EDITORIAL COMMENT

Another inconvenient truth: meeting the challenge of preventing poor surgical outcomes

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The high-risk noncardiac surgical population represents a major global healthcare challenge. Despite widespread advances in medical care, surgery remains a common and effective treatment option for a diverse range of diseases. Far from being replaced by drug therapies, the role of surgical treatment options appears to be growing. Moreover, surgery is now more frequently deemed a viable option for elderly patients and those with comorbidities or advanced disease. Recent estimates suggest that 234 million major surgical procedures are performed worldwide each year [1]. Whereas this estimate may be on the high side because of the broad definition of major surgery, there is little doubt that a very large number of patients undergo potentially life-threatening surgery. The topics covered in this edition of the journal have been carefully selected for their relevance to recent advances in the delivery of perioperative care. Despite the many opportunities to apply such advances in clinical practice to improve surgical outcomes, this knowledge base is poorly recognized and exploited. There is a widespread failure to acknowledge the frequency of poor outcomes after surgery, to search for effective preventive and therapeutic measures and to implement research findings where appropriate. The aim of this editorial is to highlight the major challenges we must tackle to increase patient survival through improved perioperative care.

In common with all treatments, surgery has attendant risks as well as benefits. With the introduction of procedures such as safety checklists, the standard of patient care during surgery is now extremely high, with very few deaths related to anaesthesia or procedural errors [2,3]. In contrast, the delivery of an adequate standard of perioperative care represents a growing challenge, largely because improved care provision continues to be outstripped by the number of high-risk patients who undergo surgery. Consequently, complications following major surgery remain a leading cause of morbidity and mortality [4–9]. Studies from the United Kingdom suggest that a readily identified high-risk subgroup accounts for over 80% of postoperative deaths but less than 15% of in-patient procedures [7,8]. In the United Kingdom, 170 000 patients undergo high-risk noncardiac surgery each year [7,8]. Of these patients, 100 000 will develop significant complications resulting in over 25 000 deaths [7–9]. Advanced age, comorbid disease and major and urgent surgery are the key factors associated with increased risk [7–9]. This pattern of poor outcomes following major surgery can be readily identified worldwide [4–12]. Survival among patients who develop postoperative complications varies widely between hospitals, confirming both the potential and the need to improve clinical outcomes [10]. The importance of minimizing avoidable morbidity is highlighted by the observation that patients who develop complications but survive will still suffer reductions in functional independence and a substantial decrease in medium and long-term survival [4–6]. A prospective 13-year observational study of a large cohort of British civil servants examined the link between diagnoses associated with medical absence from work and long-term mortality [4]. Physician-certified sickness absence to undergo surgery was associated with a two-fold increase in mortality. Apart from circulatory disease, surgery was associated with the highest risk of late death compared with psychiatric, infectious and respiratory disease. Although we may have made some progress towards improving surgical outcomes, the available evidence suggests that postoperative adverse events may be much more frequent than many have appreciated and that the long-term consequences of these complications are considerable.

We commonly fail to balance risk and benefits of major surgery in two major ways. The first is poor case selection; patients often undergo surgery when the balance of risk and benefit suggests conservative management would more likely achieve the patients’ desired outcome. The second common failure is to squander opportunities to identify and minimize perioperative risks, most frequently through inadequate levels of perioperative care for patients who are very likely to develop complications. There are a number of specific clinical interventions which may benefit high-risk surgical patients [7,13], but critical care facilities will continue to form the basis of adequate perioperative care for this group. In the United Kingdom, recent studies have demonstrated that fewer than
one-third of high-risk noncardiac surgical patients are admitted to critical care following surgery [7,8]. In addition, those patients who did receive this level of care were discharged after a median stay of only 24 h and, subsequently, lingered for many days on standard surgical wards. Premature discharge from critical care was identified as an important risk factor for postoperative death, suggesting a failure to correctly identify those patients who can be safely discharged from critical care [7,8]. This situation contrasts starkly with perioperative care for cardiac surgical patients for whom postoperative critical care admission is routine. Cardiac surgical patients also have a high incidence of coexisting disease and undergo major surgery, but with an overall mortality rate as low as 2% [14–17]. These observations may relate to limited availability of critical care beds in the United Kingdom, although published data do not support this suggestion [18]. Indeed, it would seem that poor surgical outcomes are an international healthcare problem [4–12].

Given the large surgical workload in many hospitals, any increase in perioperative care resources would impose a heavy financial burden. Our priority should, therefore, be to identify pragmatic solutions. The lack of robust epidemiological data describing the surgical population represents an important obstacle to improving survival. Hospital coding data are collected in many nations but these are not designed to measure clinical outcomes. A lack of equivalence prevents a robust comparison of national datasets and even high-quality databases from North America focus on populations which are not fully representative [4,6,10]. Despite recent research [4–10], many continue to debate the existence of a significant high-risk surgical population or suggest that this problem may be confined to just a few healthcare systems in the developed world or to developing nations. This uncertainty represents a significant barrier to progress through research. If surgical outcomes represent a problem in some developed nations, it is likely the problem is widespread. In contrast, if other nations are less affected, then we must investigate the differences between healthcare systems which might underlie better outcomes. Large, international prospective epidemiological studies could provide important data that may themselves trigger a step-change in the care of the high-risk patient undergoing noncardiac surgery. Such information will also provide the rationale and impetus for the type of large international randomized trials which are dramatically changing clinical practice in other specialties.

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References