



Resident Perspectives on Teaching During Awake Surgical Procedures

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INTRODUCTION: Residents learn technical and communication skills during training and practice both concurrently during awake surgical procedures. Patients have expressed mixed views on resident involvement in their surgical care, making this context challenging for residents to navigate. We sought to qualitatively explore resident perspectives on teaching during awake surgical procedures.

METHODS: Residents in Urology, Obstetrics and Gynecology, and General Surgery who had been exposed to 10 or more awake surgical procedures were recruited for recorded focus groups at the University of Chicago. Recordings were transcribed, coded, and reviewed by 3 researchers using the constant comparative method until thematic saturation was reached.

RESULTS: Twenty-five residents participated in 5 focus groups. Residents identified positive educational techniques during awake surgery including preprocedural communication, explaining teaching and the resident role, whispering/nonverbal communication, involving the patient in education, and confident educator. Residents described challenges and failures in education, including hesitating to ask questions, hesitating to correct a learner, whispering/nonverbal communication, and taking over. In discussing informed consent during awake procedures, some residents described that the consent process should or did change during awake procedures, for example, to include more information about the resident role.

CONCLUSIONS: Residents participating in awake surgical procedures offer new insights on successful techniques for teaching during awake surgery, emphasizing that good communication in the procedure room starts beforehand. They also identify challenges with teaching in this context, often related to a lack of open and clear communication. (J Surg Ed 76:1492–1499. © 2019 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: ethics, surgical education, anesthesia, general surgery, urology, obstetrics and gynecology

COMPETENCIES: Interpersonal and Communication Skills

INTRODUCTION

As residents progress through surgical training they must learn the clinical and technical skills required to safely practice independently as well as the communication skills necessary to succeed in an increasingly patient-focused healthcare system. Residents must practice technical and communication skills concurrently during awake surgery when procedural education is taking place in the presence of an aware and listening patient.

Patients have repeatedly expressed mixed views on resident involvement in their surgical care.¹⁻⁵ Residents themselves have expressed angst and discomfort with the lack of transparency regarding surgical education and resident roles.^{6,7} Patients have also noted anxiety related to undergoing awake surgery,⁸⁻¹⁴ all of which make this unique context a challenging one for attending surgeons teaching and for residents working to learn surgical skills. However, resident perspectives on education during awake surgical procedures have gone unexamined. We offer a qualitative analysis of the resident

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perspective on teaching during awake surgical procedures, which we hope will provide attending surgeons an introduction to strategies to consider for effective teaching in this context.

METHODS

Residents in the specialties of Urology, Obstetrics and Gynecology, and General Surgery were recruited using a purposeful sampling for focus groups at the University of Chicago Hospitals. These specialties were selected given that they would allow for resident procedural diversity and would include residents with exposure to some procedures of a more sensitive nature (as in Obstetrics and Gynecology and Urology) and some of a less sensitive nature (as in General Surgery). Additionally, these specialties allowed for a diversity regarding the invasiveness and setting of frequently performed awake procedures—from central lines placed on the floor by General Surgery residents to cesarean sections performed in the operating room by Obstetrics and Gynecology residents.

Residents were initially contacted via an announcement and brief description of the research at Grand Rounds and were invited to sign up for focus groups. Resident inclusion criteria necessitated exposure to 10 or more awake surgical procedures, with awake procedures defined as the patient's being under any level of anesthesia where he or she retained the ability to understand, acknowledge, and respond to verbal stimuli. Our inclusion criteria did not specify whether or not an attending surgeon needed to be present for these awake procedures.

Focus groups were scheduled using unique identifiers. Twenty-five residents were eventually included in 5 focus groups prior to saturation. We did not collect data on resident sex, age, or postgraduate year as doing so within programs with relatively small class sizes would have endangered resident anonymity.

Following a process of verbal consent, each focus group proceeded through the same guide of standardized questions designed to solicit resident perspectives on successes and challenges with regards to communicating and teaching during awake surgery (Appendix 1). Focus groups were recorded using QuickTime Audio and transcribed with all names redacted. Themes were identified and discussed among 3 researchers via an iterative process involving collapsing and expanding of themes and subthemes to ensure themes accurately represented the transcribed data. The responses from the fourth focus group largely fit into our existing thematic framework, developed by iteratively analyzing transcripts from groups 1 to 3, with a few minor unique

points. Data from the fifth focus group fit entirely into the existing thematic framework. At this time, it was determined that our thematic framework accurately depicted the complex views of residents at our institution regarding teaching during awake surgery, and as such that saturation had been reached.¹⁵⁻¹⁸

This research was approved by the University of Chicago Division of Biological Sciences Institutional Review Board.

RESULTS

Fifty-nine residents indicated initial interest, and 25 eventually participated in focus groups. Focus groups included 7 residents from Obstetrics and Gynecology, 7 from Urology, and 11 from General Surgery. Five focus groups were conducted prior to saturation. Focus groups contained from 2 to 7 residents, and ranged from 17 to 25 minutes.

From the focus groups, 8 over-arching themes were identified. In this manuscript, we explore the 3 themes applying to education during awake surgery: positive educational techniques, challenges and failures in education, and informed consent for awake procedures. We provide a description of each theme and subtheme, and supply representative quotations for each subtheme. Additionally, we note the number of focus groups and the number of residents discussing each theme and subtheme in the text and the tables respectively to provide a general understanding of the frequency with which topics were discussed.

Positive Educational Techniques

The theme of positive educational techniques was divided into 5 subthemes: (1) preprocedural communication, (2) explaining teaching and resident role, (3) whispering/nonverbal communication, (4) involving patient in education, and (5) confident educator. This theme was identified in the conversations of every focus group, with 17 residents making comments regarding positive educational techniques.

Positive Techniques: Preprocedural Communication

Residents identified preprocedural communication with the senior resident or the attending as extremely beneficial for their education during awake surgical procedures. Residents specifically appreciated running through the steps of procedures beforehand, thus laying the groundwork for intraprocedural communication. Residents also remarked on the success of preprocedural conversations with attendings or senior residents that stipulated which parts of procedures residents could

anticipate performing, so as to avoid surprises regarding roles inside the room.

Positive Techniques: Explaining Teaching and Resident Role

Another type of preprocedural communication that residents identified as supportive of education during awake surgical procedures involved an attending preparing patients regarding resident roles and the normalcy of teaching during awake surgery. Residents repeatedly noted that patient awareness of the team approach to procedural care and understanding of the roles within that team created a more comfortable environment for operating and for learning.

Positive Techniques: Whispering/Nonverbal Communication

Residents described the extent to which whispering or nonverbal communication, including hand-signals and pointing, could be used successfully to teach and communicate during awake procedures. Whispering, pointing, and gesturing were seen as ways to communicate and correct a learner without alerting patients to any challenges with the technique of the procedure. However, residents also identified how a resident's inexperience, the patient's positioning, or the logistics of a particular procedure could at times make such quiet or nonverbal communication more challenging.

Positive Techniques: Involving Patient in Education

Residents noted that involving the patient explicitly in teaching can be successful. Residents described how teaching the resident through speaking to the patient offers a unique method of educating residents without excluding patients from the conversation, and noted how this can normalize intraoperative teaching, and further, can be educational and empowering for the patient.

Positive Techniques: Confident Educator

Attending or senior resident comfort and confidence was praised by residents as helpful for creating an environment amenable both to resident education and to patient comfort. Specifically, residents identified vocal praise and articulation of success as extremely welcome to both guide the resident and reassure the patient.

Challenges and Failures in Education

Within the theme of challenges and failures in education, we identified 4 distinct subthemes, including (1) hesitating to ask questions, (2) hesitating to correct a learner, (3) whispering/nonverbal communication, and (4) taking over. This theme was identified in the conversations of every focus group, with 14 residents making

comments regarding challenges and failures in education (Table 2).

Challenges and Failures: Hesitating to Ask Questions

Residents described their reluctance to ask questions of teachers during awake surgery, expressing fear that patients would view such questions as exposing the resident's inexperience. Additionally, residents identified the extent to which a lack of comfort asking questions led to a "silent struggle," in which the resident might push forward in a procedure on an awake patient, whereas with an unconscious patient, they would be more likely to pause and ask for help (Table 2; Quotation 1).

Challenges and Failures: Hesitating to Correct a Learner

In tandem with hesitating to ask questions, residents noted how a lack of comfort in asking such questions might lead to less teaching, or less correction, from the attending or senior resident. Additionally, senior residents had experience teaching during awake surgery, and confirmed that for the teacher, a patient's being awake can lead to less comfort in correcting a learner

Challenges and Failures: Whispering and/or Nonverbal Communication

In addition to whispering/nonverbal communication emerging as a subtheme for positive educational techniques, it also emerged as a subtheme for challenges and failures in education. Residents identified whispering and/or nonverbal communication as a failed technique in several contexts. First, they noted discomfort with silently and covertly performing the procedure while the senior or attending communicated with the patient. Second, residents identified the extent to which, for an already anxious patient, hearing whispering could validate and intensify the patient's anxiety. Finally, residents noted specific examples when the subject of their whispered conversations suggested resident inexperience and subsequently could have made patients uncomfortable.

Challenges and Failures: Taking Over

Residents described an increased predilection for attendings or senior residents to take over, or perform more of the case when the patient is awake. It was noted that attendings or senior residents may be more likely to perform parts of the procedure when teaching or correcting a learner was deemed too difficult with an awake and listening patient. Residents also articulated that this dynamic might owe partly to learner discomfort with performing procedures on awake patients.

TABLE 1. Positive educational techniques

Subtheme	Focus Groups Discussing	Residents Discussing	Representative Quotation
Preprocedural communication	3	5	1. "[The attending said], 'okay, you've never done this before. . .what's next, what's next, when you get here you should do this, when you get here you should do this,' then they referred to their tips during the procedure."
Explaining teaching and resident role	3	7	2. "It's all about managing the patient expectations, so when they're going in ahead of time they know there's going to be talking, there's going to be teaching, you're going to be hearing a lot of explaining, but the resident is never going to just be on their own, the attending is always going to be there, teaching."
Whispering/nonverbal communication	4	7	3. "A variety of things work, ranging from things like hand signals, totally nonverbal communication, to whispering, attempting to communicate in a non-audible way from the patient's standpoint."
Involving patient in education	4	9	4. "If the patient is awake, the senior, the trainer, like your fellow in this case, had to be saying those things for the patient's benefit but also for your benefit in verbalizing the steps."
Confident educator	4	6	5. "Having the leader of the operating team. . . exert that authoritative role or oversight role early on, it helps a lot. And I think the patient then trusts their confidence, even if they're not the ones doing the steps of the operation."

Informed Consent for Awake Procedures

Within the theme of informed consent, 4 subthemes were identified: (1) no change, (2) includes more about

education/role of resident, (3) includes more detail about the procedure, and (4) includes factors such as anxiety or fear. This theme was identified in the conversations of every focus group, with 20 residents making

TABLE 2. Challenges and failures in education

Subtheme	Focus Groups Discussing	Residents Discussing	Representative Quotation
Hesitance toward questions	3	4	1. "I think there's more silent struggle sometimes in awake procedures because as a junior person I am not one hundred percent sure of what I am doing, but I'm going to keep trying to do it."
Hesitance toward correcting the learner	4	9	2. "So I guess the difference is when they're awake you can't get away with, I guess this is how I'll say it, get away with that teaching experience as you can more easily when they're asleep."
Whispering and/or nonverbal communication	4	6	3. "If you have someone who's super anxious and really nervous about this, you don't want essentially in the operating room [to be] whispering or doing things like that because that will exasperate their anxieties or their fears."
Taking over	3	5	4. "So it's a lot harder being the senior resident because instead of saying, "No, no, no don't do this, don't do that", you try to give nonverbal cues, but if they're not catching on you just have to take it and do it and then hand it back."

comments regarding informed consent for awake procedures.

