“Intercostal artery reimplantation with saphenous vein during thoracoabdominal aortic replacement” Excellent idea, but...

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In their article titled “Intercostal Artery Reimplantation with Saphenous Vein During Thoracoabdominal Aortic Replacement,” Sultan and colleagues¹ describe a novel and safe technique of revascularization of the spinal cord. This short article reports good results with the described technique, in the immediate and midterm follow-ups. The idea is, indeed, quite logical, because it is largely demonstrated that reversed saphenous vein grafts represent good conduits, the patency of which is generally long enough to allow satisfactory results. As a matter of fact, it may appear rather strange that this logical idea was not proposed earlier, considering that those conduits were used systematically and worldwide in peripheral vascular and coronary surgeries for several decades. However, this technique raises some questions.

The first question concerns the intercostal arteries to be revascularized. In the present experience, 1 to 3 of those vessels were reimplanted in each patient. This is certainly an average number in case of atheromatous aneurisms with a fair number of preoperatively occluded intercostal arteries. But what about chronic dissections, for instance, in which a much larger number of arteries may be patent? Should all of them be revascularized with saphenous grafts or only some of them? And, therefore, which ones?

One of the difficulties of reimplanting intercostal arteries during thoracoabdominal aortic replacements is indeed to recognize the important segmental arteries, even though the intercostal arteries have been visualized preoperatively through imaging techniques. Yet, intraoperatively, when the aorta is opened and the patent intercostal arteries are back bleeding, it is often rather difficult to recognize which is which. In those cases, reimplantation might have some random nature.

The question of the availability and the quality of the saphenous conduits is also at stake here. In many surgeons' experience, the saphenous vein is too large or of poor quality in the thigh (mostly in men) or tiny or rapidly divided in

The collateral network.

Central Message

Reimplantation of the intercostal arteries with the aid of saphenous vein grafts is an excellent idea resulting in satisfactory results. However, several points remain unresolved or not addressed.

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the leg (generally in women), and therefore would be considered as poorly usable for bypasses as the ones required for the intercostal arteries.

Last but not least, the excellent video provided by the authors shows an end-to-end technique of bypass on a supple and thin aortic wall surrounding the intercostal ostium. But in many cases, those ostia are included in a severely calcified, atheromatous, thick aortic wall on which direct suture of the saphenous conduit would be uncertain. In those cases, would the authors propose performing an end-to-side distal anastomosis with ligation or occlusion of the intercostal artery upstream?

A fundamental and rather disturbing question remains that, I acknowledge, is largely beyond the goal and the topic of the present study: Is reimplantation of the intercostal arteries mandatory? The important study by Griep and co-workers² developed during the last 2 decades have formed what was called “the collateral network concept.” According to this theory, a dense anastomotic arterial network fed by the vertebral, intercostal, and iliac arterial systems provides the vascularization of the spinal cord. Therefore, during the thoracoabdominal aortic replacement, the patent intercostal arteries are occluded under evoked potentials control, before opening the aorta. The aorta is then simply replaced. This technique has proven to be efficacious and to result in outstanding clinical results.³

One may wonder whether this is not the real solution.

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