Overlapping surgeries: defining the "critical portions" of the procedure

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Introduction: *An important aspect of overlapping surgery is to determine the "critical portion" of an operation. Currently, there are no guidelines that standardize the critical portions of common urologic procedures. We sought to determine the relationship between the critical portions of common urologic operations as defined by the primary surgeon compared to the trainee at a single academic medical center.*

Materials and methods: *In an open-ended survey of the Urology Department at Thomas Jefferson University, attending surgeons and urology residents, were asked to list five of their most commonly performed surgeries and subsequently identify what they defined as the critical portion for each. Responses were examined for surgeon-trainee congruence. Response agreement was defined as identifying key words that provided reasonable evidence that the responders were referring to identical portions of the case.*

Results: *Nine residents and eight attending physicians provided 67 and 63 responses, respectively, encompassing 28 different procedures. Six procedures were chosen for further analysis based on high volume of responses. Overall, of the 67 resident-reported critical portions, 32 (47.8%) were in agreement with attending-reported critical portions. Year of training in residency was not a predictor of surgeon-trainee agreement.*

Conclusion: *External pressures from the public and lawmakers alike may demand that providers be present during all "critical portions" of a procedure. Our study shows that the understanding of critical portions of an operation is often incongruent between surgeons and trainees. Critical portions of all procedures should be established by the surgical team in order to accurately schedule overlapping surgeries.*

Key Words: American College of Surgeons (ACS), overlapping surgery, concurrent surgery

Introduction

In late 2015, the Boston Globe published an investigative piece chronicling the potential risks associated with overlapping surgeries at Massachusetts General Hospital.[1] This article sparked renewed interest in the evaluation of the safety and prevalence of this practice and was followed shortly thereafter by a 2016 U.S. Senate Finance Committee report that surveyed 20 academic hospitals on their overlapping surgery policies.[2] The committee stated that implementation of the practice was highly variable with regards to both prevalence at each institution and the specific language of each institution's policy. Such a lack of standardization regarding the practice presented concerns for Medicare/Medicaid billing and patient safety.

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Both concurrent and overlapping surgery involves scheduling substantial portions of two or more operations to occur at the same time. According to the 2016 American College of Surgeons (ACS) Statement of Principles, concurrent or simultaneous surgery is defined as surgical procedures where critical or key components of the surgery performed by the same primary surgeon are occurring all or in part at the same time. This is distinct from overlapping or sequenced surgery whereby the key or critical portions of the surgery are not occurring at the same time. The noncritical portions can be completed by a qualified practitioner while the primary surgeon moves on to the next procedure in another room.[3]

There is a general agreement that concurrent surgeries are ethically unacceptable and billing for concurrent surgical procedures is a violation of the US Centers for Medicare & Medicaid Services guidelines.[4] On the other hand, overlapping surgeries are a common practice, especially seen in teaching hospitals, with delegations of non-critical portions to an appropriate-level trainee. This practice however presents several

bioethical, professional and legal concerns as evidenced by the immediate and intense public outcry after the Boston Globe's article, questioning the appropriateness of overlapping surgeries.

Despite this nationwide debate, the ultimate question remains, what constitutes the "critical portion" of a surgery? The ACS Statement defines the critical or key portions of a surgery as stages where essential technical expertise and surgical judgment are necessary to achieve optimal patient outcome.[3] While other surgical subspecialties have undertaken surveys to define the critical elements of their most commonly performed procedures, there still has not been strict guidelines that standardize the critical portions of common urological procedures.[5] Only by objectively defining the critical portions of an operation, will we be able to accurately and safely schedule overlapping surgeries.

Materials and methods

An open-ended survey between the faculty and trainees in our department was conducted to ascertain the existing level of agreement with regards to the nebulously defined "critical portion" of common urological procedures.

Each attending surgeon and resident were tasked to list five of their most commonly performed surgical procedures and to specifically identify the critical portion(s) for each of those five operations listed. Faculty and residents responded in an open-ended format and were given no restriction on the number of responses allowed for each procedure. Respondents' critical portions were collected and reviewed by a post-graduate year 5 (PGY-5) resident and a research assistant who together evaluated these responses for agreement. For the purposes of this study, critical portions were considered 'in agreement' and were subsequently grouped together if there was minimal deviation in wording and there was no ambiguity regarding the portion of the procedure intended to be conveyed in the response. Critical portions were identified as 'not in agreement' and grouped separately when the portions of the procedure differed, or if the scope of the critical portion was too broad or narrow to be considered identical to another respondent's response. Grouped responses between residents and attending surgeons were then analyzed for agreement.