Informed Consent: No Change

Some residents articulated that the informed consent process should not, by definition, change for any procedure where the patient is awake. Other residents described how having the patient awake might in theory cause them to change the informed consent process to more clearly articulate the resident’s role in performing part of the procedure, but that this extent of disclosure was not yet necessary for very junior residents, who are less likely to perform critical parts of the procedure.

Informed Consent: Includes More About Education/ Role of Resident

However, other residents stated that they obtain consent from patients differently for awake surgical procedures, being more forthcoming about the resident role. Some noted that awake surgical procedures brought to the forefront the ethical standard to which they ought to adhere for all surgical cases. One resident specifically stated that this change in the consent process brings to light an “ethical quandary,” in that it highlights a best practice for consent—full disclosure of the resident role and participation—that is not always achieved (Table 3; Quotation 2).

Informed Consent: Includes More Detail About the Procedure

Residents described how, for an awake patient, they frequently expanded the consent process to better prepare the patient for the steps of the procedure and particularly any sensations they might experience. Additionally, residents noted how, with an awake patient, the consent process can continue inside the operating room, as residents continue to inform patients on the details of their surgery.

Informed Consent: Includes Factors Such As Anxiety or Fear

Residents also articulated that the consent process with an awake patient could include a discussion of the additional risks of anxiety, fear, or discomfort during the procedure, which were not applicable for surgery under general anesthesia.

DISCUSSION

In this study of residents’ perspectives on teaching during awake surgical procedures, we explore residents’ views on positive strategies for and challenges related to teaching during awake surgery. The residents interviewed bring an inherently fresh perspective to strategies for teaching during awake surgery. Unlike attending

TABLE 3. Informed consent for awake procedures

Sub-Theme	Focus Groups Discussing	Residents Discussing	Representative Quotation
No change	4	8	1. “So informed consent you want the patient to understand the risks, benefits, alternatives. And I don’t think that that is changed by the level of interaction the patient has during the procedure.”
Includes more about education/role of resident	3	5	2. “Whereas, in awake cases, I’d probably be a lot more forthcoming about my role as a trainee. . .I’m more quick to tell them about it ahead of time during that consent process if they’re going to be more aware of my involvement. As ashamed as I am to say that, I guess that’s kind of an ethical quandary.”
Includes more detail about the procedure	2	8	3. “I’ll even talk about the specifics of were going to move from this room to this room, then were going to prep you, then you’re husband will come in and sit by your head, then a big blue drape will go up, you really talk them through it. When you’re in a general procedure, it’s like ‘you won’t remember any of it don’t worry.’”
Includes factors such as anxiety or fear	3	3	4. “I don’t usually put on consent pain or anxiety because they’re under anesthetic, they’re totally sedated, but for awake procedures. . .because they’re awake they may experience some discomfort, some anxiety.”

surgeons, they have spent fewer years settling in to their communication styles. On the contrary, they are exposed to the communication techniques of multiple different attending surgeons throughout their training and so are in the unique position of comparing and contrasting the successes and drawbacks of each communication strategy. Further, residents experience teaching both from the learner's perspective and from the teacher's perspective, as senior residents have experience guiding more junior residents through awake procedures. The resident perspective has the potential to prove particularly fruitful given evidence that attending surgeons endorse a lack of formal training and a desire to learn more about colleagues' techniques for communication during awake surgery.⁸

Many of the strategies that residents identify as successful for teaching during awake surgery highlight the extent to which open and honest communication with the patient can lead to resident comfort with the teaching process. Further, these categories make clear that the groundwork for good teaching during awake procedures must be laid beforehand. Surgeons should especially consider introducing the resident role to patients and communicating and outlining expectations with the resident prior to surgery. Preparing patients for resident involvement stands to increase patient comfort with open communication and teaching during the procedure. Discussing the procedure with residents beforehand may help pre-empt intraoperative questions and make clear expectations for technical and educational roles in the operating room.

