ANESTHESIOLOGY

Patient Involvement in Anesthesia Decision-making: A Qualitative Study of Knee Arthroplasty

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EDITOR'S PERSPECTIVE

What We Already Know about This Topic

- Involving patients in shared decision-making is widely regarded as part of optimal patient care
- The preoperative anesthesia consultation has unique features and challenges compared to other patient encounters

What This Article Tells Us That Is New

- In a qualitative study of 36 anesthesia consultations before knee arthroplasty, it was found that the anesthesia consultation is complex with multiple functions and involvement in shared decision-making may not be the most important function of the visit
- Shared decision-making may be limited by external factors and the risk of increasing preoperative anxiety

ABSTRACT

Background: Calls to better involve patients in decisions about anesthesia—*e.g.*, through shared decision-making—are intensifying. However, several features of anesthesia consultation make it unclear how patients should participate in decisions. Evaluating the feasibility and desirability of carrying out shared decision-making in anesthesia requires better understanding of preoperative conversations. The objective of this qualitative study was to characterize how preoperative consultations for primary knee arthroplasty arrived at decisions about primary anesthesia.

Methods: This focused ethnography was performed at a U.S. academic medical center. The authors audio-recorded consultations of 36 primary knee arthroplasty patients with eight anesthesiologists. Patients and anesthesiologists also participated in semi-structured interviews. Consultation and interview transcripts were coded in an iterative process to develop an explanation of how anesthesiologists and patients made decisions about primary anesthesia.

Results: The authors found variation across accounts of anesthesiologists and patients as to whether the consultation was a collaborative decision-making scenario or simply meant to inform patients. Consultations displayed a number of decision-making patterns, from the anesthesiologist not disclosing options to the anesthesiologist strictly adhering to a position of equipoise; however, most consultations fell between these poles, with the anesthesiologist presenting options, recommending one, and persuading hesitant patients to accept it. Anesthesiologists made patients feel more comfortable with their proposed approach through extensive comparisons to more familiar experiences.

Conclusions: Anesthesia consultations are multifaceted encounters that serve several functions. In some cases, the involvement of patients in determining the anesthetic approach might not be the most important of these functions. Broad consideration should be given to both the applicability and feasibility of shared decision-making in anesthesia consultation. The potential benefits of interventions designed to enhance patient involvement in decision-making should be weighed against their potential to pull anesthesiologists' attention away from important humanistic aspects of communication such as decreasing patients' anxiety.

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Anesthesia consultation has several features that make it an ambiguous setting for involving patients in decision-making. Unlike other clinical scenarios, this preoperative visit does not center on whether patients are going to undergo a procedure, since they have already agreed to an operation that entails anesthesia. Patients typically have no previous relationship with the anesthesiologist, and the consultation sometimes occurs directly before an operation.[1] If there is a decision to be made in the consultation, it most often focuses on procedural elements (*e.g.*, whether to use general or regional anesthesia) despite the fact that there are numerous processual details such as choice of medication and route of administration that could be considered equally material, yet are rarely discussed with patients.[2] It remains uncertain how much biomedical information should be presented by anesthesiologists and how useful this information is to patients and their families.[3,4]

Nevertheless, patients rate preoperative communication as an important part of undergoing surgery.[5] As such,

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for cases in which there is at least some degree of clinical equipoise, pressure is rising in the anesthesia community to align preoperative consultations with the principles of shared decision-making. Shared decision-making expands on conventional informed consent, recommending not only thorough disclosure of the pertinent options and their risks, but also encouraging patients to form preferences about these options and participate in collective deliberation as to which option should be pursued.[6–8] The few studies that have assessed shared decision-making in anesthesia consultations have shown that it rarely occurs as measured by observer rating scales, though both patients and anesthesiologists typically self-report that they have engaged in shared decision-making.[9,10] Recently, a push has begun to integrate patient decision aids—tools that inform patients about treatment options and their risks and benefits—into anesthesia consultations to increase patient participation in decision-making.[11–13] This effort occurs at a time of contradiction around shared decision-making: while many researchers and policymakers seek its routine measurement and implementation,[8,14,15] a growing chorus is skeptical of its feasibility and implications.[16–18]

Given the ambiguous nature of the anesthesia consultation, associated uncertainty about how it should best be carried out, and the current energy behind launching decision-making interventions in this space, there is a need for better empirical understanding of conversations between anesthesiologists and surgical patients. This qualitative study of preoperative consultation for primary knee arthroplasty aims to: (1) describe interactions between anesthesiologists and patients and the factors shaping these interactions; (2) characterize how these interactions arrive at an anesthetic plan; and (3) reflect on the implications for achieving shared decision-making in these consultations.

Materials and Methods

This study took place at a large urban American academic medical center. We used qualitative methods. Qualitative research addresses causality through directly identifying connections in order to generate in-depth accounts of process, in contrast to quantitative approaches, which infer causality by identifying differences in frequency or intensity between groups along a dimension of interest.[19] Qualitative methods are thus apt for the description and explanation of complex social, cultural, and cognitive processes like those involved in anesthesia decision-making. Further, qualitative methods are not typically structured by a hypothesis, instead seeking to capture any dynamics relevant to the process of interest. They are consequently able to identify unanticipated yet important factors more easily than can quantitative techniques (*e.g.*, surveys) that must delineate factors of interest *a priori*. The open-ended nature of qualitative methods was suitable for this study given the dearth of previous work that directly examined anesthesia consultations.

Specifically, we used the qualitative approach of focused ethnography.[20] Popularized by anthropology and sociology, ethnography is an immersive method using mainly observation and interviewing to describe social and cultural processes in their ordinary, everyday settings. Focused ethnography adapts ethnography to the study of topics that are specialized, thus demanding discrete observation sessions and targeted interviews that focus on specific settings and individuals.

Sampling and Data Collection

The University of Pennsylvania institutional review board approved this project. Participating patients provided written informed consent, while participating anesthesiologists provided verbal informed consent. Data collection was performed by J.J.C. (a research assistant trained by J.T.C, an experienced qualitative researcher) from February 2018 to July 2018. We used purposive sampling to enroll patients. Eligible patients were those undergoing primary knee arthroplasty, a procedure that typically presents a decision to use spinal or general anesthesia.[21] We equally stratified patients across participating anesthesiologists. Patients were recruited in the preoperative area on the day of surgery, just before the anesthesia consultation, which occurs directly before surgery in this surgical center. Patients then participated in audio-recorded semi-structured interviews (see Supplemental Digital Content 1 for interview guides, http://links.lww.com/ALN/C611) in which they were asked about previous experiences with surgery and anesthesia, with whom they had spoken about this procedure, other sources of information they had accessed, concerns they had about anesthesia, and expectations about the preoperative consultation. Questions were open ended, giving little priming information to avoid altering the behavior of patients in the consultation. If an interview was not completed before the consultation, any remaining questions were asked directly after the consultation. Consultations were observed and audio recorded. Anesthesiologists participated in audio-recorded semistructured interviews offsite, focusing on their general considerations in deciding on anesthesia type, their approach to the consultation, and their impressions of how patients think about anesthesia. Data were collected until theoretical saturation[22]—when additional data neither altered our coding schema nor changed the explanation we were developing to explain trends made apparent by coding (see Qualitative Analysis section below).

Analysis

Qualitative Analysis. Audio recordings of interviews and consultations were transcribed by a professional service. Coding was managed using *NVivo 12* qualitative analysis software (QSR International, Australia). First, V.G. (a practicing anesthesiologist and clinical researcher), J.T.C., J.J.C., S.J.H. (a research assistant), and M.M. (a research assistant) all annotated two randomly selected patient interview transcripts and

their associated consultation transcripts and one randomly selected anesthesiologist interview transcript. Annotations were discussed to generate themes, which were then formalized into a codebook (a taxonomy for thematic categorization of data).[23] J.J.C., S.J.H., and M.M., supervised by J.T.C., used this codebook to double-code four randomly selected patient interviews and their associated consultations and two randomly selected anesthesiologist interviews (S.J.H. coded all; J.J.C. and M.M. coded two patient interviews/consultations and one anesthesiologist interview each). Coding was compared and all discrepancies rectified through consensus, and the codebook was revised to refine ambiguous categories, eliminate those lacking utility, and create new categories to capture missing themes. A second, identically structured round of double-coding and codebook iteration was performed using a different set of randomly selected transcripts. Having achieved a refined codebook and agreement about how it should be applied, S.J.H. then coded all remaining files. Finally, M.M. and J.J.C. coded an additional randomly selected set—identical in size to previous rounds of double coding—to verify the consistency of the coding performed by S.J.H. All codebook revisions were applied to previously coded transcripts. After this basic coding process, we performed focused coding,[24] prioritizing themes most pertinent to our research question, refining these themes, and combining related themes. Using this final set of themes, we developed an overarching explanation using an abductive approach,[25,26] during which we generated potential explanations, assessed their levels of empirical support, and—through this assessment—revised until arriving at explanations that best accounted for our data.

Quantitative Analysis. We summarized the characteristics of our participants using descriptive statistics, counting the number of participants in each category and calculating percentages.

Results

We analyzed anesthesia consultations of 36 primary knee arthroplasty patients, and also interviewed these patients. Of this sample, 25 (69%) ultimately underwent spinal anesthesia and 11 (32%) underwent general anesthesia. Consultations were carried out by eight different anesthesiologists—four consultations observed per participating anesthesiologist—all of whom were also interviewed. Four consultations were carried out mainly by resident anesthesiologists, with attending anesthesiologists signing off on the decisions made. (See table 1 for sample characteristics.) Hereafter, we describe the perceptions of patients and anesthesiologists and their interactions in the consultation.

