No difference in 1-year wound morbidity following no-touch versus conventional vein harvesting for coronary artery bypass surgery: a new beginning

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Controversy surrounding the issue of greater wound morbidity when using the ‘no-touch’ (NT) saphenous vein graft (SVG) when compared with the conventional (CON) harvesting technique has been addressed for the first time by the recent study of Verma et al. [1], who showed no significant difference in wound complications and functional recovery after 1 year of follow-up.

Due to the relatively low use of the NT technique, introduced in 1996, data are limited to a single randomized study showing that NT harvesting of the SVG results in a superior patency over CON [2]. Various vasculoprotective mechanisms in NT SVGs have been demonstrated. Although the primary outcome measure of the paper by Verma et al. shows a decreased vascular injury in NT SVGs, we find the results of the secondary study, regarding leg wound healing and functional outcome, to be crucial for the NT technique to attain warranted popularity. We congratulate the authors on conducting this study and point out a few additional factors that we believe should be considered when interpreting the results.

It is difficult to understand why no differences in intima, media and adventitial thicknesses were seen between the two groups particularly as CON veins were stripped of its adventitial layer. Also, an earlier study on NT versus CON vessel morphology has shown differences in media thickness [3].

Although there appears no clear evidence of a difference in the risk of infection when staples rather than sutures are used to close leg wounds after SVG harvesting during coronary artery bypass grafting (CABG) [4], information regarding the proportion of wounds closed using staples is missing. To maintain as high homogeneity of the sample as possible all patients should either have staples or absorbable cuticular sutures, particularly in the larger, ongoing, SUPERIOR-SVG trial (clinicaltrials.gov identifier: NCT01047449).

In the light of recent data indicating that antibacterial sutures reduce the incidence of infections after CON harvesting in CABG patients by ~35% [5], we consider that the data regarding the suture material used are both relevant and necessary for adequate interpretation of the results.

SVG harvest-site complications are often managed in legs with arterial insufficiency. Did the patient with peripheral vascular disease have an equal severity of the disease in both legs and was he/she included in the leg assessment analysis? The importance of accounting for arterial insufficiency in the donor site is crucial when comparing postoperative leg wound morbidity rates between groups. The vast majority of patients included in the study by Verma et al. [1] were men (94%). Whether these results will remain similar in a mixed sex population remains to be seen. The Materials and Methods section points to Supplementary data on leg wound healing and functional outcomes, although no such data can be found.

Finally, there was a single crossover; a CON SVG was harvested from the leg assigned to NT. This patient developed a leg wound infection of the leg assigned to NT and analysed according to intention to treat. What impact would per treatment analysis have on the 3-month follow-up results of leg assessment?

When considering that reduced leg wound morbidity has resulted in the recent adoption of endoscopic vein harvesting as a standard of care in spite of dubious graft patency [6], resolving the issue of NT wound morbidity is more important for greater uptake of the technique. We congratulate the authors once again on conducting this study and hope they find our comments useful for the SUPERIOR-SVG ‘NT versus CON’ trial that is underway.

Conflict of interest: none declared.

REFERENCES

LETTER TO THE EDITOR RESPONSE

Reply to Kopjar et al.

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We thank Kopjar et al. [1] for their comments regarding our recent work published in Eur J Cardiothorac Surg [2]. We reported attenuated vascular smooth muscle cell activation via microRNA-145 as a possible pathogenetic mechanism for the clinical observation of improved vein graft patency using the no-touch (NT) approach. Kopjar et al. [1] focused on a critical aspect of a ‘NT’ vein harvest that has been a major barrier to wide-spread adoption, which being the morbidity of the leg incision. We have read their comments and offer our responses.

In this report, our patient numbers were too small to make any definitive conclusions regarding clinical leg wound morbidity. To address this important issue, we direct Kopjar et al. to our ongoing prospective, multicentre randomized controlled clinical trial comparing conventional (CON) saphenous vein graft (SVG) harvest versus the no-touch technique (SUPERIOR SVG Study; http://clinicaltrials.gov/show/NCT01047449). The primary outcome of the SUPERIOR SVG Study is 1-year graft occlusion; the secondary outcomes include adverse SVG harvesting events at 1 year post-coronary artery bypass graft, which include infection, haematoma, swelling, neuropathy and quality-of-life measures.

In this report, we found worse short-term leg assessment scores in NT versus CON at 3 months as well as more incidences of infection (4 vs 0 patients). However, as the authors have pointed out that, at 1 year, such scores were not different between groups. Our data does suggest that, in our patient population, although NT vein harvest was associated with acute morbidity, there may not be associated long-term functional consequences. As for the method of leg closure, all leg incisions were sutured closed with two layers of subcutaneous 2-0 Vicryl (Ethicon, Somerville, NJ, USA) sutures and a single 3-0 monocryl subcuticular layer. Anti-microbial sutures may minimize leg wound harvest-site infections, but were not used in these patients.

In this report, all patients were included in the leg assessment study, including the one patient with preoperative peripheral vascular disease, which was not considered severe and without observable chronic skin changes. We do advocate that lower leg harvesting be avoided and thigh saphenous vein segments used for patients with more significant peripheral arterial insufficiency. We also agree that it remains to be seen whether gender will come to be an independent risk factor for infection.

The Materials and Methods section points to Supplementary data, which includes the leg wound healing and functional outcomes questionnaire. This can now be accessed on the Eur J Cardiothorac Surg website.

Finally, although the representative micrographs of SVG H&E staining (Figure 1) do not show statistical differences in intima, media and adventitial thickness between the two groups, there was an observed trend in the thickness of intima, media and adventitia between the NT and CON specimens (mean ± SD: 132.72 ± 42.02 vs 112.46 ± 44.18; 217.76 ± 48.73 vs 202.32 ± 45.53, and 146.19 ± 43.39 vs 132.38 ± 28.34, respectively).

Finally, there was a single crossover; a CON SVG was harvested from the leg assigned to NT that developed a leg wound infection and analysed according to intention to treat. We did not perform the as-treated analysis nor would this change the outcome of the analysis.

In addition, we thank Kopjar, et al. [1] for their interest in our paper and for raising these important points. Unfortunately, this report was not designed nor able to address many of the issues raised. As Kopjar et al. point out, the SUPERIOR SVG study will address these concerns.

REFERENCES
