

MICROCIRCULATION OF THE STERNUM FOLLOWING HARVESTING OF THE LEFT INTERNAL MAMMARY ARTERY

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Thoracic internal arterial grafts for cardiac surgery in coronary artery disease provide excellent longterm results regarding patency. Due to the high incidence of sternal infections, the blood supply of the sternum has become the focus of attention. Using *Oxygen-To-See (O2C)*, a novel laser Doppler flowmetry and remission spectroscopy system (LEA Medizintechnik, Giessen), it is possible for the first time to measure real time parameters of microcirculation in vivo.

In this study, 16 patients (12 males) were enrolled who were scheduled for coronary artery bypass grafting (CABG). After sternotomy, the probe was placed either pre- or retrosternal for measurements of tissue oxygen saturation (SO₂), haemoglobin concentration (rHb), superficial (2mm) and deep (8mm) blood flow. Measurements were performed before and after clamping the left internal mammary artery (LIMA) and analysed by repeated measurements analysis of variance (Wilks-Lambda-Test).

Baseline presternal SO₂ was 87% in line with retrosternal SO₂ 82%. After LIMA harvesting, presternal SO₂ was rather unchanged (92%, n.s.), whereas retrosternal SO₂ decreased significantly (56%). In line retrosternal postcapillary venous filling (rHb) increased significantly after LIMA harvesting (89 vs. 95, p<0.05). Retrosternal superficial and deep blood flow also decreased significantly.

LIMA grafts for coronary revascularization significantly decrease retrosternal tissue oxygen saturation with postcapillary venous stasis, which may explain the higher incidence of sternal infections after LIMA harvesting. In contrast, presternal tissue microcirculation is not significantly influenced after LIMA grafting.

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