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Original Research

Variability in Surgeon Approaches to Emotional Recovery and Expectation Setting After Adult Traumatic Brachial Plexus Injury



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Purpose: Increasing emphasis has been placed on multidisciplinary care for patients with traumatic brachial plexus injury (BPI), and there has been a growing appreciation for the impact of psychological and emotional components of recovery. Because surgeons are typically charged with leading the recovery phase of BPI, our objective was to build a greater understanding of surgeons' perspectives on the care of BPI patients and potential areas for improvement in care delivery.

Methods: We conducted semistructured qualitative interviews with 14 surgeons with expertise in BPI reconstruction. The interview guide contained questions regarding the surgeons' practice and care team structure, their attitudes and approaches to psychological and emotional aspects of recovery, and their preferences for setting patient expectations. We used inductive thematic analysis to identify themes.

Results: There was a high degree of variability in how surgeons addressed emotional and psychological aspects of recovery. Whereas some surgeons embraced the practice of addressing these components of care, others felt strongly that BPI surgeons should remain focused on technical aspects of care. Several participants described the emotional toll that caring for BPI patients can have on surgeons and how this concern has affected their approach to care. Surgeons also recognized the importance of setting pre-operative expectations. There was an emphasis on setting low expectations in an attempt to minimize the risk for dissatisfaction. Surgeons described the challenges in effectively counseling patients about a condition that is prone to substantial injury heterogeneity and variability in functional outcomes.

Conclusions: Our results demonstrate wide variability in how surgeons address emotional, psychological, and social barriers to recovery for BPI patients.

Clinical relevance: Best practices for BPI care are difficult to establish because of the relative heterogeneity of neurologic injury, the unpredictable impact and recovery of the patient, and the substantial variability in physician approach to the care of these patients.

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Brachial plexus injuries (BPIs) are devastating and have a broad impact on patients' lives. In addition to the loss of physical function, patients are at risk for depression,^{1,2} anxiety,¹ suicidal ideation,² posttraumatic stress disorder,² and prolonged opioid use.³ The recovery process after surgical reconstruction is prolonged, and many patients cannot return to work or must change jobs owing to permanent functional deficits.^{4–7} Managing patient adjustment to life after BPI is critically important to minimize the physical, emotional, and financial impact of the injury.

Although surgeons and researchers strive to improve function after surgical reconstruction, the importance of addressing the emotional and social sequelae of BPI is increasingly recognized.^{8–10} Patients have expressed a need for better education about BPI and its treatment options, as well as a desire to be more involved in the decision-making process for treatment.^{8–10} Given the complexity of BPI and the specialized nature of treatment, BPI surgeons have important roles as gatekeepers of information and key decision-makers for patients. A deeper appreciation of how BPI surgeons approach the patient experience of BPI, including both the process leading to surgery and the time frame beyond surgery, will be helpful for determining how to improve patient adjustment during recovery and beyond. The purpose of this study was to use semi-structured interviews and qualitative analysis to build a greater understanding of surgeons' perspectives on the care of BPI patients and potential areas for improvement in care delivery.

Materials and Methods

With institutional review board approval from Washington University in St Louis, we conducted semistructured interviews with surgeons who treat patients with BPIs. Semistructured interviews allow the interviewer to pursue new ideas that may arise during the course of the interview. Participants were identified from the professional networks of the first author and recruited during professional society meetings by the first author, a BPI surgeon. All recruited surgeons agreed to participate. Inclusion criteria were surgeons who perform BPI reconstruction in the United States. After the first author obtained informed consent from participants, and before the interview, participants completed a demographic questionnaire that included questions regarding the type of residency and fellowship training, years in practice, and volume of BPI surgical cases per month. Because treatment recommendations for BPI vary widely by surgeon and level of experience,¹¹ we used purposive sampling strategies to include participants with varying degrees of surgical experience (years in practice) and training backgrounds. Participants received a \$50 gift card to an on-line retailer. The number of surgeons to be interviewed was determined by an interim analysis of the interview data, as described subsequently. Consistent with qualitative research methods, no additional interviews were conducted once thematic saturation was reached.

The first author designed an interview guide (Appendix A, available on the Journal's Web site at www.jhsgo.org) for the semistructured interview to solicit surgeon perspectives on delivery of care for BPI. The interview guide was reviewed by a health psychologist with expertise in qualitative research and with 2 additional BPI surgeons, and revised until consensus approval was obtained. Surgeons were asked whether they thought that emotional, social, or economic factors contributed to the overall recovery process for BPI patients, as well as about their approach to handling mental health issues and social issues in BPI patients. The role of setting patient expectations was included in the interview guide. All interviews were conducted by the first author. Face-to-face in-person interviews were conducted for 11 participants. Phone interviews were used for 3 participants who wanted to participate but could not complete in-person interviews during the professional society meetings. All interviews were audio recorded and professionally transcribed. Field notes were taken during and after the interview using a designated template to annotate nonverbal forms of communication, such as body language.

The research team (including the first author/interviewer, health psychologist with qualitative research expertise, and a qualitative research coordinator) analyzed the interview transcripts using established qualitative research methods.¹² Inductive

and deductive coding approaches were used.¹² The research team developed an initial code book, including code definitions and code examples, after review of an initial series of transcripts. Further revisions to the code book were agreed upon after group discussion. Coding was facilitated by uploading all transcripts into NVivo software (version 12, QSR International, Doncaster, Australia). Two members of the research team (first author/interviewer and qualitative research coordinator) independently coded each transcript using the final code book. Coding discrepancies were settled by group discussion. The study team held regular meetings after coding of the interview transcripts. In accordance with accepted qualitative research methodology,¹² group discussion was used to determine when thematic saturation had been reached, indicating that no new data were arising from the transcript analysis. The research team then used group discussion to organize the codes into themes, which were refined by comparing and contrasting with the interview data.

Results

We conducted interviews with 14 BPI surgeons. Of the 14 interviewed surgeons, 5 were plastic surgeons; the remaining participants were orthopedic surgeons. Half of the surgeons had been in practice less than 10 years, whereas the other half had been in practice more than 10 years (range, 5–38 years; median, 12 years). Four surgeons responded that they performed more than 20 BPI reconstructions in 1 year, 3 surgeons performed 10 to 19 BPI reconstructions annually, and 7 surgeons performed less than 10 BPI reconstructions annually. After analysis of the interview transcripts, the following themes emerged.

There is variability in how BPI surgeons address emotional and psychological recovery

Surgeons expressed a range of opinions regarding the appropriateness of their involvement in the nonsurgical care of BPI patients (Table 1). Several surgeons mentioned the emotional toll that caring for BPI patients can have on the surgeon, noting the intimacy of the relationship between patient and surgeon.

I think that cutting a human being open is an extremely intimate thing [...] That intimacy is what allows you to lend them some of your emotional and spiritual strength, which is one of the reasons why I said that it burns you out a little bit. Because you have to do that. You can't get a surrogate to come in and mimic that emotional strength.

It's too hard, emotionally. That goes back to why I try to stay in my lane and not get too warm and fuzzy with my patients because I couldn't handle it because I care too much.

All surgeon respondents agreed that emotional and psychological aspects of recovery had an influence on patient satisfaction.

Just being keenly aware that most of these patients who have a life-changing injury are going to have some psychological issues associated with it. Then knowing that their outcomes really can be influenced by their psychosocial state of mind. Evaluating them, identifying them early, and sending them the referral has been huge for them.

I'm not saying that we should be the leaders of [addressing psychological aspects of recovery], but we have to talk to patients more. We attribute [suboptimal recovery] to poor coping skills and to depression, anxiety, but many times we don't have that conversation with the patient because that's a really uncomfortable

Table 1
Additional Quotations Provided by Participants, Sorted by Themes

Emotional connection between patient and surgeon

I think any surgery—particularly complex surgeries that are—these are, by nature, high-risk surgeries, and I think that it then requires a pretty intimate relationship with the patient. And I think that most people are hesitant to voluntarily engage in an intimate relationship with somebody that is difficult to deal with, at best.