Anesthesiologists' Approaches to the Preoperative Consultation

When discussing the goal of the preoperative consultation in interviews (see table 2), some anesthesiologists stressed that the purpose of the consultation was primarily educational, describing their role as informing the patient about the anesthetic plan that was most medically appropriate in order to instill comfort (table 2, row 2.1). Others identified the interaction as a decision-making situation in which their role was to present options to the patient, educate them on these options, and elicit a choice between them—the ultimate intent being to arrive at a plan that accords with what the patient wants (table 2, row 2.2). Among anesthesiologists who construed the preoperative consultation as an opportunity for facilitating patient choice, there was variation both within and across accounts about how to

Table 1. Participant Characteristics

	No. (%)
Patient participants (n = 36)	
Age, yr	
35–44	2 (5.5)
45–54	6 (16.6)
55–64	14 (38.8)
65–74	9 (25)
75–84	5 (13.8)
Sex	
Female	22 (61)
Male	14 (39)
Race	
Asian	2 (5)
Black	15 (42)
White	19 (53)
Median household income of zip code, US $/yr*	
15,000–29,999	5 (14)
30,000–59,999	11 (31)
60,000–89,999	9 (25)
90,000–119,999	7 (19)
120,000–149,999	4 (11)
Anesthesiologist participants (n = 8)	
Age, yr	
30–39	6 (75)
40–49	0 (0)
50–59	0 (0)
60–69	1 (12.5)
Not reported	1 (12.5)
Sex	
Female	1 (12.5)
Male	7 (87.5)
Race	
Asian	3 (37.5)
Black	1 (12.5)
White	4 (50)
Years in practice	
1–10	6 (75)
11–20	0 (0)
21–30	1 (12.5)
31–35	1 (12.5)
Subspecialty	
Intensive care	1 (12.5)
Obstetric anesthesia	1 (12.5)
Regional anesthesia	3 (37.5)
None	3 (37.5)

*Median household incomes reported here are 2013–2017 American Community Survey 5-yr estimates as produced by the U.S. Census Bureau.

Table 2. Anesthesiologists' Approaches to the Preoperative Consultation

	Illustrative Quotes
2.1. Goal: educate, ensure comfort	ANESTHESIOLOGIST: I mean, I think for the most part you want to build a patient relationship and build a rapport and essentially come up with a safe anesthetic plan and not only that you and the patient kind of agree with, but they understand. So, I wanna make sure they completely understand why we're doing what we're doing and they're comfortable with the plan and I guess it's safe to proceed. **INTERVIEWER: [W]hat are you aiming to achieve overall in your conversation with the patient?** **ANESTHESIOLOGIST: I want them to understand what's going on. I want them to be as happy with it as I can make them. That's pretty much it.**
2.2. Goal: align care with patient choice	ANESTHESIOLOGIST: I try to leave it up to the patient to make a decision. That way it doesn't feel like I coerced them into making a decision. Or let's say something bad happened, it wasn't like, "Oh, I was talked into this." **ANESTHESIOLOGIST: As long as their lab work is okay, as long as the patient's preferences align with their choice in the end, it really doesn't matter to me. [Patient preference] plays more of a role in how I decide. I obviously take into account their medical stuff. And unless it's really salient that I need to do one or another, I will let them choose.**
2.3. Anesthesiologist equipoise, promotion of patient preference	ANESTHESIOLOGIST: I personally don't have a preference [between regional and general anesthesia for knee replacement]. […] When I talk to the patients, if they're relatively healthy and they don't give me an indication that they would be better with one or another, then I kind of just leave it up to them. So, I present both pretty neutrally, I think, and then give them the option. **ANESTHESIOLOGIST: I try to give my patients the option. Both spinal and general can be done safely even though there are advantages from having the spinal. So, if a patient tells me right off the bat that they're definitely afraid of needles, they don't want anything to be done, then I leave it at that. But if they are short of making a decision, they don't quite know yet, they're still sort of in between, then I give them as much information as they would like to hear to help them make that decision.**
2.4. Anesthesiologists equivocate on relative importance of their recommendation *versus* patient preference	ANESTHESIOLOGIST: I try to present it fairly neutrally, but you could definitely present the two options, making it sound like the spinal is the great way to go, blah, blah, blah. And then I'd probably convince people a little bit more. But, yeah. **ANESTHESIOLOGIST: So, if the patient really has no preference for one or another, I kind of lean a little bit toward the spinal because of those studies. But if they do have one thing or other that pushes me one way or another, I might lean toward the other.** ANESTHESIOLOGIST: All things being equal, if there's no contraindications, I always mention regional anesthesia first. And then sort of gauging how receptive the patient is, I'll proceed to discuss the spinal anesthesia and then mention that we always have general anesthesia as a backup. So, both are discussed. The one that I want to do primarily is the one that I—that's what I talk about first.

Each block of regular or bold text indicates dialogue from a single interview or consultation.

do so. At times, these anesthesiologists stressed that so long as a patient was not contraindicated for a particular anesthesia type, they approached the consultation with genuine equipoise and thus tried to present the anesthetic options in neutral terms, allowing the patient to choose (table 2, row 2.3). Other accounts exhibited an uneasy vacillation between neutral presentation and a desire to shift the patient toward a particular anesthetic option preferred by the anesthesiologist without bluntly overruling the patient's inclination (table 2, row 2.4).