The strategy of whispering/nonverbal communication, noted by residents as both a successful and a challenging strategy for teaching, does not contribute to open communication but rather attempts a work-around allowing attending surgeons and residents to communicate without the patient's awareness of their conversation. Other challenges identified by residents ("hesitating to ask questions," and "hesitating to correct a learner") also relate directly to a breakdown in clear and open communication between the resident and the attending. While the intention in obscuring communication is likely to prevent anxiety in the patient, this may lead instead to suboptimal surgical team performance (a "silent struggle") to the patient's detriment if not their detection. Ironically, a lack of open communication may conversely increase anxiety in patients. In our prior study of patient perceptions on awake surgery, some reported feeling anxious when they detected surgeon attempts to conceal communication by whispering.¹⁴ It is possible that warning patients about this behavior, e.g., "we may speak quietly at times because we don't want to concern you with the details of the operation," could offer a degree of transparency that may assuage

some patient and/or resident discomfort. This would also offer the patient an opportunity to request more audible communication if that is their preference.

Finally, we were interested to learn that for some residents, a patient's being awake changes the informed consent process, leading them to explain more about their own role in the procedure. Some residents noted that the patient's being awake highlighted the extent to which they ought always explain their role as a trainee, while for others, consenting a patient for awake surgery caused them to be more forthcoming in order to inform the patient of their involvement. This raises the question of whether residents feel they have something to hide from patients regarding their participation, particularly given that the lay public has been shown to have a poor understanding of the roles of trainees.^{19,20} This potential lack of transparency is ethically troubling, as noted by the residents in our study. It is also practically problematic in the context of increasingly common awake procedures and pressing calls for video and audio recording in the operating room.^{21,22} Perhaps an increasing focus on awake surgery²³ offers an inroad to educating patients and the public at large regarding the safety both of teaching hospitals and of a team-based approach to patient care.²⁴⁻²⁶

This work has limitations. It is limited to a single practice setting and to a selection of 25 residents within a few specialties and thus may not be generalizable to settings unlike our institution. This qualitative work is meant to be descriptive and does not provide a standardized set of practices that will apply to all procedural educators or learners.

We include quantitative data on the number of focus groups and number of residents discussing each theme and subtheme to provide a general understanding of the frequency with which each topic was discussed. These data are not meant to be comparative or to imply the strength or lack of strength of agreement surrounding one theme versus others; we were limited by audio recording to track residents' nonverbal agreement, such as nodding, and some residents, having heard a point, may have avoided reiterating it intentionally so as not to provide repetitive data.

CONCLUSIONS

This study allows us to begin to build a conceptual framework of faculty and resident activities that may be considered best practices to optimize learning and the patient experience during awake surgery. These findings suggest that there are challenges inherent in maintaining open and clear communication in this context and make clear that there are specific steps a faculty member can take to

enhance the experience of awake surgery for learners while simultaneously addressing the patient's experience and concerns. Specifically, attending surgeons should prepare for teaching during awake procedures beforehand by communicating with patients and with residents regarding what they may expect. This will, we hope, increase attending surgeons' comfort and confidence as well as their ability to include the patient in the education process and create an environment that is open to appropriate questions and to coaching of trainees.

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SUPPLEMENTARY INFORMATION

Supplementary material associated with this article can be found in the online version at doi:[10.1016/j.jsurg.2019.04.007](https://doi.org/10.1016/j.jsurg.2019.04.007).

APPENDIX 1. FOCUS GROUP QUESTIONNAIRE

1. What are some of the successes you have experienced or witnessed in surgeon communication with patients during conscious surgery?
2. What are some of the challenges?
3. What are some of the successes you have experienced or witnessed with respect to learning during surgery with conscious patients?
4. What are some of the challenges?
5. How, if at all, does operating on a conscious patient, impact the informed consent process?
6. What, if any, formal or informal training have you had during your residency about communicating during conscious surgery?