[Being wary of addressing psychological aspects of recovery] is human nature, especially in a litigious society. You tend to worry that those are the patients that will not be understanding if things don't go perfectly and that you may be at risk for liability down the road. It's also human nature to not want to have to deal with difficult people in your clinic who are unhappy and make you unhappy. If you have a few patients that go through [unsatisfactory outcomes], it will put you off of doing difficult things for difficult people.

We all have patients that we connect to. And when you connect to a patient and you see the pain that they're in, that probably hits you a little bit harder. It's not that we don't care about all our patients, of course, we do, but we're humans and we have emotional connections. And when you get an emotional connection, and the person really struggles, I think you internalize it more. And when you internalize things enough time, it changes your behavior.

Appropriateness of surgical team in addressing emotional and psychological recovery

Against

If you're asking, "How do we help them with social issues?" to be honest with you, I do very little of that. And if you say, "Why?" It's honestly because I don't think about it that much. The brachial plexus patients already take three or four times longer than the other patients to see. I've already given a lot more of myself to them than I give to the majority of my patients. And then, for me to handhold them through the social issues, I don't have the time, um, uh, or the skill set to do that. That's not my skill set. My skill set is something else. And quite frankly, I don't know that I have the emotional fortitude to deal with that, in addition to all of the other things that I've already tried to deal with for them.

[Considering psychological issues] is kind of an unspoken thing. A lot of surgeons are not going to think of it. They're not going to engage their patients in it. It's definitely not in our wheel house of expertise to be talking about psychological issues.

Supporting

We see [BPI patients having] PTSD and depression, so we screen every patient every visit for PTSD and depression. [...] I think the psychological side is sometimes a bigger problem than the physical side for a lot of these patients, so we've collected that data since the start.

I think it's better to have somebody else [addressing psychological issues]. That's not something that I know anything about, and I just wouldn't do as good of a job. We've learned a lot about questions they've asked that I didn't think about. The other thing is, it's a lot to deal with just to think about the surgical aspects of planning and what has to be done next, and then to throw that into the mix, when you have these complex patients, it's maxing out on my bandwidth for the patient.

[Knowing about the patient's social support network] doesn't change the surgical management or the physical part of that. It's more like—let's say he comes in post-op, and he's down or something like that, and now that I know this background, I can get more on it. I'll probably be like, "Wait a second," and call [the social worker] in.

I think every plexus team should have somebody who helps with the social and mental issues that these patients have. Because so many of them have psychological issues like PTSD and depression and suicidal ideation. It's very prevalent in this group, and not to mention the financial burden.

In general what I will tell [patients with signs of emotional stress] is, you know, "I don't handle the mental side of this. This is obviously a significant injury. I'm here to support you. You tell me when it's time, and I can get you to see someone that can help you from a mental health standpoint. If you say, 'I'm fine right now. I've got the family support,' we're good. And if in a month, something changes, let me know." So I just try to really give them the opportunity to seek that out when they're mentally ready to do it, because some people—you know, I think just saying, "Well, I want you to see the psychiatrist to help with this" is not the best approach because there are people that end up getting a negative effect rather than a positive effect. So I want them to be in the state of mind where they will benefit from it, and I can make the referral, but we don't have that—a good team where I'd say, "Boy, I've got a person that treats these all the times on the psychiatric end." As we look to develop a plexus team, to be able to have all those ancillary pieces in place to really treat the whole patient, as opposed to it kind of being fragmented as it is at this point.

I think what we need to do is we need to have better access to resources to plug them in right from the start instead of piecemealing it together: like I'm going to try and coordinate with the therapist here at this place, and you're going to get your pain management done here at this place, and a lot of these patients never show back up.

Patient expectations

Tendency to set low expectations

I tell patients what I think right up front. In general, I tend to err on being a little bit more pessimistic. And my philosophy behind that is not that I want to crush people, but it's always easier to be a hero than the bad guy down the road when what you predicted doesn't come true. Like, if they do better than you predicted you're a superstar. If you they don't get what you led them to believe, they can be upset with you.

Ways to maximize patient understanding

I try to get [patients] to discuss with me their understanding of where we're at and where we're going. That way I don't cloud their judgment and I can figure out what information they've retained. And if they have a good understanding of where we're going.

I meet with plexus patients again and I'll sort of preface things by saying something like, to the effect of, "I know we've talked about this before, and I may be repeating myself, but I'm going to go through it from the start again, just so we're on the same page," and repeat everything from the beginning. And then, you can get a sense a little bit as to whether or not people are carrying some of the information forward, or if it's a bit overwhelming the first time they hear things. And it can be kind of tough to retain things as you go forward, then I find the repetition of things helps.

In general, I do think that you can get a sense from people as to how well they're engaging with their problem, the kind of questions they're asking, how focused they seem to be. ... Active versus passive as they kind of are sort of taking on the challenge. And I think a big factor of it is how well they've accommodated to the idea that this is a long road. You know? I think, sometimes people if they think that they're in for a quick fix, it can be very disheartening to understand that they got a long road ahead of them. And the people, who can understand the length of time, they're kind of ready.

At the beginning, you just have to tell patients that "We're going to do your surgery today, but you're not going to notice any twitch or anything unusual for many months." And then, "Once you start to notice things, it's not like plugging in a light switch. You're going to take some time. [...] I think that being able to point out progress and changes in their clinical exam, and reemphasizing that these little changes are actually really a good sign of the nerve recovery. And really giving them a sense that their potential, and just keep reminding them that they're going to be making progress for 18 months plus after their injury. But, beyond that, it's hard. You want to make sure that they realize that what they're doing is only helping their recovery.

I dumb [the conversation about treatment expectations] down as much as I can and explain it to them. And when they come back, I explain it to them again.

Shortcomings of surgeons in educating patients

I think we probably fail at that sort of bigger discussion about where do you feel you are and how do you feel their doing. And I think part of that it's hard to engage a patient in expectations where probably most people with a nerve injury like a brachial plexus injury really understand that this might take 2 years to recover. They can't get past that—that possibility.

If someone with a complete plexus avulsion injury is like, "I really like playing the piano, and I want to be able to do that and probably tennis, too." And that's not realistic. And it helps me to understand, they don't really get it yet. That I have not done a good job educating them yet.

Some people want to be back to normal. You know, the first time I see them, I always tell them, "You're not going to be normal, right? But, if you do surgery, the best chance is 70% chance you have some meaningful use." Then they'll come back, said, "I thought said we can have 70%." They are always going to twist your words. Always because they are in denial. You know, they don't want to accept. They don't want to accept the 70% chance—30% chance of no recovery, 70% chance some recovery, not complete recovery.

Table 1 (continued)

One of the things that I always try to remember about these injuries and these patients—it's the same with replants. It's the only way I'm able to survive replants—you just have to remember: you didn't cut the finger off. You didn't give this person this brachial plexus injury, and you're giving them the best shot [at recovery].

PTSD, posttraumatic stress disorder.

conversation with the patient. I think it is, in general, if you have a patient that's not doing well psychologically, you're not treating the pathology.

There was variability in whether emotional and psychological issues should be addressed by the surgeon herself or himself, or by other members of the care team. Several surgeons felt strongly that a surgeon's time and energy are better spent focused on the technical aspects of care.

[BPI patients] have all these social issues, of course, but you're also first and foremost, their surgeon. [Social issues] are certainly not my expertise and certainly not something that I'm going to go thinking enough about.

I would rather have the brachial plexus surgeons do what they're trained to do and do it right and do it well and do it at the right time than worry about the emotional issues.

Many of these surgeons recognized the shortcomings of their own skill set and recognized that social workers and other team members had an important role in care.

I think it really comes down to the surgeon at least providing the appropriate referrals, and the more knowledgeable they are, the better they're going care for that patient. [...] They need to be involved but not the primary person.

