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Advance Directives and Operating: Room for Improvement?

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Abstract

Anesthesiologists and surgeons are frequently called on to perform procedures on critically ill patients with advanced directives. We assessed the attitudes of attending and resident surgeons and anesthesiologists at our institution regarding their understanding of and practice around the application of consenting critically ill patients with advance directives in the operating room. To do so, we deployed a survey after interdepartmental grand rounds, featuring a panel discussion of ethically complex cases featuring end-of-life issues.

Surgeons and anesthesiologists are frequently called on to perform procedures on patients who may have advance directives; however, they receive little training as to how to identify and manage these patients. After being involved in the cases described later, we sought to elucidate training and practice patterns at our own institution surrounding the perioperative care of patients with advance directives by presenting cases and administering a multiple-choice survey to surgeons and anesthesiologists participating in interdepartmental grand rounds.

CONSENT FOR PUBLICATION

This case discussion and project were reviewed by the University of Pennsylvania institutional review board and determined to meet criteria for institutional review board review exemption.

CASE DESCRIPTION

Case 1

A 59-year-old man with end-stage renal disease and multiple comorbidities receiving intermittent hemodialysis was transferred from an outside hospital with symptoms concerning for an intra-abdominal abscess. On imaging, he was found to have para-aortic infiltration and a thoracoabdominal aortic aneurysm.

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He underwent an uneventful repair of his thoracoabdominal aortic aneurysm and was transferred to the intensive care unit for postoperative care. Over the first 24 hours after the procedure, he developed progressive lactic acidosis and hypotension requiring initiation and escalation of vasopressors. He also became increasingly hypoxemic and required increasing ventilatory support. He was taken to the operating room for an emergent exploratory laparotomy on postoperative day 1 because of concerns for bowel ischemia. Exploration of the abdomen was negative for ischemia, and the abdomen was left open for further evaluation. Over the next 24 hours, the patient's condition continued to deteriorate with progressive lactic acidosis, high pressor requirements, and increased fraction of inspired oxygen requirements. He returned to the operating room on postoperative day 2 for exploratory laparotomy, transverse colectomy for ischemia, and abdominal vacuum dressing placement. He subsequently developed hyperkalemia, for which he was treated per the intensive care unit protocol with concomitant initiation of continuous renal replacement therapy. Shortly thereafter, he experienced 2 episodes of asystole, and advanced cardiovascular life support was initiated. Over the next several hours, the patient was resuscitated according to advanced cardiovascular life support protocol with multiple episodes of cardiopulmonary and pharmacologic resuscitation with occasional return of spontaneous circulation followed by episodes of pulseless ventricular tachycardia and asystole. After a family meeting to discuss his wishes, his code status was advanced and he died shortly after resuscitation efforts ceased.

Case 2

An 89-year-old woman with a medical history remarkable for hypertension, coronary artery disease, peripheral vascular disease, and a history of stroke presented with abdominal discomfort and was found to have contained rupture of her abdominal aortic aneurysm. The patient had previously undergone repair of her abdominal aortic aneurysm with an endograft many years prior and had returned to the operating room 3 months before this presentation for the repair of an endoleak. After extensive discussion with the surgery and anesthesia teams, the patient gave consent for open aneurysm repair. She expressed clearly that she wished to have everything done to save her life.

Despite successful repair of the aneurysm, the case was complicated by extremely extensive resuscitation. Maintenance of arterial blood pressure compatible with organ perfusion required a total of 99 units of blood products as well as a dose of recombinant factor VII and high doses of pressors. Initially, it was possible to maintain adequate hemodynamic status; however, as the resuscitation progressed, the patient became so coagulopathic that she began to bleed from her suture holes. At this point, the surgeon spoke with the patient's family, and the decision was made to stop resuscitating the patient. She died in the operating room approximately 20 minutes later.

Anesthesiologists and surgeons alike struggle with the ethical and logistic issues surrounding the operative care of critically ill patients with poor prognoses. Anesthesiologists in particular experience conflict as far as defining a role and a voice in situations wherein the decision to take a patient to the operating room might not be congruent with their goals of care because of perceptions of differing investments in

outcomes and limited voice because of workplace politics.¹ Surgeons also struggle with best management of surgical care in critically ill patients and with their perceived obligations to patients and their families versus the outcomes they anticipate in these situations and also with anecdotes of heroically successful outcomes and the associated pressure to generate similar successes.^{2,3} The struggle to understand and define a practice for the care of critically ill patients in the operating room is elaborated in studies examining management of do-not-resuscitate (DNR) orders in the operating room.⁴⁻⁶ Survey research suggests that anesthesiologists are more likely than internists or surgeons to assume suspension of DNR orders in the operating room and the least likely to discuss the consequences of suspension with their patients,^{7,8} and simulation studies have demonstrated similar findings.⁹ We used a joint grand rounds featuring a case discussion in combination with a survey to assess the attitudes of attending and resident surgeons and anesthesiologists at our institution regarding their operating room management of critically ill patients with advance directives.

