

Internal mammary artery harvesting with its distal end occluded

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To the Editor: We have read with great interest the comment of Chen *et al*^[1] “What can we learn from cases of internal mammary artery damage in coronary artery bypass graft ?” The advice that the authors propose in relation to the internal mammary artery (IMA) harvesting is very useful because they are based on a 20-year experience in more than 10,000 patients.

However, we wish to briefly comment on tip number 6 related to avoiding placing a bulldog clamp in the IMA before patient heparinization.

In our hospital, during the last 3 years, we have been introducing some modifications to the classical technique of skeletonized IMA harvesting.^[2] The main modification precisely consists in the distal occlusion of the IMA, with a clamp, at the beginning of its dissection, without previous heparinization. The physiological fundamentals of our modification are warranted in the fact that experimental investigations from the 1960s never found thrombosis in internal mammary arteries implanted through Vineberg technique (distally occluded).^[3]

Our hospital is a center with very low surgical volume. Until now, we have compared the classic harvesting technique of the IMA with our modified technique in two homogenous groups of 50 patients, and we have found interesting results (manuscript in preparation).

The placement of a bulldog clamp before the final bifurcation of the IMA, at the beginning of its dissection, allows an earlier start of its dilation by increasing its internal hydrostatic pressure. As the artery begins to expand in its bed, the effects of the possible anticontractile factors present in the perivascular adipose tissue of the IMA^[4] are exploited. This favors its visualization and dissection by increasing the diameter of the artery and its small branches. In addition, blood flow begins to redistribute (perhaps the greatest advantage of the clamp) and there is an intentional diversion of blood to the

ischemic heart by the pericardiophrenic artery (antegrade flow) and phrenic arteries that, at the diaphragm, make connections with the superior epigastric artery (retrograde flow from the iliac artery).^[5]

Also, an important change occurs in the sternal circulation, because once the IMA is occluded, the antibiotic (prophylaxis) flowing through it begins to redistribute in the peristernal tissues, as the IMA is its main blood source. With the current harvesting techniques of the IMA, in which the artery remains patent all the time, much of the antibioprofilaxis is distributed in anatomical regions distant from the mediastinum, which in theory could increase the chances of infectious complications of the sternal wound.

Finally, we consider that IMA harvesting, in skeletonized form, with magnifying loupes, and without the use of electrocautery (only with clips and scissors), is the best way to avoid artery injuries. Even so, when these occur, the placement of bulldog clamps adjacent to the lesion facilitates repair. If the damage compromises the health of the hemoduct, the injured fragment can be discarded, and an end-to-end anastomosis performed. Thanks to the clamp, a longer and dilated artery will facilitate this maneuver.

Authors' reply

It is our great pleasure to receive comment from Dr. López-de la Cruz and his colleague. We appreciate that Dr. López-de la Cruz and his colleague developed an advanced technique to harvest the left IMA (LIMA) and got a great outcome.

Concerning their great opinions, we still have some doubts. First, there is no denying that the clamp of the end of LIMA can enlarge the diameter of the proximal part of it, but we do not know whether it will result in the change of the proximal flow. Therefore, we can detect it by measuring the flow before and after clamping of the LIMA.

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Meanwhile, this technique can reduce the infection of the sternum remains debating. However, we agree that it will reduce the damage of the LIMA without the use of electrocautery. However, it will also increase the time of harvesting LIMA.

Conflicts of interest

None.

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