I'm comfortable [having conversations with patients about emotional issues] to the extent that I—I think my role is to identify that these are going to be issues, and that there are certainly resources available for helping patients. You do feel at a loss many times when you can't walk out the door and help them.

The reason we started [having a social worker in clinic] was when we as surgeons would walk out of the room after meeting one of these patients and telling them they would never be the same. [...] And when you tell them that, you know, you'd see their mental state just crumble. We just felt like we didn't have the skill set or the background to deal with that, so that's why we brought in the social worker as part of our program.

Surgeons described the importance of setting preoperative expectations that can be met

All surgeon participants acknowledged both the variability in functional outcomes after surgical reconstruction for BPI and the relatively modest functional outcomes that occur after surgery for pan-plexus injuries (Table 1). Because of this, there was an overall tendency to set low expectations when discussing possible functional outcomes with patients. Several surgeons acknowledged that this tendency may have the unintended impact of discouraging patients.

A lot of [counseling patients before surgery] is educating them what the reasonable expectations are, and a lot of them unfortunately have this optimism. [...] I like somebody who is positive because then they're not beat down right off the bat. But then I worry about

them being disappointed when [their expectation] actually doesn't come to fruition.

I obviously want my patients to be perfect in the end, but I don't want to give them a glowing outlook just to have it fall short and have them be devastated. I'd rather lay out the average results of mine and then if they end up doing really well, then that's just icing on the cake.

Many surgeons described the importance of serial visits with patients to reinforce counseling about treatment options and prognosis for functional recovery. Some surgeons also mentioned the challenges in engaging patients and the potential influence that this might have on their satisfaction with the ultimate outcome. The traumatic nature of the condition and the heterogeneity of injury patterns were also mentioned as having a potential impact on patient satisfaction.

More often than not, I think patients don't ask specifics. You have to tease it out from patients. I think maybe you have to tell patients what to expect, but equal amount, you have to kind of figure out what is the patient expecting, what are the patient's expectations.

And I want them to kind of remember right off the bat that they had a very devastating injury, and there's nothing we can do to undo that. The best we can try and do is minimize the damage or to reconstruct to the function that they lost as best we can. That's one of those things that I think is hard, and has to be repeated over and over again multiple times, and sometimes, it's sort of lost.

I think one of the challenges with a brachial plexus injury is that each patient is so different. And the danger is false expectations because not every patient's going to have the same outcome.

Discussion

In our analysis of interviews with BPI surgeons, there was a variety of approaches to addressing the emotional, psychological, and social barriers aspects of BPI. When viewed in light of the broad emotional and psychological impact of BPI,^{1,2,5,8–10,13} this variability should be addressed in care system design. Although surgeons are perceived as the leader of the BPI care team in the United States, not all surgeons whom we interviewed felt adept or comfortable with addressing or orchestrating nonsurgical aspects of care. For some surgeons, the personal toll of being too empathic with BPI patients led them from incorporating emotional and psychological aspects of care in their practice. This has been previously described as compassion fatigue, and if unrecognized, it may place surgeons at risk for burnout.¹⁴ Some surgeons expressed reservations about the appropriateness and potential effectiveness of surgeons being involved in elements of care beyond surgery. This variability in opinion demonstrates an area for quality improvement in the delivery of care for BPI. The need to address the emotional and psychological aspects of recovery after BPI is apparent, and continued neglect of these areas may be detrimental to patients' recoveries. To address these issues, some BPI centers have included social workers as part of the care team, but additional work is needed to determine best practices and minimize variability in care. Brito et al¹³ noted

that BPI patients in Australia valued continuity of care and coordination of visits in a specialized BPI clinic, providing a framework for care delivery design. Collaboration and integration with other disciplines such as pain management and psychology were previously discussed,^{1,3,15,16} but validation and frameworks for these models are needed to propel widespread adoption. Although BPI surgeons may not be personally interested or comfortable with the emotional and psychological aspects of care, they can be important allies and advocates to engage colleagues in other disciplines and health care administrators to ensure that these components of patient care are addressed.