We assessed the management of advance directives in critically ill patients undergoing surgery using a 13-item survey deployed at a joint anesthesia–surgery educational case conference. The cases were discussed by a multidisciplinary panel after a presentation on framing patient conversations. Audience members voluntarily completed the survey, which featured 8 questions addressing personal practice and beliefs, 1 question discussing consent, and 1 item assessing how different practitioners cope with adverse outcomes. Responses were scored on a 4-item forced-choice Likert scale. Five of the questions were sourced from pre-existing, validated, and published survey material. The remaining content questions were generated by the survey development team and validated through testing in a peer group of physicians whose location or areas of practice prohibited participation in the survey. A total of 137 surveys were distributed to participating surgeons, anesthesiologists, and residents. Respondents were subgrouped based on training status as well as specialty. Initially, means of the Likert scaled responses were generated for comparison. Scaled responses were then recoded to binary responses for analysis of the bivariate association among specialty, training, and beliefs regarding advance directives in the operating room. Questions not completed were excluded from statistical analysis, which was performed in Excel (Microsoft Inc., Redmond, WA).

Sixty-nine of 137 surveys were returned (50%). Respondent characteristics are presented in Table 1. The majority of participants reported that they had learned how to discuss informed consent from a mentor or attending (40%); this finding held across most subgroups with the exception of surgical residents (Table 2). Most respondents confirmed that they “sometimes or always” included the risk of acute adverse events in their preoperative consent for critically ill patients (91%); however, a majority also confirmed that critically ill patients “sometimes or always” came to the operating room without sufficient discussion on how their perioperative care might impact their prognosis or long-term goals of care (Table 3). A relative minority reported frequently confirming the presence of advance directives before going to the operating room; of this subgroup, attendings reported much more frequent assessment than residents (Table 4), although there was no significant difference between surgeons and anesthesiologists. A slightly larger group reported that they would “sometimes or always” decline to perform surgery or anesthesia on a patient whose advance directive limited their peri-/postoperative care; residents were significantly more likely to agree with

this statement than residents, with surgical residents demonstrating most agreement with this statement (Table 5). Our institutional policy with regard to the use of DNR orders in the operating room states that DNR orders should be considered as suspended barring a discussion with the patient or their family clarifying which components of the advance directive should be applied. When asked about how to manage DNR orders in the operating room, attending responses suggested greater familiarity with this policy (73% of anesthesia attendings and 77% of surgical attendings stated that they would suspend the DNR order; Table 6). Resident responses were more evenly divided between full suspension and suspension of do-not-intubate orders with retention of the remainder of the DNR order.

DISCUSSION

Discussion of end-of-life planning has been emphasized increasingly in recent years; this is exemplified no better than in the reintroduction of Medicare provisions incentivizing outpatient discussion and establishment of advance directives. However, the 2 cases we describe illustrate some of the problems within this discussion: 2 patients were initially diagnosed with survivable problems and taken to the operating room, but events in the operating room left them with a low probability of survival. In both cases, the family ultimately chose to withdraw care after incurrence of significant morbidity. The question becomes, then, when and how do we draw a line when deciding when to initiate and withdraw care for critically ill, elderly patients? Could these events be pre-empted with better preoperative discussion?

Our study results suggest that training both for surgeons and for anesthesiologists at our institution is lacking with regard to implementation of advance directives and DNR orders in the operating room. Physicians in both specialties have similar practice patterns with regard to their understanding of, assessment for, and management of such orders in the operating room. This understanding is often at odds with the clearly defined guidelines published by the American Society of Anesthesiologists and American College of Surgeons, both of which recommend preoperative discussion about how a given surgical or anesthetic plan might be reconciled with a patient's DNR status.^{10,11} The apparent generational gap in beliefs and practices between trainees and attending physicians suggests that more junior physicians might be more familiar with these guidelines but might also reflect a generational gap in practice and in perceptions of the goals of taking care of critically ill, elderly patients. It certainly begs a deeper examination of the ethical training offered to surgeons and anesthesiologists and suggests that interventions to increase awareness of current recommendations regarding perioperative DNR status are warranted.

