

Dissection of the internal thoracic artery using skeletonized technique

Henrique Murad¹

DOI: 10.5935/1678-9741.20110039

The article by Sá et al. “*Skeletonized internal thoracic artery is associated with lower rates of mediastinitis in elderly undergoing coronary artery bypass grafting surgery*” [1], published in this issue of the Brazilian Journal of Cardiovascular Surgery (p. 617) demonstrated that in patients older than 70 years, with the removal of the internal thoracic artery (ITA) using the skeletonized technique, there was a lower incidence of mediastinitis than when it was used the pedicled technique to dissect the ITA. The incidence of mediastinitis was 1.2% in the skeletonized group and 12.5% in the pedicled group. In principle, only one ITA was used and probably the left. There are no special reference to the use of double ITA or concern in noting which of the two ITAs were used. The withdrawal of the pedicled ITA was predictive of mediastinitis in multivariate analysis. The two groups were comparable, and the few differences between the groups (obesity and multiple transfusions) were more unfavorable to the skeletonized group, which still showed a lower incidence of mediastinitis.

Skeletonized is a word that does not exist in our dictionaries of Portuguese language, being one of several approaches that we translate from English in our medical vernaculum. In *Dicionário Novo Aurélio* [2], the closest we get the English “skeletonized” was skeletal, regarding our imitating the skeleton.

The groups skeletonized and pedicled still deserve another repair. Both groups are pedicled, only one has a thick pediculum and another pediculum skeletonized. I understand that this division of pedicled and skeletonized is somehow enshrined, but it’s always good to question the accuracy of our terms.

ITA is recognized as the best graft for use in the coronary tree, and in particular for the left anterior descending artery, due to its large long-term patency, even in patients older than 75 years [3]. Obesity, diabetes, chronic obstructive

pulmonary disease and advanced age are predisposing factors to mediastinitis and sternal complications, and an obstacle to the use of ITA.

The withdrawal of ITA using skeletonized technique allows better preservation of sternal vascularity when compared to the technique which uses a thick pediculum, veins, muscle and fascia [4]. This has improved sternal vascularity as a consequence a lower incidence of sternal complications and precordial dysesthesia [5].

The first concern was to research whether with the withdrawal using the skeletal technique would be greater possibility of injury from ITA and lower long-term patency. There is already enough information in the medical literature to conclude that the withdrawal of ITA using the skeletonized technique is not accompanied by a greater injury of ITA and lower graft patency [6].

SEE ALSO ORIGINAL ARTICLE
ON PAGES 617-623

The use of dual ITA has expanded, especially in young patients, in whom it has demonstrated improved event-free survival in 20 years of postoperative [7]. Using the withdrawal of ITA by skeletonized technique and maintenance of larger sternal revascularization, it is possible to use one or both ITAs, even in groups at higher risk for sternal complications, such as obese patients with type I diabetes, or age above 70 years old.

In the “in touch” technique of removal of the saphenous vein developed by Dashwood et al. [8], maintaining a thick pedicle of the saphenous vein, mimicking the classic way of dissecting the ITA, was accompanied by greater saphenous vein patency, perhaps because of greater local release of nitric oxide. The advantage of thick pedicle is not shown in the ITA, in which there is migration in order to perform the dissection using the skeletonized technique.

The study by Sá et al. [1] brings another important evidence for the use of dissection of the ITA using the skeletonized technique in patients older than 70 years.

The ITA dissection using the skeletonized technique causes lesser devascularization of the sternum, and is accompanied by a lower incidence of sternal complications

1. Titular Member of the Brazilian Society of Cardiovascular Surgery, Chief of Cardiovascular Surgery, Hospital São Vicente de Paulo, professor of cardiothoracic surgery at the Federal University of Rio de Janeiro.

in high risk groups, even with use of both ITAs. Khuri [9], in an editorial published in *Circulation*, noted there are no non-randomized studies sufficient to allow or not to recommend the routine use of ITA removed using skeletonized technique, except the diabetic patients undergoing coronary artery bypass grafting with use of bilateral ITA.

REFERENCES

1. Sá MPBO, Santos CA, Figueiredo OJ, Lima ROA, Ferraz PE, Soares AMMNS, et al. Skeletonized internal thoracic artery is associated with lower rates of mediastinitis in elderly undergoing coronary artery bypass grafting surgery. *Rev Bras Cir Cardiovasc*. 2011;26(4):617-23.
2. Anjos M, Ferreira MB. Novo Aurélio. Rio de Janeiro: Nova Fronteira; 1999.
3. Loop FD, Lytle BW, Cosgrove DM, Stewart RW, Goormastic M, Williams GW, et al. Influence of the internal-mammary-artery graft on 10-year survival and other cardiac events. *N Engl J Med*. 1986;314(1):1-6.
4. Ferguson TB Jr, Coombs LP, Peterson ED. Internal thoracic artery grafting in the elderly patient undergoing coronary artery bypass grafting: room for process improvement? *J Thorac Cardiovasc Surg*. 2002;123(5):869-80.
5. Boodhwani M, Lam BK, Nathan HJ, Mesana TG, Ruel M, Zeng W, et al. Skeletonized internal thoracic artery harvest reduces pain and dysesthesia and improves sternal perfusion after coronary artery bypass surgery: a randomized, double-blind, within-patient comparison. *Circulation*. 2006;114(8):766-73.
6. Pevni D, Uretzky G, Mohr A, Braunstein R, Kramer A, Paz Y, et al. Routine use of bilateral skeletonized internal thoracic artery grafting: long-term results. *Circulation*. 2008;118(7):705-12.
7. Lytle BW, Blackstone EH, Loop FD, Houghtaling PL, Arnold JH, Akhrass R, et al. Two internal thoracic artery grafts are better than one. *J Thorac Cardiovasc Surg*. 1999;117(5):855-72.
8. Dashwood MR, Savage K, Tsui JC, Dooley A, Shaw SG, Fernández Alfonso MS, et al. Retaining perivascular tissue of human saphenous vein grafts protects against surgical and distension-induced damage and preserves endothelial nitric oxide synthase and nitric oxide synthase activity. *J Thorac Cardiovasc Surg*. 2009;138(2):334-40.
9. Khuri SF. To skeletonize the internal thoracic artery or not? Is that the question? *Circulation*. 2006;114(8):754-6.