

# **FUNCTIONAL AND MORPHOLOGICAL PROPERTIES OF HUMAN SAPHENOUS VEINS AFTER PRESERVATION IN DIFFERENT SOLUTIONS**

A. Jeppsson, O. Aljassim, D. Delbro, B. R. Johansson, L. Wiklund, Gothenburg, Sweden

## **Background**

Veins are still an important graft alternative in coronary artery bypass surgery. Perioperative preservation of venous graft material might have importance for short and long-term patency. It has been suggested that preservation in low-potassium dextran-glucose solution (LPD) is superior compared to saline and blood. We assessed vascular function and morphology in human veins after preservation in four different solutions.

## **Methods**

Ten cm of the distal saphenous vein was harvested from 15 CABG patients. Each vein was divided into four portions, which were kept for 60 minutes at room temperature either in A. Saline; B. Heparinized autologous blood; C. LPD solution; or D. Krebs solution. The specimens were then mounted in organ chambers and contractions to norepinephrine and relaxations to nitroprusside and acetylcholine were monitored. Vessel segments were also prepared for electron microscopy.

## **Results**

Contractions caused by norepinephrine and non-endothelial dependent relaxations to nitroprusside were superior in veins preserved in Krebs solution ( $p < 0.05$  vs all other groups) and did not differ between after storage in saline, blood and LPD. Relaxations to acetylcholine were minor or absent and did not differ between the four groups. Electron microscopy demonstrated that storage in Krebs, or LPD solutions caused minor damage to the endothelium. The damage was more clearcut after saline storage, and far more aggravated after storage in blood, when the endothelium was thin, condensed and vacuolized.

## **Conclusion**

Smooth muscle function were superior in human veins stored in the laboratory Krebs solution and comparable after preservation in three clinically available alternatives (saline, autologous blood, and LPD). Endothelial function was poor after storage in all solutions while endothelial morphology appeared to be better preserved with Krebs or LPD.