Letters to the Editor

The Editor welcomes submissions for possible publication in the Letters to the Editor section that consist of commentary on an article published in the Journal or other relevant issues. Authors should:

- Include no more than 500 words of text, three authors, and five references
- Type with double-spacing
- See <http://jtcs.ctsnetjournals.org/misc/ifa.htm> for detailed submission instructions.
- Submit the letter electronically via jtcvs.editorialmanager.com.

Letters commenting on an article published in the JTCVS will be considered if they are received within 6 weeks of the time the article was published. Authors of the article being commented on will be given an opportunity to offer a timely response (2 weeks) to the letter. Authors of letters will be notified that the letter has been received. Unpublished letters cannot be returned.

Vein graft neointimal hyperplasia: Prevention is better than cure

To the Editor:

We read with interest the article by Thomas Schachner.¹ This review was an excellent description of the multiple factors involved in the initiation and progression of neointimal hyperplasia in vein grafts during coronary bypass surgery. Clearly much has been learned in recent years about the type and origin of the cells composing the hyperplastic tissue and other various factors involved in the hyperplastic process. Schachner has proposed multiple pharmacologic strategies to reduce this hyperplastic process.

However, we contend that this approach is similar to closing the stable door after the horse has bolted. Surely it is better to prevent the damage to the vein in the first place than to try to reverse the results in terms of neointimal hyperplasia after the damage has been done. There is a wealth of literature showing the adverse effects of surgical trauma, especially high pressure distension during vein graft harvesting, on the subsequent fate to the vein graft.²

However, surgeons know instinctively that before they can implant a vein graft it must have an adequate lumen and be free of spasm. If vein spasm is present then the surgeon invariably uses sufficient pressure to remove the spasm. We and others have shown that this procedure of distending the vein can generate extremely high intraluminal pressures and lead to widespread loss of endothelial coverage.^{2,3} We have also shown that this loss of endothelium can be prevented by pharmacologic relaxation of the vein with appropriate vasodilator agents.⁴

We have shown in an extensive series of organ bath studies and clinical trials that a mixture of glyceryl trinitrate and verapamil is a highly effective means of reducing vein graft spasm. This combination relaxes the saphenous vein by 2 mechanisms. It has a rapid onset of effect and a long duration of action.⁵ A more commonly used pharmacologic agent is papaverine. However, we have shown that this agent results in inferior preservation of the endothelium.⁴

Papaverine also has a number of other undesirable effects, especially endothelial damage from the acidity of its solution, particularly if it is undiluted.⁶ Recent studies have shown other adverse effects of papaverine on the endothelium.⁶ Papaverine, however, continues to be used because it is readily available in the operating room.

Although pharmacologic inhibition of vein graft neointimal hyperplasia is possible, it is more important to prevent it in the first place by using pharmacologic relaxation of the vein graft conduit during harvesting.

Franklin Rosenfeldt, FRACS^a

Guo Wei He, MD, DSc^b

Nick Roubos, MB, BS, BMedSci^c

Department of Cardiothoracic Surgery^a

Monash University Department of Surgery

Alfred Hospital and the Baker Heart

Research Institute

Melbourne, Australia

Department of Surgery^b

The Chinese University of Hong Kong

Department of Cardiothoracic Surgery^c

Alfred Hospital Melbourne

Melbourne, Australia

References

1. Schachner T. Pharmacological inhibition of vein graft neointimal hyperplasia. *J Thorac Cardiovasc Surg.* 2006;131:1065-72.
2. Ramos JR, Berger K, Mansfield PB, Sauvage LR. Histologic fate and endothelial changes of distended and nondistended vein grafts. *Ann Surg.* 1976;183:205-28.
3. Angelini GD, Passani SL, Breckenridge IM, Newby AC. Nature and pressure dependence of damage induced by distension of human saphenous vein coronary artery bypass grafts. *Cardiovasc Res.* 1987;21:902-7.
4. Roubos N, Rosenfeldt FL, Richards SM, Conyers RA, Davis BB. Improved preservation of saphenous vein grafts by the use of glyceryl trinitrate-verapamil solution during harvesting. *Circulation.* 1995;92(9 Suppl): II31-6.
5. He GW, Rosenfeldt FL, Angus JA. Pharmacological relaxation of the saphenous vein during harvesting for coronary artery bypass grafting. *Ann Thorac Surg.* 1993;55:1210-7.
6. Rubens FD, Labow RS, Meek E, Bedard E, Gill IS, Dudani AK, et al. Papaverine solutions cause loss of viability of endothelial cells. *J Cardiovasc Surg (Torino).* 1998;39:193-9.
doi:10.1016/j.jtcvs.2006.09.082