Patient Expectations about the Preoperative Consultation

When describing what they expected from the preoperative interaction (see table 3), patients' accounts varied in ways similar to those apparent in the anesthesiologists' interviews. Some patients expected not only to be informed about the details of the anesthetic procedure, but also to be actively involved in the process of deciding on anesthesia type (table 3, row 3.1). Others did not expect or desire to use this information to contribute to the selection of an anesthetic approach, as they did not feel qualified, comfortable, or interested in doing so (table 3, row 3.2); their desire for information stemmed instead from not wanting to be unpleasantly surprised by the anesthesia experience. Patients who did not perceive the preoperative consultation as a decision-making situation often talked of their commitment to undergoing surgery after a lengthy period of pain unmitigated by other interventions (table 3, row 3.3). Anesthesia for these patients was an inevitable component of a procedure that they had long been anticipating.

Patient Predispositions to Anesthesia

As seen in table 4, patients displayed patterned predispositions about anesthesia stemming from a range of previous experiences. Patients who had previously undergone surgery commonly came into this surgery with an initial preference about anesthesia, which could be derived from an uneventful or negative experience with a particular approach (table 4, row 4.1). Another common source of predispositions was previous discourse with family and friends who had undergone surgical procedures or had relations who had done so (table 4, row 4.2). In the latter scenario, patients were part of sometimes long chains of interactions by which ideas about anesthesia were disseminated. Experiences had to be noteworthy in order to be disseminated in this way, and so these experiences were predominantly negative and contributed to patient anxiety. Patient predispositions were frequently brought up in strong terms early in preoperative consultations (table 4, row 4.3). Negative notions about anesthesia were more likely to be brought up and occupied more discursive space than did neutral or positive stances. Because of the frequent appearance of these predispositions in consultations, all participating anesthesiologists described them in detail during interviews (table 4, row 4.4).

Table 3. Patient Expectations about the Preoperative Consultation

	Illustrative Quotes
3.1. Patients approach consultation as decision-making situation, expect to play role	INTERVIEWER: Yeah. Great. And then what do you expect to talk about in your discussion with your anesthesiologist today? PATIENT: I would like to know exactly the procedure, what's going to go—how deep am I going to be asleep, what effects it's going to have on my lungs and my body. […] INTERVIEWER: How involved would you like to be in decision-making about anesthesia today? PATIENT: I would like to be involved. Yes. Because it's about me. **INTERVIEWER: And how involved do you think you'll be in decision-making?** **PATIENT: Actually, you are involved. I don't think they actually make the decision for you. They say, while you're doing all this paperwork and you've been prepping in those meetings and stuff and with the people that you talk to, you tell them… [trails off]** **INTERVIEWER: This is what I want?** **PATIENT: Yeah. And that's it.**
3.2. Patients see consultation as educational—instilling comfort, not making choice	PATIENT: I want to know what they're going to do to me. […] [The anesthesiologists] know what they need to do. And unless there was some real reason why I didn't want to do it that way, there's no reason not to follow their instructions. INTERVIEWER: […] So, you just kind of want to know what's going on? PATIENT: Yeah. Because I can't make medical decisions. **INTERVIEWER: So, how involved would you like to be in decision-making about anesthesia technique?** **PATIENT: Oh, very much. I want to know everything I can. Yeah.** **INTERVIEWER: […] And how involved do you think you'll be in decision-making?** **PATIENT: I'm hoping he'll explain it to me, so I understand it, but I probably won't have too many choices. I think the decision will be made for me.** **INTERVIEWER: Okay. And are you okay with that?** **PATIENT: Well, I don't mind relying on experts. I guess I would like to have as much information so that what they're saying makes sense to me why they're choosing one over the other. Then I would be more comfortable with it.**
3.3. Patients demonstrate commitment to surgery	PATIENT: [The orthopedic surgeon] told me that I needed it, because I [saw] a picture of my knee, and it is really messed up [...] I knew I needed [surgery]. I saw the x-rays—the two sets of x-rays, MRIs. I've been through this for a year. PATIENT'S SPOUSE: Or 2 years. PATIENT: Yeah, so I know this is the right procedure. I'm convinced of it now. **INTERVIEWER: Have you talked to anybody else outside of medicine?** **PATIENT: No, just my mom.** **INTERVIEWER: Just your mom. Did she help you make the decision to get this procedure done, or did you just kind of tell her you needed it?** **PATIENT: Actually, she made, she's the one decided I get it done, because my leg, I barely can walk on it. […] I can't walk two blocks straight. […] Yeah, but if I would have been gotten it tooken [sic] care of it wouldn't be as bad as it is now, so it's my fault.**

Each block of regular or bold text indicates dialogue from a single interview or consultation.

Determination of the Anesthetic Plan

In six consultations, the anesthesiologist told the patient that they were contraindicated for spinal anesthesia and would have to undergo general anesthesia. The remaining 30 consultations exhibited several distinct patterns by which the physician and patient arrived at an anesthetic plan (see table 5). In eight consultations, the anesthesiologist did not present the discussion as an opportunity for decision-making; rather, they told the patient that they would be undergoing a certain type of anesthetic, followed by a check for understanding or elicitation of questions, and the patient did not subsequently bring up any issues that derailed the anesthesiologist's plan (table 5, row 5.1). Conversely, two consultations saw the anesthesiologist present the consultation as a choice, maintain an explicit stance of equipoise throughout, and defer to the patient's inclination to undergo a particular anesthesia type (table 5, row 5.2). The remaining preponderance of consultations occupied a middle ground between the scenarios just described. In seven consultations, the anesthesiologist described the operation as appropriately done with either anesthesia type but in doing so expressed a preference for one, and the patient quickly agreed to the anesthesiologist's preferred method (table 5, row 5.3). Twelve consultations similarly featured the physician presenting anesthetic options and expressing preferences; however, in these cases, the patient did not quickly acquiesce to the anesthesiologist's approach (table 5, row 5.4). In response, the anesthesiologist continued to justify their preference through describing its advantages and/or assuaging the patient's discomfort with it until the patient consented to its use. Finally, in one1 consultation, the anesthesiologist presented options and conveyed a preference, the patient was disinclined to pursue that preference, and the anesthesiologist's brief subsequent attempt to persuade was unsuccessful (table 5, row 5.5).

Grading to Increase Patient Comfort with Spinal Anesthesia

In consultations where the anesthesiologist presented multiple procedures, recommended one, and a patient expressed a negative inclination about it (see table 5, rows 5.4 and 5.5),

Table 4. Patient Predispositions to Anesthesia

	Illustrative Quotes
4.1. Predispositions based on prior surgical experience	PATIENT: Only thing I've got about anesthesia is I just want to be out. I don't want to feel nothing. Obviously. Because I'm absolutely scared to death. Trust me. **PATIENT: I'm hoping that people here don't have an aversion to giving me a spinal because of my spine. Because I really don't want general.** **INTERVIEWER: Yeah. Just because of your past memories of how bad it was?** **PATIENT: Yeah. And it's just—being in the business, I know it's not the best thing for you, and I don't like the feel of it.**
4.2. Predispositions based on accounts of family/friends	PATIENT: As long as [the anesthesia] doesn't mess with my back. INTERVIEWER: […] What about the back is so— PATIENT: —I'm just real hesitant about that. I've heard so many horror stories. **INTERVIEWER: Have you talked to anyone outside of medicine about your surgery? Obviously, your sister is here, so any other family members or anything like that?** **PATIENT: Quite a few people. [...] Yes. And that was the worst thing I could have done [...] because I heard a lot of negative things that they were sharing, and I didn't need to hear it.** INTERVIEWER: So that family member did get the spinal, and it sounds like she told you a little bit about it. What did they tell you about the anesthesia? PATIENT: They felt nothing, that's what they said. They said it was basically localized and they felt nothing. And I said, well, it sounds good, I'll try it. You gotta do something. So I said, okay, we'll try it.
4.3. Predispositions surface during consultations	**PATIENT: I'm scared of the spinal.** **ANESTHESIOLOGIST: Well, let's talk about it. In both cases, you're still gonna go off to sleep. You're not gonna be awake. The spinal is an injection in the back. What it does is it numbs up everything from your belly button down. As a result of you being so numb, it doesn't take that much to get you off to sleep. We use a lighter anesthetic because you don't feel anything.** **PATIENT: I woke up at [hospital name]. I don't know what they did, but I woke up during surgery there.** ANESTHESIOLOGIST: So, as far as the anesthesia goes. The way I normally like to do anesthesia for a total knee or total hip is with a spinal anesthesia. PATIENT: Mm-mm. Okay. Great. I don't want that. ANESTHESIOLOGIST: You don't want that? PATIENT: No. ANESTHESIOLOGIST: Any particular reason? PATIENT: Because my back is all—because I had epidurals when I had my children and it seemed like I never really recovered from that. It's very uncomfortable and I don't like having—after this procedure's done, then I have to lay around. I wanna be able to get up and move.
4.4. Anesthesiologists reflect on patient predispositions	**ANESTHESIOLOGIST: Previous experience might be one where [patients have] tried [spinal anesthesia] and they don't like it. They have a lot of fear like they don't wanna be paralyzed or they don't wanna be awake for the procedure or the thought of having a needle in their back scares them. Those are some of their fears. There's not a lot of preconceived notions with general because most people are kind of either used to it, have had it, or expect it.** ANESTHESIOLOGIST: Oh yeah. I think it's again the thought of the needle in the back. And a couple of them will say, oh, my friend had one and then had back pain. [...] Patients will say that either for them or somebody else, [spinal anesthesia caused] chronic back pain or paralysis.

Each block of regular or bold text indicates dialogue from a single interview or consultation.

a great deal of remaining time was devoted to the anesthesiologists' attempts to allay these concerns. These efforts relied heavily on "grading," as anesthesiologists characterized the intensity of some aspect of the anesthesia procedure through comparisons to other procedures—medical or nonmedical—that also had this aspect (see table 6).[27–29] Likely due, in part, to the relative lack of patient familiarity with regional anesthesia and in part to the preference of many participating anesthesiologists for its use in knee arthroplasty, most of this grading was done to address patient hesitancy about spinal anesthesia. Grading, for example, took the form of comparing the degree of sedation used under spinal anesthesia to that used during more familiar procedures like colonoscopy (table 6, row 6.1). Grading also compared the size of the needle used to deliver spinal anesthetic and the pain it would cause to more mundane experiences like receiving a tattoo (table 6, row 6.2). The risk of complications resulting from spinal anesthesia was downplayed by characterizing the risk as low and the complications as minor relative to other procedures (table 6, row 6.3). The frequency of the use of spinal anesthesia for this type of surgery was graded as high relative to alternative approaches, emphasizing the mundanity of spinal anesthesia.

Discussion

In this study of anesthesia consultations, we found variation across the accounts of anesthesiologists and patients as to whether the consultation was an opportunity for a collaborative decision or an activity whose purpose was to provide information to patients before moving forward with an often long-awaited surgery. Patients sometimes had strong predispositions about anesthesia and frequently brought them up to anesthesiologists. Consultations displayed a number of decision-making patterns, from the anesthesiologist not framing the visit as a discussion of options to the anesthesiologist adhering steadfastly to a stance of equipoise; however, most consultations fell between these

Table 5. Determination of the Anesthetic Plan

	Illustrative Quotes
5.1. Physician does not present consultation as choice among options	ANESTHESIOLOGIST: We typically do this procedure under something called a spinal. PATIENT: Yes, I— ANESTHESIOLOGIST: You read about it? PATIENT: I've heard of it. ANESTHESIOLOGIST: We'll be there with you the entire time. We monitor all of your vital signs and make sure you're comfortable and make sure you're stable. Good? Questions? Concerns? PATIENT: No. ANESTHESIOLOGIST: Okay. **ANESTHESIOLOGIST: Okay, so we'll just have you asleep for the surgery. […] We're going to do two things for you. Regional anesthesia—that's the nerve block. I need your initials right here. Okay. And once the nerve block is done and we bring you in the operating room when [surgeon name] says it's time, we'll go ahead and do a general anesthetic. I just need your initials right there for that part.**
5.2. Anesthesiologist presents options, stresses equipoise, defers to patient's preference	PATIENT'S DAUGHTER: What [anesthesia] is normally done with a knee replacement? ANESTHESIOLOGIST: It depends on who you talk to, but it's pretty even. I give people the option. […] The spinal, when they looked in studies, is maybe slightly safer. They're both very safe options, but the spinal may just be a little bit safer in terms of the lungs, particularly if you have a little asthma. […] But at the same time, you have the sciatica, too. […] I know a lot of people are kind of worried about a needle in the back. That's why I give people the option. I don't want to force anything upon you. […] What are you thinking? PATIENT: I don't know. I don't know if I would like that one in my back. […] I just can't imagine getting that in my back. […] ANESTHESIOLOGIST: Yeah, I'll tell you, most women on the labor floor when I do them, they tell me that, like, if they have back tattoos, the tattoo's worse than the spinal. […] But yeah, no. Perfectly fine. Either way. I'm okay with doing it either way, whichever you'd like. DAUGHTER: Probably the general. PATIENT: The general, because— ANESTHESIOLOGIST: Okay.
5.3. Anesthesiologist presents options, expressing preference; patient quickly agrees	**ANESTHESIOLOGIST: Now as far as the anesthesia for the surgery goes, there's two options, one is general anesthesia where we give you medicine through the vein, you go to sleep. […] The other option for total knee operations, which we do a lot of the time, is to do spinal anesthesia. So, I know you had a history of back pain, but that's not a contraindication of doing a spinal. […] The spinal lasts about 3 to 4 h, so it'll give you some pain relief, you know, so you don't wake up immediately. You'll be maybe less sleepy with that. So, we usually, for total knee replacements, we like to do spinal anesthesia. Is that alright?** **PATIENT: That's fine.**
5.4. Anesthesiologist presents options, expressing preference; patient does not quickly agree; anesthesiologist successfully persuades	RESIDENT: Now we're gonna talk about the anesthesia part, okay? So there's a couple of different ways we can do this. PATIENT: Knock me out. RESIDENT: Are you sure? PATIENT: Knock me out. RESIDENT: Because, let me tell—can I tell you about both, and then we can discuss, and then we can decide? PATIENT: Spinal tap. Knock me out. RESIDENT: Well, do you want a spinal tap? PATIENT: No, no. Which one is it that knocked me out completely? RESIDENT: General anesthesia. PATIENT: General. That's what I want. RESIDENT: So, let me tell you about both. I'm gonna tell you about both, okay. PATIENT: Okay, I'll let you tell me about both. [Patient eventually consented to spinal anesthesia]
5.5. Anesthesiologist presents options, expressing preference; patient does not quickly agree; patient is not persuaded	**ANESTHESIOLOGIST: Sure. I saw you got this [previous orthopedic surgery] done not too long ago. How was that anesthetic for you?** **PATIENT: Fine. I had the general anesthesia, and I'd prefer that today.** **ANESTHESIOLOGIST: Okay. Had you guys planned for the spinal [in the previous surgery]? Because it kinda looked like they tried.** **PATIENT: Yeah. But they had to be tried, and I guess there was some curvature in the lower spine, so after many attempts, we went with general. So I did have to do general.** **ANESTHESIOLOGIST: Okay. You don't even want me to try? […] I feel like I can probably get it. But if you specifically don't want me to try, then that's fine.** **PATIENT: I'd rather not do it this time.** **ANESTHESIOLOGIST: Yeah, okay.** **PATIENT: Thank you, though.** **[…]** **ANESTHESIOLOGIST: Alrighty. So I'll have you sign here. Was it a bad experience, the spinal last time?** **PATIENT: It hurt, yeah. And they tried for quite a while.** **ANESTHESIOLOGIST: It did?** **PATIENT: Yeah.**

Each block of regular or bold text indicates dialogue from a single interview or consultation.

two poles, with the anesthesiologist presenting multiple procedures, recommending one, and persuading patients who expressed any disinclination. Anesthesiologists made patients feel more comfortable with their proposed approach by comparing its elements to more familiar procedures or experiences.

Table 6. Grading to Increase Patient Comfort with Spinal Anesthesia

	Illustrative Quotes
6.1. Grading to familiarize level of sedation	ANESTHESIOLOGIST: We use a sedative very much like what we use for a colonoscopy. It's very pleasant, actually. I've had it myself, actually, for knee surgery. PATIENT: I don't—you've had knee surgery? ANESTHESIOLOGIST: Yeah, so I had a spinal, plus a nerve block, and the stuff through the IV. Very pleasant. I would do that again. **ANESTHESIOLOGIST: So, [general anesthesia] is one way. The other way of doing this is under a spinal and some sedation. Like, the sedation is like what we would give for a colonoscopy, all right? So, you may not—have you had a colonoscopy?** **PATIENT: Yes.** **ANESTHESIOLOGIST: Yeah. So, you may not actually remember anything that happened in the colonoscopy, but you were just under sedation, where you were sleepy, but you weren't fully, fully asleep. Okay?**
6.2. Grading to quell needle and injection pain fears	ANESTHESIOLOGIST: I asked [patients] who've had tattoos done before and they tell me [spinal anesthesia] is not as bad as a tattoo. FAMILY MEMBER: Thank goodness. PATIENT: No, tattoos hurt because it's over and over again in the same spot. I don't have any, but I've heard some people say that. **PATIENT: It's a long needle, isn't it?** **RESIDENT: Well, yeah, but it has to—** **PATIENT: It's a long…see.** **RESIDENT: It's not the length. It's the gauge. It's a little, little needle. It's like the smallest needle we have.** **PATIENT: Is it smaller than the needles they use to inject the cortisone in your knee?** **RESIDENT: Yeah. It's a lot smaller.** **PATIENT: Okay.**
6.3. Grading to lessen perception of risk	ANESTHESIOLOGIST: It's very safe. I had a spinal myself 8 years ago. There's a small risk of a headache. Okay? But that's unlikely. I didn't get one. I don't think you'll get one. Sometimes when the needle goes in, it can brush off against the nerve, and you get a little kind of a shock feeling. But that goes away. And if you feel that you tell us. One of the rare complications of a spinal would be if you get a blood clot in your back, and the back pressed against your spinal cord, it could result in permanent nerve injury or paralysis. That's why I was asking if you were on any medicine to thin out your blood, and I checked, and you're not. That risk is very unlikely. **ANESTHESIOLOGIST: So, in terms of the risks of the spinal, there's a very small risk of a headache. That risk is extremely unlikely at your age and my age. It's primarily a problem with younger folks. And also, the needles that we use these days are—have a much lower chance of causing any problems. […] Okay? It's a very safe procedure to have done. Like you said, you had epidurals before.**
6.4. Grading to emphasize mundanity of spinal anesthesia	ANESTHESIOLOGIST: Okay. All right. So, the way that we usually do this is with—it's called a neuraxial technique, an injection in the lower back. **ANESTHESIOLOGIST: And we do spinals a lot for like general procedures. We also do it for like labor, C-sections, that sort of stuff. Okay?**

Each block of regular or bold text indicates dialogue from a single interview or consultation.

Faced with a patient who hesitates about or refuses a recommendation, a clinician can either reformulate the recommendation or justify it; the tendency to do one or the other varies by clinical setting.[30] In the preoperative consultations we examined, anesthesiologists usually sought to persuade patients to accept recommendations. With the exception of consultations in which they did not tell patients there were options, anesthesiologists sought to direct patients toward certain treatment plans without coming off as paternalistic, a dynamic observed in other contemporary studies of medical consultation.[31,32] For decades, Western medical training has taught practitioners to avoid overt paternalism by managing consultations in a way that simultaneously satisfies patients attuned to patient advocacy and medical consumerism, achieves medically sound plans, and meets the demands of time efficiency.[33,34]

Reliance on self-report data or on assessment of clinical communication with a tool that measures the content of medical discourse might lead to the conclusion that the consultations we studied show patient collaboration in decision-making. After all, in most cases, the patient was notified that there were multiple possibilities for anesthesia and was given opportunity to voice opinions about them. However, care must be taken not to characterize the patient's role in determining treatment without fully considering the circumstances.[35] Only one patient caused the anesthesiologist to reformulate the treatment plan, despite many patients expressing initial discomfort about this plan. To simply describe the function of these preoperative consultations as involving the patient in a choice would thus be a mischaracterization.[36,37] The findings of this study combined with prior work on medical consultations suggest explanations for why patient influence on the anesthetic plan was limited. For one, physicians do not present a neutral ledger of risks/benefits or pros/cons of various options to patients, who then form preferences.[38] Rather, the facts of the situation are continually under construction during the consultation. Physicians, through their power to indicate degree of medical necessity and determine whether a patient's experiential input is relevant to a given situation, have asymmetrical authority in these encounters.[39] To expect a patient's experiential authority to overrule the anesthesiologist's medical authority—except perhaps in situations where a patient is adamant and the anesthesiologist's time to persuade is

short—may be unrealistic. Second, the preoperative consultation occurs as part of ongoing medical care.[40] In orthopedics, surgery is typically cast as a solution in contrast to alternative treatments that are cast as palliative.[41] Our study and others[42] have shown that patients, already committed to operations that they believed were their best hope for the long-term alleviation of pain and enhancement of function, often did not approach the preoperative consultation as a choice, but rather saw anesthesia as one inevitable technical component of much-anticipated surgery. Although many patients who participated in this study expressed strong preferences about certain anesthetic options, such inclinations usually faded quickly during the consultation.

Given these conditions, the preoperative consultations we observed were less oriented to the involvement of patients in decision-making and more to addressing affective and relational concerns. Patients do not necessarily desire biomedical information in consultations so that they can contribute to decisions. The information provided allows them to feel involved in their care[43] and—perhaps most important for anesthesia—calm and assured. Indeed, prior research suggests that patient satisfaction with anesthesia consultation is based on a summative judgment of the encounter more so than its specific ability to involve them in decisions.[9] It has long been recognized that the preoperative visit plays an important role in addressing surgical patients' anxiety.[44] Vulnerable and in an alien environment,[45] surgical patients can be deeply uncomfortable. Anesthesiologists have relatively little time to address this discomfort. The grading observed in this study, done through calibrating the intensity of various aspects of the anesthesia procedure to more familiar situations, is an efficient means of decreasing patients' sense of alienation.

The findings of this study have implications for the pursuit of shared decision-making in anesthesia consultations. Implementation of shared decision-making would most clearly benefit the minority of consultations in this study where patients were not told that there were multiple anesthetic approaches. Even if anesthesiologists are more comfortable performing particular approaches, patients should be made aware when there is more than one clinically viable option, should the differences between the options possibly be of material concern to them. In most consultations we examined, however, anesthesiologists indicated that there were options and patients were able to express their predispositions. Nevertheless, patients typically deferred to, or were persuaded to accept, the anesthesiologists' initial recommendations. It appears unlikely that the provision of more detailed medical information would have enhanced patient involvement in these decisions, given that the patients we studied mainly valued this information for its ability to prepare their expectations and decrease preoperative anxiety. The provision of greater opportunity for patients to introduce their preferences seems similarly unlikely to enhance their role in determining the anesthetic approach, since patients freely articulated comfort and discomfort with proposed procedures. As such, the potential benefit of behavioral interventions designed to enhance patient involvement in decisions should be carefully considered alongside their potential effect on the other functions accomplished by preoperative consultation. Such interventions may seem innocuous, but they are not costless.[46] Their use may result in less attention being devoted to important humanistic aspects[47] of preoperative communication observed in this study, such as lessening anxiety.

This study has several notable limitations. It was performed at a single academic medical center where preoperative arrangements may differ in important ways from other settings. Anesthesia consultations for orthopedic surgery at this surgical center occur directly before surgery. Though this arrangement is shared by many other centers, it differs from sites where surgical patients have separate preoperative visits at earlier time points. The practitioners at this center may also differ in important ways from those elsewhere. The anesthesiologists practicing at this site were mainly young and tended to favor regional anesthesia for primary knee arthroplasty. Relatedly, surgeons at this center were open to operating on patients under regional anesthesia and, in some cases, discussed this possibility with them before the anesthesia consultation. We did not have sufficient data on these conversations—patients were able to recall little about them in interviews—to accurately characterize their contribution to anesthesia decision-making, which is an interesting direction for future research. Finally, the study focused on a single surgical procedure. While this focus allowed us to achieve theoretical saturation, the medical inclinations of anesthesiologists, predispositions of patients, and interactional characteristics of the anesthesia consultation undoubtedly vary by surgery to some extent.

In conclusion, this qualitative study stresses that even a short preoperative consultation is a complex, multifaceted interaction that serves several functions. The involvement of patients in determining the anesthetic approach may not be the most important of these functions in many cases. Furthermore, this involvement is limited by a number of forces that extend beyond the consultation, including the authority of the physician to determine the relevance of the patient's experiential input, the positioning of the anesthesia consultation after a patient has already committed to surgery, and the feelings of anxiety and alienation that often come with this commitment. This suggests that interventions to increase patient involvement in anesthesia decision-making would be most impactful if aimed beyond the preoperative conversation itself, instead altering how this interaction fits into the overall surgical trajectory. However, given our findings, broad consideration should be given not just to the feasibility of increasing patient involvement in anesthesia decisions, but also to the implications of such efforts given the other important functions that the consultation accomplishes.

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Competing Interests

The authors declare no competing interests.

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