Results

A total of 9 residents (PGY-4 and above) and 8 attending surgeons provided 67 and 63 responses, respectively, encompassing 28 different urological procedures. These procedures ranged from urologic oncology to endourology to reconstructive urology procedures. Of these 28, 6 procedures were chosen for further analysis based on the high volume of responses, namely transurethral resection of bladder tumor (TURBT): 12 residents and 6 attending responses, robotic-assisted laparoscopic prostatectomy (RALP): 13 residents and

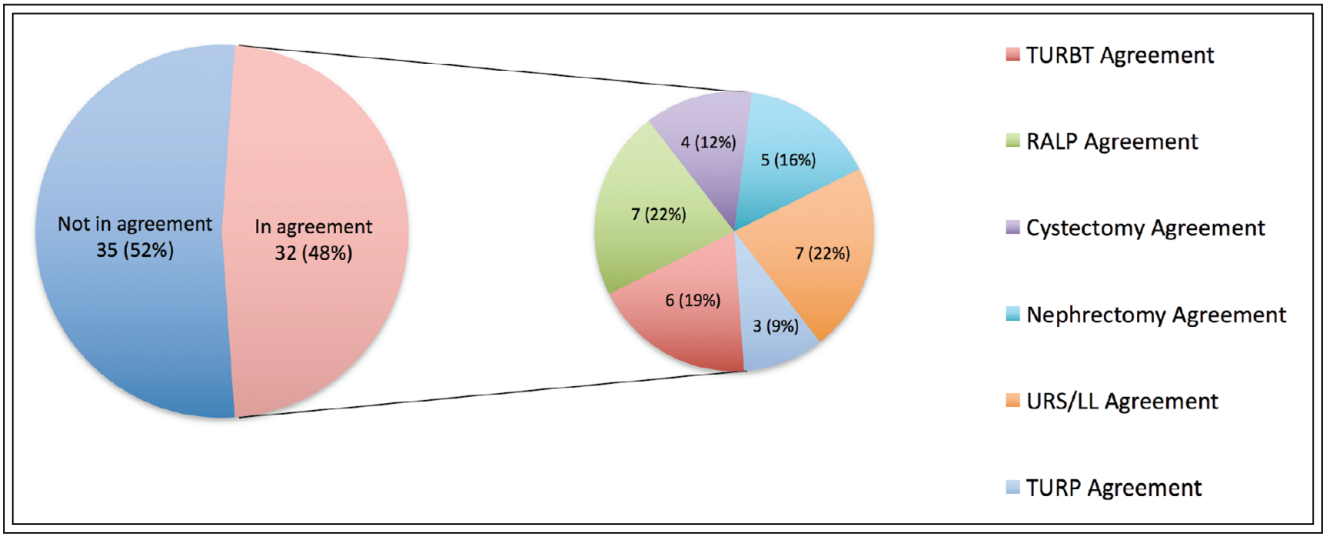

Figure 1. Individual breakdowns of number and percentage of attending-resident agreement for each procedure. Only 32 (48%) of the 67 resident-reported critical portions were in agreement with attending surgeons.
TURBT = transurethral resection of bladder tumor, RALP = robotic-assisted laparoscopic prostatectomy, URS/LL = ureteroscopy and laser lithotripsy, TURP = transurethral resection of prostate

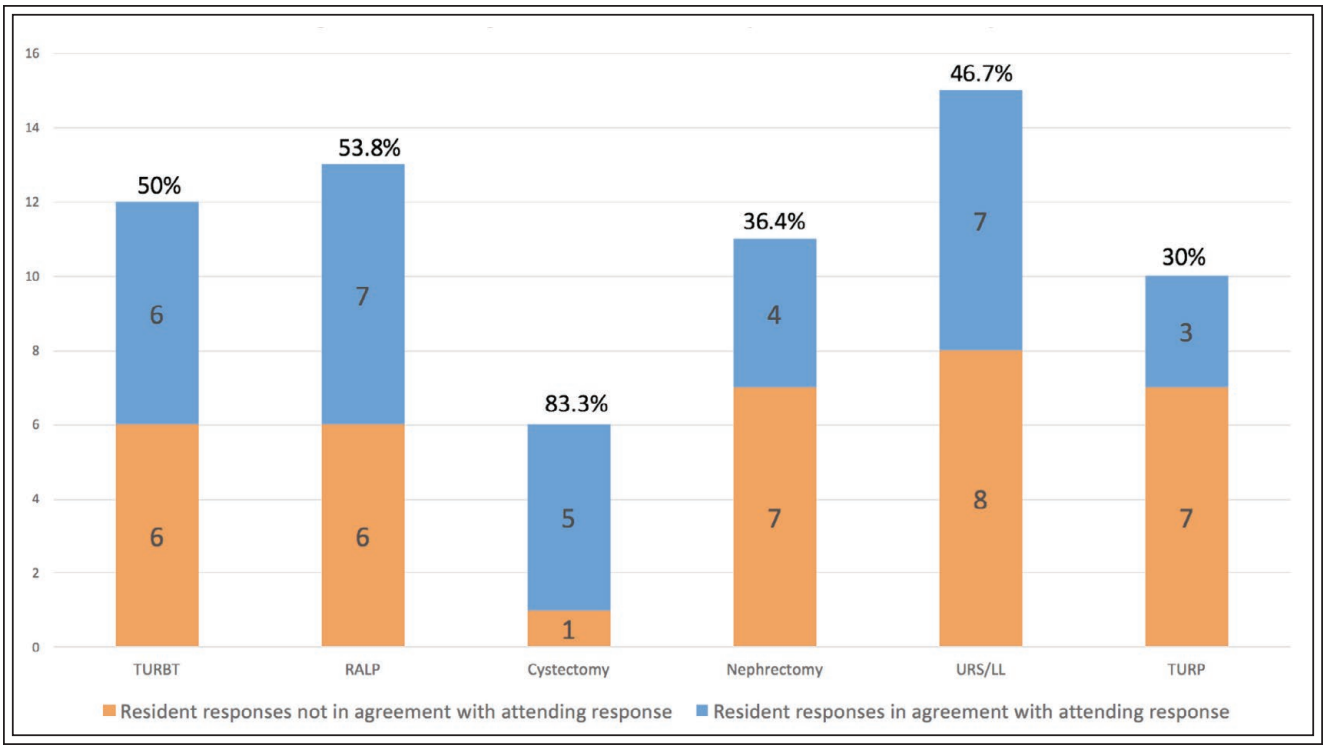

Figure 2. Percentage of attending-resident agreement for each procedure depicted above individual columns. Attending-resident agreement highest for cystectomy (83.3%) and lowest for TURP (30%).
TURBT = transurethral resection of bladder tumor, RALP = robotic-assisted laparoscopic prostatectomy, URS/LL = ureteroscopy and laser lithotripsy, TURP = transurethral resection of prostate

14 attending responses, nephrectomy: 11 residents and 11 attending responses, cystectomy: 6 residents and 14 attending responses, ureteroscopy/laser lithotripsy (URS/LL): 15 residents and 12 attending responses and transurethral resection of the prostate (TURP): 10 residents and 4 attending responses.

Response agreement was defined by identifying keywords that provided reasonable evidence that the responders were referring to identical portions of the case. Results of the analysis are depicted in Figure 1 and 2. Overall, of the 67 resident-reported critical portions, 32 (47.8%) were in agreement with attending-reported critical portions. Resident-attending agreement was highest for responses for cystectomy (83.3% agreement) and lowest for TURP (30.0% agreement). URS/LL received the highest volume of reported critical portions (n = 15) and cystectomy was the procedure with the lowest number of reported critical portions (n = 6). Year of training in residency was not a predictor of surgeon-trainee agreement.

Most differences stemmed from a disparate level of detail presented in each response. Attending surgeons generally clarified their definitions to a more specific degree, while the residents tended to list a single phrase or step in defining the critical portion. Despite the promising level of agreement between faculty and residents, there was not perfect concordance at every level. This leaves room for miscommunication and could be an indicator of a need for further standardization of overlapping surgery and its implementation. Therefore, for overlapping surgeries to be carried out safely, it is crucial for all operating room staff to have a common understanding of the ongoing procedure.

Discussion

Overlapping surgeries: what we know now

Surgeons and hospital administrators alike recognize the benefits of scheduling overlapping operations, noting that this allows for the optimal use of space and surgical teams. By delegating certain portions of a procedure to the appropriately experienced trainee, there will be more efficient utilization of specialist surgeon time, thus increasing patient's access to sought-after surgeons. Especially in a specialty such as urology where access to care already poses a significant challenge, this will in turn lead to better outcomes, and for highly specialized surgeries where few experts are

available, this could help avoid delays in receiving necessary care. Additionally, delegating parts of a procedure to surgical trainees can help develop trainee skills and experience. This gives trainees a chance to progressively assume responsibility in a supervised setting prior to independent practice, ensuring high quality care for future patients.[6,7] Moreover, although there is limited evidence regarding the safety profile of overlapping surgeries, single institution observational studies have shown no significant difference in patient outcomes when compared to those undergoing non-overlapping surgeries.[8-14]

Despite the multitude of benefits, a recent survey evaluating the perception of 1,454 patients on this practice found that only 4% of patients were familiar with surgeons scheduling overlapping surgeries and 69% expressed opposition to this practice. Furthermore, 44% of respondents indicated that they would not have chosen a surgeon who scheduled overlapping surgeries and 78% were willing to wait up to a month to have a non-overlapping surgery.[15] Together with the recent controversy on overlapping surgeries, this survey highlights the matter of informed consent regarding this current practice. Often, the information provided to patients regarding overlapping surgeries are vague or inadequate, and as physicians, it is imperative for us to maintain an open and transparent channel of communication with our patients on how we manage our operations. This includes explicitly explaining the direct benefits, clinical implications and logistical aspects of overlapping surgeries to facilitate informed decision making. With continuous education regarding the intricacies of this practice, public confidence will be gained and patients will more readily entrust themselves to our care.[16]

Defining the "critical portions" of the procedure

Regulations issued by the Centers for Medicare & Medicaid services (CMS) suggests that in order to bill for overlapping surgeries, surgeons "must be present for the critical or key portions for both operations."[4] Unfortunately, CMS regulations itself does not define what constitutes the critical portion of an operation. Despite efforts to enforce more prescriptive regulations, it may be difficult to formulate a satisfactory blanket definition of "critical" for every surgical procedure due to patient-specific factors and the constant advancement in operative technologies and techniques.

Both the ACS and the Senate Finance Committee each proposed that the primary attending surgeons or surgical departments should administratively decide on the critical portions.[2,3] These proposals are not without its limitations as giving surgeons authority to unilaterally declare the critical portions have proven unreliable, as evidenced by the repeated occurrence of fraudulent billing and public mistrust. Under the pressure to generate revenue, surgeons may also subconsciously permit secondary interests to impede their judgement. Furthermore, having departments decide on the critical portions does not recognize the inherent conflict of interest within each department and also ignores the fact that not all departments are willing to address the issue of overlapping surgeries.

Instead, we believe that every surgical facility should have a local policy on overlapping surgery, ideally determined by a multidisciplinary operating room committee involving attending surgeons, surgical chiefs, anesthesiologists, OR nurses, and patient safety committee members. This policy should clearly define what ordinarily constitutes the critical portions of common operations and which procedures are acceptable to be scheduled as overlapping. Hospitals should also establish stringent definitions of what it means for a surgeon to be "immediately available" to rejoin an operation should complications arise. Ultimately, all these protocols should be strictly adhered to by individual attending surgeons.[6]

It may also be wise to implement a system that documents the presence and absence of a surgeon during an operation. Such a system, now utilized at Massachusetts General Hospital, will be able to monitor policy compliance and dispel malpractice claims should an adverse event occur in the presence of scheduled overlapping surgeries. Surgeons must also be able to manage their trainees well to ensure all patients are appropriately cared for. This means understanding the abilities of those who will be handling the noncritical portions of the operation. Availability and competency levels are not always consistent among residents and fellows; thus, these factors should be taken into account when planning for the operative day.[16,17]

Conclusion

Unconditionally disallowing overlapping surgery is neither desirable nor practical. Many of the risks involved are not unique to overlapping surgery but rather stem from a more general practice, influenced by both patient and physician factors. While the debate on the safety and efficacy of overlapping surgery continues, the duty to respect and care for our patients remain unchanged. Despite external pressures from lawmakers and the public demanding that providers be present during all critical portions of a given case, the definition "critical" is often used ubiquitously in the medical community, with only minimal attempts

to delineate what constitutes the critical portions of common urologic procedures. Our survey suggests that the understanding of critical portions of a given procedure is often incongruent between surgeons and trainees. Critical portions of all procedures should be established by the surgical team in order to accurately schedule overlapping surgeries. Further analysis and consideration of confounding factors are necessary to optimize the utility and safety of overlapping surgery. With the implementation of the aforementioned approaches, this will hopefully do much to avoid fraudulent billing, and more importantly, re-establish public trust in the practice of overlapping surgery. □

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EDITORIAL COMMENT

RE: Overlapping surgeries: defining the critical portions" of the procedure.
Leong JY, Calio B, Shah M, et al. pages 9694-9698 in this issue.

The authors have nicely framed the issues surrounding the current interest in addressing overlapping surgeries. At the Massachusetts General Hospital (MGH) in Boston the leadership has undertaken an exhaustive review of surgical policy/procedures in this regard. It is generally recognized that for high volume/academic hospitals patient surgical flows are important to maintain efficient utilization of resources (demand, access, capacity). In addition, exposure by our trainees to a wide variety of clinical cases is very important for our education mission. I believe it is important to realize that today we work in surgical teams and society needs education on this point. I also agree with the authors that defining critical parts of cases is difficult and changes with improvement in surgical judgement and technical mastery by our residents or fellows. At my institution we have resisted wholesale, strict definitions of the critical portion of a procedure as we consider this should be done on a case by case basis. At MGH we have focused on transparency with patients and stress optimizing care with resident teams. It is policy to consent patients when overlapping will occur to the extent we identify covering/surrogate surgeon/teams. Having said this, in the Department of Urology at our institution, we do not perform overlapping surgery unless there is need for a combined case.

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