Editorial comment

Quality measurement in adult cardiac surgery: a challenge

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The manuscript presented by Hartrumpf et al. concerns a current but sensitive topic [1]. In contrast with others reporting and promoting quality assessment at unit level [2—4], the article highlights the surgeon's individual performance, expressed by the Surgeon Performance Index (SPI). In this respect, the article is progressive, presenting public data, good and bad, without distinction. The authors thus take up a vulnerable position, which takes courage. However, despite the efforts and the good intention, the article contains several pitfalls. It is important to recognize these pitfalls, especially in the case of quality control. Otherwise, misuse of articles such as this will undermine the importance and power of quality assessment.

1. Variables

The authors use early mortality, early rethoracotomy for bleeding, sternal rewiring for instability and mediastinitis as variables for their assessment and use the EuroSCORE for risk adjustment [5]. Firstly, why not use variables which have an accepted association with quality of care, as presented by several quality improvement organizations [2—4]? Secondly, the used variables differ from the definitions given in internationally used systems, thus making benchmarking impossible. Moreover, the used definitions are free to interpretation. Sternum instability is defined as visible movement of sternal edges, necessitating sternum rewiring. This definition contains two weak points. For one, ‘visible movement’, while everybody knows patients with a sternal dehiscence without visible movements. Secondly, ‘necessitating sternum rewiring’ which is not an event but a therapeutic decision. Therefore it is biased. The same goes for early rethoracotomy. As defined by the authors, it is a therapeutic decision, but what about patients, with minimal blood loss undergoing a rethoracotomy for cardiac tamponade?

2. Mortality

It is important that when mortality is used, theoretically, the whole early phase, about 6 months postoperative, must be considered [6]. This means that an active follow-up is necessary [6]. Because of difficulties with follow-up, most centers use their hospital mortality. With the early discharge policy most patients leave the cardiac surgical center within 10 days postoperative. This means that, even using the 30-day mortality, as the authors did, an active follow-up is needed. In order to have a good idea about the value of the used rate of mortality in the evaluation, the method of follow-up and the results must be presented.

3. Patient population

Besides clearly defined variables, quality control requires a good description of the patient population. It is preferable to focus on programs; at this moment it is generally accepted that quality reports should focus on CABG, the most commonly performed standardized cardiac procedure, with several well-defined outcome, process and structure variables. It is even accepted that results of CABG give a good idea of the overall adult cardiac surgery performance. However, it is the authors’ choice to include valve surgery in their studied population. Despite this decision, some agreements must be clear. What about high-risk patients? It is known that an additive EuroSCORE > 10 is not precise and therefore it is probably better not to include the, generally few, patients with a score > 10 in the assessment [7].

References

Another problem is a patient operated on several times during the same hospital admission. What about a CABG patient, reanimated postoperative and undergoing a second CABG, who died? Is this mortality registered for the surgeon doing the second operation? Or for the surgeon who did the first operation? Or for both? Usually the second operation is accepted as a complication of the first and thus it is not included in the analysis.

4. Risk adjustment

At this moment the EuroSCORE is the best validated risk model for adult cardiac surgery. The EuroSCORE is a scoring system for the prediction of mortality [5]. However, risk adjustment of the complications based on the EuroSCORE, even with the logistic, is inappropriate.

It is also important that patients are scored correctly. A patient undergoing an isolated CABG receives no score for the EuroSCORE item other than ‘isolated CABG’, even when during the operation an unexpected mitral valve replacement must be done. This patient must be scored as an isolated CABG and the mitral valve replacement as a complication during the operation.

5. Assessment

The intention of the report is to present the SPI as a tool for assessment of individual surgical quality. However, before evaluating so called ‘parts’ of a program, the quality of the whole program must be evaluated. It would be better to start this assessment with a global assessment of CABG patients. Here we return to the point of the used variables. Use the same variables, process, structure and outcome as presented in several baseline studies. Present the data with confidence limits or interquartile ranges. This way, benchmarking is possible with greater databases, such as the STS database. This gives an idea of the quality of care of the total unit and is important for further analysis. Using the SPI, surgeons are inevitably ranked. But what is the use of being the best in a department without knowing whether the overall results meet the standards of quality.

Use generally accepted tools for assessing surgical results such as control charts, CUSUM analysis, or cumulative funnel plots [8–10]. In their article the authors present the SPI, however, it seems rather arbitrary and there is no comparison possible with existing indices of quality. Besides, as already suggested, it is wrong to relate expected probability of morbidity to the logistic EuroSCORE.

6. Recommendations

1. Start quality control by evaluating units and setting boundaries to them. Is the unit representative and how is quality in the unit? Compare with larger series and best practices.

2. Use accepted and well-defined indicators, structure, outcome and process.

3. Use risk adjustment but recognize that it is always incomplete.

4. Use accepted methods of analysis.

I felt honored to write this comment. Quality control is a new and challenging development in our profession. In contrast with our surgical concrete thinking patterns, quality control is an abstract field. For this reason, it is important to have a good methodology, founded on strong principles but continuously updated in response to the demands of modern day standards of care.

References


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