



Can we improve the results of venous grafts in CABG?

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Received: 29 May 2018 / Accepted: 19 June 2018 / Published online: 7 July 2018
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Abstract

Saphenous Vein as a conduit in coronary artery bypass surgery (CABG) has a high attrition rate. Yet because of free availability and technical ease of use, it accounts for 80% of all grafts in CABG. The reasons for its failure and the ways to improve its patency have been discussed in this video article with special emphasis on post harvest storage of the vein grafts.

Keywords Saphenous vein patency · Storage solutions · Venous CABG

Dr. Winkler discuss (Video 1) the reasons why 80% of the grafts still being used worldwide for CABG are venous and are barriers to total arterial revascularization [1]. He then goes on to discuss the main reasons of failure of the vein graft—transfer from a low pressure to high-pressure area, over distention, handling of the vein graft, and storage of these grafts after harvesting. Dr. Winkler feels that blood is not a good storage solution as it is physiological only when it is present inside the human body's circulation and when it is taken out, it loses CO₂ and the pH level increases. pH levels of 8 and higher that are achieved in stored blood are damaging to the endothelium and this may be even worse than saline solution. He discusses the two commercially available storage solutions which help preserve the endothelial function [2].

Speaking at epigenetic levels, Dr. Winkler stresses that when there is an altered flow mechanism, there is cellular generation of the smooth muscle type, which may lead to hyperplasia and earlier restenosis. However, good laminar flow stimulates endothelialization with good long term results.

So the technical aspects become extremely important including the angle of inflow, etc. The size of the anastomosis should be a maximum of one and a half times the diameter of the coronary artery to prevent the eddy currents and altered flow dynamics. Cobra head too is important. For sequential anastomosis, Dr. Winkler feels that the diamond anastomosis is better in most cases than the parallel anastomosis as the latter may lead to a “Seagull” or “Hamocking” effect. Dr. Winkler refers to the saphenous vein as a Diva and that one has to keep her happy and handled with care.

References

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Electronic supplementary material The online version of this article (<https://doi.org/10.1007/s12055-018-0688-1>) contains supplementary material, which is available to authorized users.

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