On Patient Safety

On Patient Safety: Is it Possible to Operate Too Much?

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How much does surgical volume matter in a patient's decision making? If a patient is having a knee replaced, would he or she be more likely to seek a surgeon who does 10 or fewer a year, or someone who does more than 300? Common sense and studies [4, 5] tell us that there is a benefit to finding a surgeon who performs surgery more frequently. Higher-volume surgeons are less likely to have complications than lower-volume surgeons doing the same procedure [4]. Higher-volume

surgeons are generally more experienced with the procedure, have likely recognized more variations, and have probably encountered and dealt with a larger breadth of complications. The positive correlation between higher surgical volume and safety makes sense, but at some point, does the curve bend in such a way that there is an inflection and subsequent inverse relationship between quality and volume? From a patient safety standpoint, is it possible to operate too much?

Recent articles in the *Boston Globe* [1] and *Seattle Times* [2] examined the practice of concurrent or overlapping surgery, where one surgeon operates on two patients in two different rooms at the same time.

I believe that overlapping surgery, if done conscientiously, can be done safely and ethically. But it's not a simple black and white issue. The safety of overlapping surgery is dependent upon multiple variables. The devil is in the details. Procedure

type matters. Are the safety implications the same for inpatient and outpatient procedures? Are these routine total joint replacements, or complex AP spine procedures? Are these elective cases that can be delayed or call/trauma cases where timing of care is more impactful? Who is helping the surgeon run these rooms? Is it the 2nd year resident on July 1, or is it a seasoned fellow or physician assistant? How does one define the critical portion of the case?

Though I have observed the running of multiple rooms to be a safe practice in general, there is reasonable concern about potential patient safety risks. Complications, particularly technical surgical complications that occur when the surgeon is not in the room, may or may not be directly attributable to the surgeon's absence. Certainly if things go awry, the optics can be horrible; after all, what could sound more appalling than, "I had a surgical complication and my surgeon wasn't even in the room when it happened"?

So why do we run two rooms? For trauma and call cases—when timely care is impactful—running multiple rooms can increase access and can expedite surgical care. And for elective surgical care, running multiple rooms perhaps has the value of increasing

A note from the Editor-in-Chief:

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access to a particular highly in-demand surgeon.

However, we can't pretend that increasing volume doesn't also increase revenue, both for the hospital and the surgeons themselves. The vast majority of orthopaedic surgeons are financially incentivized to operate more. Even academic institutions, some of which had used a salary model, now more-frequently use compensation plans that incentivize clinical productivity. I have been an academic surgeon for my entire career and have only seen incentivized compensation plans. Put in this context, if complications occur, can we really blame patients for being upset if (1) surgeons weren't there when the complication happened and (2) they weren't there because they were off making more money operating in another room?

In addition to safety concerns, what about indications? In elective care, how does the practice of overlapping surgery affect surgical indication? Let's say I have mastered the art of running two rooms. Now, I have to fill these rooms with patients. If the hospital gives me two ORs twice a week, but I don't fill those rooms, I won't have them for long (at least at the hospitals where I've worked). How does this affect my indications for surgery? Do I encourage the patient with the mildly arthritic knee to

undergo arthroplasty sooner than I would have due to this added pressure of filling operating rooms? Do I start doing more spinal fusions for discogenic pain even though I might otherwise treat it nonoperatively? How much more aggressively might I recommend surgery? How does that affect patient safety?

I have observed several colleagues use this practice safely, and I have occasionally run overlapping rooms myself, usually if a hip fracture comes in on call. Some reports have suggested that complication rates when running two rooms may be similar to rates when running a single room [3, 6]. However, given possible conflict of interest issues, complications should be scrutinized more closely when they occur while running two rooms. Running multiple rooms requires much greater oversight, more than the serial sum of two individual rooms.

I suspect every surgeon has his or her sweet spot for the ideal number and rate of surgical cases. There's probably a normal curve distribution among surgeons' volumes. And like any normal curve, outliers—on both ends—perhaps warrant more scrutiny. Those with low outlying operative volumes may have less experience and may pose a higher risk for patient safety. Conversely, those with extremely high outlying volumes may also put patient safety at risk. We surgeons,

as stewards of patient safety, should regulate ourselves in some capacity. Who else is there to regulate surgeons—the hospitals that stand to financially benefit from greater volume? Can you recall the last time surgeons were told that they were operating too much and making too much money for the hospital? It shouldn't take an error, lawsuit, or a scrub tech talking to a journalist, for us to pay attention. Regulation and oversight should come from us. So how can this happen?

Clearly, further study needs to be done to examine the effects of overlapping rooms. The available evidence to date leaves a lot to be desired. Higher quality studies examining the safety of this practice are needed. From the results of these studies, recommendations can be made. The numerous aforementioned variables, among others, need to be accounted for. Because of these several confounding variables that have to be controlled, I suspect a meaningful research of this magnitude will take some time to complete.

In the meantime, while data are being gathered, it would be beneficial to have a consensus position statement or guidelines regarding overlapping surgeries from orthopaedic leadership. Ideally, these guidelines can be determined by a congress of past and present orthopaedic society and thought leaders. Based on collective

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experiences, expertise, and engagement with the orthopaedic community, a consensus positions statement can be generated for all these variables, until quality data are generated. Right or not, feature articles from the lay media spotlighting overlapping surgeries generally cast surgeons negatively and unworthy of the trust patients give us. In the absence of quality data that can more clearly define a direction of optimal safety, a proactive consensus position by the orthopaedic and surgical community is a good first step toward maintaining patient trust.

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