During our interviews, surgeons expressed the importance of setting patient expectations for recovery after BPI. Mancuso et al¹⁰ described the expectations put forth by BPI patients before reconstructive surgeries; many patients expected improvements in physical function that are not consistently met with current reconstructive techniques.¹⁷ The BPI surgeons we interviewed were optimistic about the value of surgical reconstruction in improving physical function, but also emphasized the importance of setting appropriate, and perhaps cautiously low, expectations when counseling patients. Some surgeons discussed the importance of using every opportunity to set expectations appropriately, often seeing patients more frequently before surgery to reinforce previously discussed concepts. One of the most difficult aspects of counseling BPI patients is describing what to expect as a functional outcome, because there is substantial heterogeneity in injury severity, physiologic capability for nerve regeneration, options for surgical reconstruction, technical ability of the surgical team, and the ability of the patient to adjust physically and emotionally to the new reality after BPI. Although surgeons are able to describe the reported outcome results to patients, the vast majority of the existing literature is framed in terms of surgeon-reported muscle strength rather than patient-reported outcomes.¹⁸ Additional investigation incorporating preoperative patient expectations and patient-reported outcomes for BPI is needed.¹⁹ Implementation of standardized measures with a large sample size that encompasses the wide variety of injury severity will provide guidance for BPI surgeons to counsel patients regarding what to expect from both functional and psychological perspectives.

Our findings from interviews with BPI surgeons may not reflect the experiences of other centers where BPI care is provided, particularly outside the United States. Many factors affect the treatment approaches of each surgeon,¹¹ including prior training, personal experience, case volume, variability in injury patterns, and local resource availability. However, qualitative interviewing provides the opportunity for an in-depth discussion about many of these factors and how they contribute to the individual philosophies of each surgeon. We interviewed surgeons from 14 centers in the United States, including surgeons early in practice and those with more mature practices and a combination of plastic surgery— and orthopedic surgery—trained surgeons. These sampling strategies allowed us to capture additional variation in treatment philosophies. During iterative analysis of our interviewers, we encountered thematic saturation, which suggests that additional interviews would not yield substantially different findings. Like all qualitative approaches using semistructured interviews, a different set of questions and style of interviewing might yield a more exhaustive or different list of themes. However, we performed pilot testing of the interview guide and allowed for revisions to the interview guide to optimize the chances of capturing a full breadth of surgeon opinion. Using a semistructured interview guide (rather than a structured set of questions) also allowed the interviewer to pursue concepts that were brought up by individual participants. Another

consideration for qualitative approaches is that the coding and analysis process is inherently subject to the bias of those who are performing the coding and analysis. It is possible that interpretation of the interview data by other individuals would yield different themes. We mitigated this risk by having 2 analysts with distinct training backgrounds (one was a surgeon with experience in qualitative research whereas the other was a non-clinician with experience in qualitative research) perform the coding independently. Because of our qualitative study design and concerns for revealing identities of participants, we were unable to conduct robust comparative analyses based on surgeon characteristics. The peer-to-peer (surgeon-to-surgeon) interview method we used introduced the possibility of response bias (ie, what participants said may be different from how they practiced). To minimize this bias, we intentionally avoided a discussion on treatment preferences, such as types of surgery preferred, which might be controversial. Rather, our intention was to allow surgeons to share their insight on the experiences of their patients, a much less controversial topic. Finally, an additional limitation of our research is that we did not interview other health care professionals who care for BPI patients. We expect that hand therapists, pain management specialists, nurses, and social workers have unique perspectives on the delivery of care for BPI patients. We believe this is an area for future investigation.

Our interviews with BPI surgeons demonstrate that many surgeons understand the importance of emotional and psychological aspects of recovery from BPI, but nearly half chose not to engage their patients in discussion on these issues. A common theme was the importance of setting expectations, although there was variability regarding how to accomplish this or identify patients' expectations of the injury. Additional investigation and guidance on best practices to address these components of care are needed, because surgeons are typically viewed as leaders of the care team for BPI patients.

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