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Behind the Curtain: Impact of Anesthesia Volume on Outcomes

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The relationship between volume and outcome has been studied for decades. Countless studies have demonstrated better postoperative outcomes with higher volume, but the presence and magnitude of this relationship is widely variable across procedures and patients, indicating it is not a generalizable concept.[1,2] In evaluating this association, much of the focus has been on the individual surgeon and the hospital.[3] However, less is known about the contribution of the other members of the surgical team.

In this issue of *JAMA Surgery,* Hallet et al.[4] seek to determine if there is an association between anesthesiology provider volume and adverse perioperative outcomes at regionalized centers in Canada. Using retrospective data from a population-based registry, they found that care by a high-volume anesthesiologist was independently associated with lower risk of 90-day major morbidity and unplanned ICU admission in patients undergoing hepatectomy, pancreatectomy, and esophagectomy for cancer.

This study addresses several important points. Many often overlook the fact that surgery is a team sport, requiring the coordinated effort of an experienced team to optimally take care of complex surgical patients. This applies to both what occurs inside and outside the operating room. Though the importance of anesthetic management has long been recognized, the significance of the individual anesthesiologist expertise in specific surgeries has not been well established. Thus, we must applaud Hallet et al. for shedding light on this topic.

Nevertheless, the decades old critiques regarding volume-outcome relationship as it relates to surgeons are equally relevant when examining anesthesiologist's care. We need to recognize that what's more important are the underlying processes and mechanisms driving the improved outcomes.[5] As the authors correctly pointed out, volume likely serves as a proxy for factors such as experience, processes of care, multidisciplinary team organization, and technical skills, to name a few. For example, procedure-specific intraoperative resuscitation and transfusion has been shown to impact postoperative outcomes.[6] Such practices and attributes that come from experience may be easier to identify and replicate in anesthesiology, to improve outcomes for all irrespective of volume.

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Finally, we must critically examine the merits of policies which regulate patient care based solely on volume. Although a useful proxy for quality, there are certainly unintended consequences such policies may have, including limiting access to care and impacting the training of the next generation of high-quality providers. Additionally, it's unclear how we can define the point at which "high-volume" equates to improved outcomes. This study demonstrates that despite regionalizing cancer surgery and standardizing surgeon/institution volume, accreditation, and care pathways, wide variation in outcomes remained, partially explained by anesthesiology care. While we commend Hallet et al. for their methodically rigorous and thought-provoking study, much work needs to be done to uncover the true underlying factors leading to improved outcomes.

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