15.6% in the C group. The IVUS assessment showed fewer grafts containing multiple plaques (14.8% vs 50%; p = 0.008), less advanced plaque with lipid (11.8% vs 63.9%; p = 0.0004) and less maximal plaque thickness (1.04 (0.23) mm vs 1.32 (0.25) mm; p = 0.02) in the NT vein grafts.

In paper IV, was demonstrated a preserved left ventricular ejection fraction in the NT group compared with the C group (57.9 $\pm$ 9.5% vs 49.4 $\pm$ 13.3%; p = 0.004) at 16 years follow-up. Also, a smaller left atrium size, a lower BNP value and fewer patients with atrial fibrillation in the NT group indicated a better left ventricular diastolic function.

In conclusion: This thesis showed that the no-touch vein harvesting technique provided a superior long-term patency compared with the conventional technique due to a delayed atherosclerotic process in vein grafts. This was associated with a preserved left ventricular systolic function at 16 years follow-up and also with more asymptomatic patients during this follow-up period.

Keywords: atherosclerosis, coronary artery disease, coronary artery bypass grafting, vein grafts, no touch vein harvesting technique, intravascular ultrasound, echocardiography, clinical outcome, revascularization, outcome analysis, angina pectoris, myocardial infarction, mortality, randomized trial.