Reviewer's report

Title: Expandable External Support Device to Improve Saphenous Vein Graft Patency after CABG.

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Reviewer: Amir Elami

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Minor Essential Revisions:
As long as saphenous vein segments continue to be utilized as coronary artery bypass grafts, the need to improve their inferior patency compared with internal thoracic artery grafts will remain. Intimal hyperplasia resulting in graft arteriosclerosis may appear within 6 months of implantation. Detection of such hyperplasia in an early stage of an experimental model may allow prediction of long-term patency.

1. The method elected for angiographic graft evaluation, namely arbitrarily measuring at seven equal distances along the graft may skip the points of maximal and minimal diameters, the magnitude of the difference between which may be more relevant to the prognosis of the graft [1]. The proximal segment of the supported graft of sheep 2196 in Figure 5c at 12 weeks could be an example of irregularity which can potentially be overlooked, resulting in lower coefficient of variance. The statement regarding the number of sheep undergoing immediate post-operative control angiography (end of first paragraph in the Results section) should be corrected. Nine of the ten animals surviving to the end of follow-up had complete information.

2. In discussing the limitations of the study the authors correctly pointed out that the follow-up period of 12 weeks could be too short. The follow-up period of 180 days in the baboon model of aorto-coronary bypass grafting reported recently [1] may be more appropriate to demonstrate the protection afforded by the external support device.

3. Some questions arise, or remain open. What is the potential advantage of the alloy used in this device over the already CE-approved external support mesh made of nitinol? Were any breakages detected in the device at the end of follow-up? Previous experiments with nitinol mesh demonstrated effective suppression of intimal hyperplasia only when aggressive downsizing of vein diameter, to better match the target vessel caliber was accomplished [reference 11 in the manuscript]. Is it also necessary with this new device? And why did such an approach result in the poor results obtained in a small group of patients included in a randomized trial reported a little more than a year ago [2]? What is the relevance of findings from this and other experimental animal models, using healthy veins, when applied to elderly patients with age-dependent venous degeneration including wall thickening, focal areas of fibrosis and even varicosities?
References:

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests