

EDITORIALS

What is the rationale for preoperative medical evaluations? A closer look at surgical risk and common terminology

K. R. Riggs^{1,*} and J. B. Segal^{2,3}

¹Division of Preventive Medicine, University of Alabama at Birmingham, Birmingham, AL, USA, ²Division of General Internal Medicine, Johns Hopkins University School of Medicine, Baltimore, MD, USA and ³Center for Health Services and Outcomes Research, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

*Corresponding author. E-mail: kriggs@uab.edu

Pharmacotherapy has seen remarkable advances in recent decades, but surgery remains a vital tool for treating a wide variety of diseases, often offering the only curative or definitive therapy. However, the decision to have surgery is often not straightforward, as potential long-term benefit comes with upfront risk of morbidity and mortality. Minimizing that upfront risk and ensuring that patients understand the trade-offs are critical components of high-quality preoperative care.

The preoperative process has changed drastically over the past half century. Patients used to be routinely admitted to the hospital at least the day prior to surgery, but the high cost of inpatient care has pushed the preoperative evaluation into the outpatient arena. The outpatient evaluation often includes an array of diagnostic tests and may involve office visits with non-surgeons including primary care providers, medical specialists, and anaesthesiologists, sometimes in dedicated preoperative clinics. Various terms are used to describe the reason for these preoperative medical evaluations, including risk assessment,¹ risk stratification,² medical clearance,³ and optimization.⁴ But it is not only the terminology that varies, the practice of preoperative medical evaluations varies widely between providers and hospitals.^{5 6} This imprecision in terminology and variation in practice may reflect conceptual confusion regarding surgical

risk, which may contribute to misuse or overuse of preoperative services. In this article we explore the concept of surgical risk and assert that the rationale for performing preoperative medical evaluations follows naturally from an understanding of surgical risk.

Surgical risk

For the purpose of this article we use surgical risk to refer to a probability of morbidity and mortality during and after surgery. Some surgical risk may not be confined to the immediate perioperative period (e.g., adhesions from an abdominal surgery increase the risk of subsequent small bowel obstruction, which can occur years later⁷), but for simplicity we largely focus on risk in the perioperative period.

When considering the risk associated with surgery, one should also consider the risk associated with not having surgery, which is driven by the underlying disease process.⁸ For example, in the case of a lacerated spleen, the risk of mortality with surgery may be lower than the risk of mortality from internal haemorrhage without surgery. However, for many patients considering elective surgery, such as the patient considering a knee replacement for osteoarthritis, the short-term risk without surgery may be negligible.

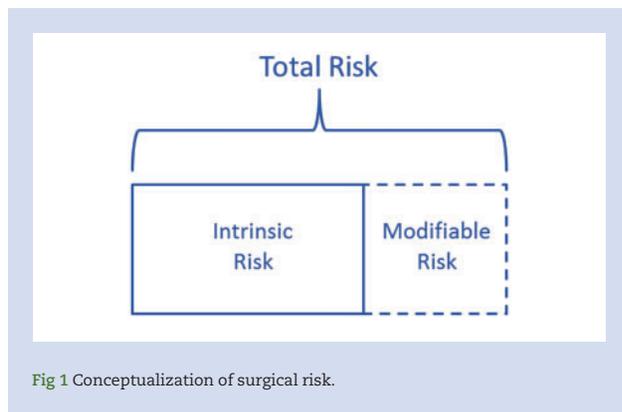


Fig 1 Conceptualization of surgical risk.

Components of surgical risk

The total risk associated with an operation can be conceptualized as consisting of two mutually exclusive components: intrinsic risk and modifiable risk (Fig. 1). The total risk is simply the risk that can be expected for a given patient undergoing a given operation in actual practice, and can be quantified and predicted based on historical observations of previous patients in similar situations.⁹ This is precisely what is done with the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) Surgical Risk Calculator.¹⁰ This free online calculator allows prediction of mortality and seven other postoperative complications—such as cardiac event, surgical site infection, and venous thromboembolism—based on 21 preoperative factors.

Some portion of the total risk—the ‘modifiable’ risk—may be reduced or eliminated. For example, smoking is associated with an increased risk of surgical complications, and smoking cessation interventions have been shown to reduce the risk of complications.¹¹ However, reducing modifiable risk should not be thought of as exclusively confined to preoperative care. For example, one of the main factors responsible for variation in surgical mortality rates among hospitals is variation in ‘rescue’—the ability to deal effectively with postoperative complications—rather than variation in complication rates.¹² Successfully managing postoperative complications is clearly not in the realm of preoperative care.

The remaining component of risk is what we call the ‘intrinsic’ risk. Some amount of risk will remain even if all modifiable risk is eliminated. After all, even healthy patients with no risk factors experience adverse events from surgery. We resist calling this component of risk ‘unmodifiable’ or ‘unpreventable’. After all, future interventions may be developed that reduce risk further than is currently possible—in that case, not applying those interventions would represent a modifiable risk.

While total risk can be measured from observation, the contribution of each component cannot be directly measured. In fact, modifiable risk is largely theoretical, and its existence is only indirectly ascertained by evidence that surgical risk can be reduced through some intervention. Conversely, the lack of ability to reduce risk associated with some risk factor suggests that the risk may be intrinsic for that operation. For example, obstructive coronary artery disease is associated with an increased risk of surgical complications, but revascularization has not been shown to reduce that risk.¹³

Others have similarly categorized the components of other types of risk as we have,¹⁴ although surgical risk could be divided in other ways, such as patient-specific and surgery-specific, or intraoperative and postoperative. However, categorizing risk as

we have highlights a sound rationale for performing preoperative medical evaluations: to reduce modifiable risk and to estimate total risk to assist with informed decision making.

Rationale for preoperative medical evaluations

Reducing modifiable risk

One primary reason for performing preoperative medical evaluations is to make surgery safer—to reduce modifiable risk. If a diagnostic test is capable of identifying modifiable risk or if a therapeutic intervention is capable of reducing modifiable risk, those services may be appropriate. If those services are beyond the expertise of the surgeon, referral to a non-surgeon to ensure that eligible patients receive them may be appropriate.

For example, consider perioperative beta-blockers. Beginning in the late 1990s, a number of small trials showed that beta-blockers reduced the perioperative risk of cardiac events for patients at high risk. As a result, assessing eligibility for perioperative beta-blockers was a sound rationale for surgeons to refer patients for preoperative medical consults. Indeed, patients who received preoperative medical consults were more likely to be started on beta-blockers preoperatively.¹⁵ However, later trials showed that despite the reduction in cardiac events, perioperative beta-blockers also increased the risk of stroke and mortality, and clinical guidelines have been updated to reflect the limited role for perioperative beta-blockers.¹⁶ Now, consideration of perioperative beta-blockers is a much less compelling reason for referral.

Unfortunately, most potential preoperative interventions have not had rigorous evaluation. Routine testing with electrocardiograms, chest radiographs, and blood tests have not been shown to reduce surgical risk.¹⁷ Routine preoperative medical consults have uncertain benefit and may even be harmful.¹⁵ Even a straightforward intervention like treating moderate hypertension has uncertain benefit.¹⁸ Ultimately, surgeons looking for evidence-based ways to reduce surgical risk will be disappointed with the current options.

Estimating total risk

In addition to reducing modifiable risk, estimating the total risk and communicating that to patients may be a valuable outcome of the preoperative evaluation. Deciding to have surgery requires a complex consideration of risks, short- and long-term benefits, and potentially a myriad of alternatives; even if risk is not modifiable, knowing the risk will affect the decision of whether to have the surgery.¹⁹

The importance of risk estimation may not be the same in all cases. Sometimes, precise risk quantification may not be necessary. The potential for benefit from surgery might be so large that it outweighs the risk over any plausible range (e.g., potentially curative surgery for early stage pancreatic cancer). In these situations, additional tests and office visits prior to surgery for the purpose of more precisely estimating surgical risk would not change the ultimate decision to have surgery, and could delay surgery and even diminish the potential benefit of surgery. In other cases, precise risk quantification is extremely important, such as when viable alternatives exist (e.g., surgery vs radiation for early stage prostate cancer) or the potential for benefit is relatively small (e.g., cosmetic plastic surgery).

Download English Version:

<https://daneshyari.com/en/article/8930472>

Download Persian Version:

<https://daneshyari.com/article/8930472>

[Daneshyari.com](https://daneshyari.com)