Risk scores: coronary artery bypass grafting with and without cardiopulmonary bypass

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The work "With or without CPB? Impact of risk scores in CABG surgery" [1], published in this issue, brings about great contribution of still controversial aspects of the benefit of avoiding the use of cardiopulmonary bypass in CABG (coronary artery bypass graft).

After 30 years of its description and initial results in systematic series of cases [2,3], only years later, in 1995, with the description of even less invasive technique known as "MIDCABG" (Minimally Invasive Coronary Artery Bypass Graft) [4,5], the alternative off-pump coronary artery bypass received special consideration and international focus, occupying the main topic of discussion at specialty congresses.

The contribution of Brazilian heart surgery in this field was extensive and internationally recognized, demonstrating the feasibility of the technique, its benefits and, subsequently, extension of the procedure through creative maneuvers to a large group of patients [6-8]. It should be noted that these contributions were demonstrated at the time when stabilizers were not yet available, and the facilitation of the procedure was obtained by pharmacological stabilization, surgical maneuvers and perfusates [9].

Despite the intuitive advantages to avoid revascularization without cardiopulmonary bypass, turning the procedure into a thoracotomy, there are controversial opinions regarding the indication of this technique in various clinical scenarios, with respect to patient selection, results, patency of the grafts, benefits and disadvantages [10-14].

In reality, these controversies are fueled by biases in patient selection, inadequate training and longer learning curve.

In the literature, the data are compared in retrospective non-randomized single or multicenter studies and the results reported as an advantage for either method. There are few prospective and randomized studies, often with sample sizes that do not allow conclusions about which often bring more confusion than clarification.

The approach of this work is original and creative for it uses comparisons among alternative revascularization considering known and approved risk scores as the Bernstein-Parsonnet and EuroSCORE (European System for Cardiac Operative Risk Evaluation).

Based on a ROC curve (Receiver Operating Characteristic) of predicted and observed risk, the study identifies the benefits of revascularization without cardiopulmonary bypass in high risk patients: 17.75 in Parsonnet (OR 7.4 for a $P < 0.0001$) and $> 4.5$ in EuroSCORE (OR 5.4 for a $P < 0.0001$).

The results are very impressive and give the off-pump revascularization an indisputable advantage for high risk patients and did not detect significant differences in patients without comorbidities [15].

In recent guidelines of the European Society of Cardiology (ESC) and European Association for Cardiothoracic Surgery (EACTS), 2010, we noticed the recognition of the procedure without cardiopulmonary bypass with special technique and preferred in patients with relevant comorbidities, especially chronic renal failure [16,17].

The authors study is the first to demonstrate in expressive sample that in order to detect differences, we have to add to the selection criteria predicted risk, which will have great impact in the planning and selection of alternative revascularization, with effect on real world strategies. The limitations consist in the fact that this is a retrospective, non-randomized unicenter study, but the sample with significant sampling allows both groups to admit that the conclusions are valid as institutional truth; however not allowing to extrapolate to other centers in which the conditions of structure and training teams may not be the same.

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Another important observation concerns the use of not updated risk scores: Bernstein-Parsonnet and EuroSCORE logistic I 2000 - 1999, being that, currently, the most used are the STS and EuroSCORE II.

This observation, however, does not invalidate the study proposal, which highlights a finding in a lot of quality information into the real world. What could possibly change if they used the Society of Thoracic Surgeons (STS) risk calculator or EuroSCORE II it would be the cut-off level and not contestation of the results.

Moreover, the work gives way to the introduction of a specific risk for myocardial revascularization without cardiopulmonary bypass, which in our opinion it would be different from the risks available, which do not distinguish between technical situations that are not similar.

I would like to congratulate the authors that offer a valuable complement to their previous contributions [18,19] and introduce a systematic assessment of procedures from deviations of ROC curves, based on previously known risks.

REFERENCES