Our results are necessarily limited by the single-institution nature of the study as well as its small sample size. An element of sample bias was incorporated by the voluntary nature of the study and reiterated by comments from participants, which ranged from the strongly held belief of one senior anesthesiologist that discussion of advance directives was not part of the anesthesiologist's job to comments from a surgical resident, suggesting that merely checking for a DNR order before taking a patient to the operating room would be an expansion of practice from current norms. With these caveats in mind, our findings still suggest a gap between institutional policy and individual practice. We view this small study as a starting

point for broader future examination of perioperative practice in patients with known DNR status and of possible interventions to increase awareness of changes in recommendations.

Advance directives and goals of end-of-life care may occupy an increased role in national discourse; however, this single-institution study suggests that they are not yet easily incorporated into day-to-day practice and that more education of surgeons and anesthesiologists is warranted.

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Table 1

Respondent Characteristics

	Number	Percentage
Anesthesia resident	26	37.7
Anesthesia attending	19	27.5
Surgery resident	11	15.9
Surgery attending	9	8.6
Total	69	100

Table 2

Informed Consent Training

	Formal training % (n)	From mentor/attending	From senior resident	Self-taught
Anesthesia residents	7.8 (2)	73.1 (19)	11.5 (3)	7.8 (2)
Anesthesia attendings	15.8 (3)	68.4 (13)	5.3 (1)	10.5 (2)
Surgical residents	9.1 (1)	36.0 (4)	45.5 (5)	9.1 (1)
Surgical attendings	11.1 (1)	44.4 (4)	0 (0)	44.4 (4)
Other	0 (0)	50.0 (2)	25.0 (1)	25.0 (1)
Total	10.1 (7)	60.9 (42)	14.5 (10)	14.5 (10)

Table 3

Provider Management of Goals of Care in the OR

Question	Sometimes or always (%)
How often, if ever, do you include the risk of acute adverse events such as the need for prolonged ventilator or circulatory support, or the risk of death, in your preoperative consent for critically ill patients?	91.0%
How frequently do you confirm the presence of an advance directive before taking a critically ill patient to the operating room?	34.8%
How frequently do you think a critically ill elderly patient undergoes surgery without adequate discussion of how surgery and postoperative care may impact their quality of life?	92.2%
How often, if ever, would you decline to perform a high-risk nonemergent operation (or anesthesia for the same) on a patient with an advance directive limiting postoperative life-sustaining treatment (e.g., ventilatory support)?	46.2%
How often do you think a preoperative discussion between surgeons and anesthesiologists about how a procedure will fit in with a patient's stated priorities for their end-of-life care might be useful?	92.6%
How often do you think this conversation happens?	7.2%

Table 4Confirming Advance Directives: Subgroup Analysis ($P < 0.05$)

Characteristic	Subgroup	N	Sometimes/always confirm the presence of an advance directive preoperatively	<i>P</i> value
All groups	Anesthesia resident	27	14.8%	<0.05
	Anesthesia attending	19	52.6%	
	Surgical resident	11	18.0%	
	Surgical attending	8	62.5%	
By training status	Trainee	38	15.8%	<0.05
	Attending	33	45.5%	
By specialty	Anesthesiologist	46	30.4%	0.61
	Surgeon	19	36.8%	

Table 5

Deciding Whether to Take a Patient with an Advance Directive Limiting Care to the Operating Room

Characteristic	Subgroup	<i>n</i>	Would decline to perform a case if advance directive limited care sometimes/ always	<i>P</i> value
All groups	Anesthesia residents	25	44.0%	0.01
	Anesthesia attending	19	26.3%	
	Surgical residents	11	81.8%	
	Surgical attendings	9	33.3%	
Training status	Trainee	36	55.6%	<0.05
	Attending	28	28.6%	
Specialty	Anesthesiologist	44	36.3%	0.08
	Surgeon	20	60%	

Table 6

Management of Do-Not-Resuscitate (DNR) Status in the Operating Room

	Suspend DNR	Suspend do not intubate; respect DNR	Respect DNR
Anesthesia residents	44.4%	40.7%	14.1%
Anesthesia attendings	73.7%	10.5%	15.8%
Surgery residents	45.5%	45.5%	9.1%
Surgery attendings	77.8%	11.1%	11.1%
Other	33.3%	33.3%	33.3%
Total	56.5%	28.9%	14.4%