# Neointima development in externally stented saphenous vein grafts. External stents are bad for the patient: why not use an undamaged saphenous vein for coronary artery bypass graft?

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In their recent article, "Neotinima development in externally stented vein grafts", Węglarz *et al.* assessed the effect of placing an external Dacron stent on lumen volume, neointima formation and the outer border of vein grafts using intravascular ultrasonography in coronary artery bypass graft (CABG) patients [1]. Over the period studied, the reduction in lumen volume was greater in stented versus normal grafts and, although there was no change in plaque volume in controls, stented grafts exhibited a significant increase in plaque size. Based on these results, they concluded, "saphenous vein grafts covered with an external elastic Dacron stent seem to be inferior to traditional ones". It is not clear, from the methods, how the saphenous vein was harvested. The term "traditional" suggests that conventional harvesting was used, where the vein is stripped of its surrounding tissue. What other treatments were used? Were veins distended and what storage solution was used? It is surprising that the previous "Extent" study, by the Bristol group and published 10 years ago [2], was not cited in this article, since the approach used is virtually identical. In the Extent study two groups of patients undergoing CABG were randomized to have an Extent placed on a right or left coronary system target graft. The results were disappointing as, at follow-up angiography, all 17 Extent grafts were thrombosed, whereas all left internal thoracic artery and non-Extent vein grafts were patent. Given the detrimental effects of external Dacron stents, ethical considerations arise in continuing this form of treatment. Do the latest data from Węglarz *et al.* suggest this approach should be abandoned?

According to the details provided from the Bristol, Extent, trial "The stent was so designed... to prevent migration or kinking of the vein graft'' and, in the Polish trial, "This extravascular stent is very resistant to bending". Since the main aim of the external stent is to provide mechanical support and prevent the graft from kinking, had either group considered no-touch saphenous vein harvesting? Slower progression of atherosclerosis in no-touch compared with traditional saphenous vein grafts has been shown using angiography and intravascular ultrasound [3] with recent results showing that such grafts maintain a 16-year patency rate comparable to the internal thoracic artery [4]. When using this technique the saphenous vein is removed with minimal trauma and with its cushion of surrounding tissue intact [5]. Since vascular damage is reduced, the vein's normal architecture is maintained and many structures damaged when using traditional harvesting are preserved [6]. The main advantage of the no-touch technique is that the surrounding tissue supports excessively long vein grafts and prevents kinking, a feature illustrated when performing mid- and long-term follow-up angiography (Figure 1) [5]. As the kinking that occurs to "traditional" saphenous vein grafts is associated with stripping of the outer vessel layers, why remove or damage them in the first instance only to replace them with an external stent? Surely it is more logical to prevent kinking by harvesting the saphenous vein with minimal surgical trauma and with its surrounding tissue intact.

## Conflict of interest

The authors declare no conflict of interest.

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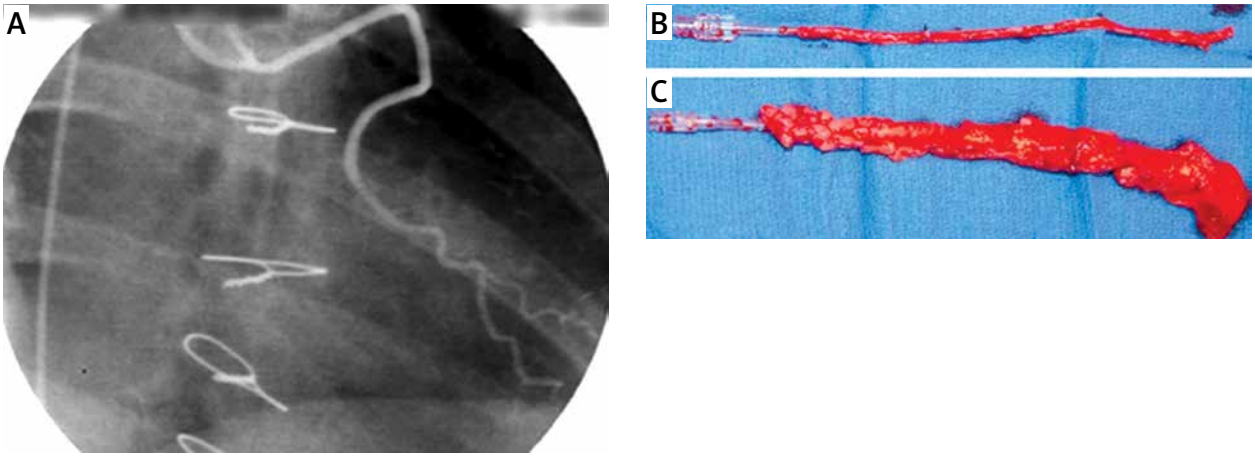


**Figure 1. A** – The angiogram shows no kinking in an excessively long saphenous vein graft harvested complete with surrounding tissue intact (from reference [5]). **B** – A "traditional" saphenous vein preparation where the outer cushion of tissue has been removed. **C** – A no-touch saphenous vein harvested with outer cushion of fat intact (both from reference [6])

## References

1. Węglarz P, Krejca M, Trusz-Gluza M, et al. Neointima development in externally stented saphenous vein grafts. Adv Interv Cardiol 2016; 12: 334-9.
2. Murphy GJ, Newby AC, Jeremy JY, et al. A randomized trial of an external Dacron sheath for the prevention of vein graft disease: the Extent study. J Thorac Cardiovasc Surg 2007; 134: 504-5.
3. Johansson BJ, Souza DSR, Bodin L, et al. Slower progression of atherosclerosis in vein grafts harvested with 'no touch' technique compared with conventional harvesting technique in coronary artery bypass grafting: an angiographic and intravascular ultrasound study. Eur J Cardiothorac Surg 2010; 38: 414-9.
4. Samano N, Geijer H, Liden M, et al. The no-touch saphenous vein for coronary artery bypass grafting maintains a patency, after 16 years, comparable to the left internal thoracic artery: a randomized trial. J Thorac Cardiovasc Surg 2015; 150: 880-8.
5. Souza SR, Arbeus M, Botelho Pinheiro B, et al. The no-touch technique of harvesting the saphenous vein for coronary artery bypass grafting surgery. Multimed Man Cardiothorac Surg 2009; 2009: mmcts.2008.003624. doi: 10.1510/mmcts.2008.003624.
6. Dashwood MR, Tsui JC. 'No-touch' saphenous vein harvesting improves graft performance in patients undergoing coronary artery bypass surgery: a journey from bedside to bench. Vascul Pharmacol 2013; 58: 240-50.