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EDITORIAL COMMENT

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How are you feeling today? Quality of life after aortic surgery

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The question ‘How are you feeling today?’ has almost become synonymous with our profession. Yet, the answer to this question has found surprisingly little attention in contemporary studies and trials.

The EuroSCORE II (<http://www.euroscore.org/calc.html>, accessed on 1 April 2015) estimates our individual mortality risk to undergo elective root replacement to be slightly <1%. Therefore, if we would need surgery right now, we would be much more concerned about

the time we need to go back to work, about sternal stability, pain, risk of infection or neurological events rather than the chance of not surviving this operation. Our primary concern would be our quality of life—or better, health-related quality of life (HRQOL)—after surgery.

Jarral *et al.* [1] from the Imperial College, London, UK, performed a systematic review regarding HRQOL after thoracic aortic surgery.

Using a Medline search with appropriate keywords, the authors reviewed each study individually and assessed the methodological quality of each selected paper. A scoring system was used to group studies in those with high, moderate or poor quality. The authors finally included 30 studies with a total of 4746 patients.

Measuring, quantifying and comparing HRQOL between individuals is difficult and complying with the general call for 'hard' data, surgeons have been struggling to provide reliable, long-term data regarding mortality and freedom from reoperation.

Death after elective aortic root replacement in an otherwise healthy patient has become a rare event. While replacement of the ascending aorta has been associated with an acceptable risk from the onset, there has been considerable improvement in the survival of patients in need for more extensive aortic replacement using hypothermic circulatory arrest. Twenty-five years ago, Kouchoukos *et al.* [2] reported an in-hospital mortality of 2.2% in patients with annulo-aortic ectasia, whereas Svensson *et al.* [3] reported 15% 30-day mortality in patients undergoing aortic arch replacement. In patients with acute aortic dissection, Kouchoukos reported a 25% mortality, whereas in contemporary series from experienced centres, mortality is ~10% or even lower in selected patient populations [4]. Therefore, mortality and freedom from reintervention alone, as objective criteria as they are, have become insufficient markers of success in aortic surgery.

There are many tools to estimate HRQOL and their strengths and weaknesses have been discussed extensively in the literature. While a total of 17 different methods were used to estimate HRQOL in the selected studies, two-thirds of the studies used the short-form questionnaire 36 (SF-36).

The SF-36 questionnaire is a generic measure that is neither specific to a certain health condition, disease or treatment nor to age or sex. The questionnaire consists of 36 questions relating to eight different aspects of health: vitality, physical functioning, bodily pain, general health perceptions, physical role functioning, emotional role functioning, social role functioning and mental health. The questionnaire can be completed in 5–10 min. These 8 scales were selected out of 40 included in the Medical Outcomes Study [5] and represent those most frequently affected by disease and treatment. The questionnaire has been shown to produce good data quality with high completion rates and consistency indices. To make comparisons between scales possible, results for each scale have been normalized to yield a mean of 50 points and with a standard deviation of 10 points. It is important to point out that the questions relating to six of the eight scales only refer to the past 4 weeks. Only 'physical functioning' and 'general health' do not have this limitation [6]. As part of the International Quality of Life Assessment Project, the SF-36 has become available in many languages.

HRQOL gives insight into the way patients experience their illness and the interaction with us as medical professionals. HRQOL in a patient after surgical aortic repair can be better than after an endovascular procedure complicated by an endoleak that necessitates frequent controls, with a second procedure looming at the horizon. But the usefulness of HRQOL data goes beyond these 'soft' data and we might be able to generate data that directly influence our surgical strategy.

Jarral *et al.* included studies relating to various subgroups that were investigated. HRQOL data are now available from patients undergoing elective root replacement, surgery for acute aortic dissection, surgery on the thoraco-abdominal aorta, thoracic endovascular interventions as well as surgery in the elderly. The authors

point out that the majority of these studies are limited by the lack of preoperative data. This is true and especially unfortunate since it would provide us with a true 'zero point'. On the day of surgery, all patients will experience the same event, namely surgery, and therefore the distance between the evaluation of HRQOL and the event would be the same for all patients.

Nevertheless, we think that the largest bias is the fact that in most studies, postoperative HRQOL data are collected at the time the study is conducted and not after a defined time after surgery. Jarral *et al.* reported a range from 1 to 14 years after surgery within the same study, making comparisons even within the same group almost impossible.

Periprocedural neurological events might be the most significant hazard in contemporary aortic surgery in terms of limiting HRQOL. Some groups have started to report their results by dividing patients into those with and without 'disabling stroke'. Quite similar to the concept of HRQOL, we see how we transfer from reporting a specific cerebral lesion towards more functional assessment of the complication [7].

Many questions in surgery are so complex that we cannot estimate the outcome over a longer period of time by investigating each aspect of it separately since we are not aware of the biasing factors. In these situations, assessing HRQOL can provide a more reliable view of the outcome than classical follow-up items.

But, as we have learned from other fields in science [8], whenever using a method that is very susceptible to bias, the studied 'phenotype' has to be very well defined in order to provide mechanistic insights. Otherwise, we will end up with HRQOL being a very general marker of disease.

With the present systematic review, Jarral *et al.* show that HRQOL can be a powerful tool when used correctly. In order to achieve solid and comparable data, we have to agree on standards on reporting HRQOL after aortic surgery. This would provide our community with a powerful tool to complement our data on mortality and reintervention rates and would enable us to compare surgical strategies across patient populations and institutions.

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