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A Conceptual Model for Spine Surgery Recovery: A Qualitative Study of Patients' Expectations, Experiences, and Satisfaction

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Abstract

Study Design: Qualitative interview study

Objective: To develop a conceptual model for Spine Surgery Recovery in order to better understand why patients undergo lumbar spine surgery and what factors influence patient satisfaction.

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Summary of Background Data: Quantitative studies have assessed patients' expectations for lumbar spine surgery outcomes, with greater expectation fulfillment leading to higher satisfaction. However, there is limited literature using qualitative methods to understand the patient perspective from the decision to undergo lumbar spine surgery through long-term recovery.

Methods: Semi-structured phone interviews were conducted with 20 participants (9 females, mean age ± SD = 61.2 ± 11.1 years) and three focus groups with 12 participants (9 females, mean age ± SD = 62.0 ± 10.9 years). Sessions were audio recorded and transcribed. Two independent researchers coded the transcripts using a hierarchical coding system. Major themes were identified and a conceptual model was developed.

Results: A total of 1,355 coded quotes were analyzed. The decision to have lumbar spine surgery was influenced by chronic pain impact on daily function, pain coping, and patient expectations. Results demonstrated that fulfilled expectations and setting realistic expectations are key factors for patient satisfaction after surgery, while less known constructs of accepting limitations, adjusting expectations, and optimism were found by many patients to be essential for a successful recovery. Emotional factors of fear, anxiety, and depression were important aspects of pre- and post-surgical experiences.

Conclusion: Our Spine Surgery Recovery conceptual model provides guidance for future research and clinical practice to optimize treatment and improve overall patient satisfaction. Recommendations based on this model include the assessment of patient expectations and mental well-being throughout postoperative recovery as well as pre-operatively to help set realistic expectations and improve satisfaction. Educational, acceptance-based or positive psychological interventions may be potentially beneficial for addressing key factors identified in this model.

Keywords

patient experience; rehabilitation; postoperative pain; spine surgery; qualitative research; recovery expectation; lumbar fusion

INTRODUCTION

Chronic low back and radicular leg pain and associated functional limitations are common symptoms of degenerative lumbar spine conditions.[1,2] Patients who do not experience meaningful symptom relief through conservative measures are often left with no option but to consider surgery.[3-5] Many patients achieve immediate and lasting pain relief after spine surgery[6,7]; however, a substantial number continue to experience persistent symptoms that impair functioning.[6,8-10] How patients cope with post-surgical pain and physical limitations may influence postoperative outcomes.

Understanding patient experiences of lumbar spine surgery from the decision to have surgery through postoperative recovery is essential for optimizing treatment and improving outcomes. Several survey studies have described the patient's decision making process for lumbar spine surgery.[11-14] Bono et al.[11] concluded that pain intensity is the most influential factor in a patient's decision to undergo lumbar fusion, while other studies found that walking tolerance/capacity and pain severity and duration were of greatest importance to patients.[12,14] In contrast, Roszell et al[13] reported that general health and quality of life were

more important than pain severity or physical disability in predicting who elected to undergo spine surgery.

Patients develop preoperative expectations of treatment success and the influence of patient expectations on postoperative satisfaction has been demonstrated in a number of orthopedic populations.[15-17] Patients with realistic preoperative expectations (i.e., less discrepancy between expectations and actual reported outcomes) have a greater chance for satisfaction with surgical results.[14,15,17-19]

There is limited literature using qualitative methods for an in-depth perspective of patients' experiences from the decision to undergo lumbar spine surgery through long-term recovery. Prior qualitative studies have focused on the immediate and short-term postoperative period. Therefore, the primary purpose of this qualitative study was to develop a conceptual model for Spine Surgery Recovery in order to better understand why patients undergo spine surgery and what factors influence patient satisfaction. A better understanding of patient expectations and postsurgical experiences has the potential to improve shared decision-making and to identify new areas of research leading to improved patient satisfaction after lumbar spine surgery.

MATERIALS AND METHODS

Participants

Participants were recruited through a stratified purposeful sampling approach from a cohort of 80 adults enrolled in a randomized controlled trial evaluating the efficacy of a cognitive-behavioral-based physical therapy (CBPT) program compared to education in patients following elective lumbar spine surgery (NCT01131611).[20] The trial sample has been previously described[23] and included individuals with back and/or lower extremity pain for greater than 6 months who were undergoing a laminectomy with or without arthrodesis for a lumbar degenerative condition. The trial sample was recruited from the clinics of four spine surgeons at a single academic medical center. The study sample (N=32) was stratified by reduction in Oswestry Disability Index (ODI) score at 12 months following surgery (12.8-points or greater vs. less than 12.8-points).[21] Participants were recruited equally across strata in order to ensure that a balanced sample of patients was analyzed. Prior qualitative literature suggests that approximately 9 to 17 interviews are needed to identify a range of thematic issues and 16-24 interviews are needed to develop a richer understanding of the themes described.[22,23] Thus, 32 participants was deemed an adequate sample size to develop an in-depth perspective of patients' experiences across groups stratified by 12-month postoperative ODI score. Institutional Review Board approval and written informed consent was obtained from enrolled participants.

Interview and Focus Group Procedures

Twenty patients participated in a 1-hour, one-on-one semi-structured telephone interview and twelve patients participated in a 2-hour focus group (Table 1). Three in-person focus groups were conducted, with 4 participants in each. Focus groups included participants that were not involved in the interview process. Interviews were conducted by a trained and

experienced qualitative researcher and a clinical psychologist moderated the focus groups. Interviews were used in addition to focus groups when too few individuals were available to participate in a focus group. Open-ended questions and probes that focused on the decision to have surgery and postoperative recovery were used for the interviews and focus groups (Supplemental Digital Content). All sessions were recorded and transcribed.

Analysis

Qualitative analysis occurred in three interrelated phases: 1) individual quotes were isolated in the transcripts; 2) a hierarchical coding system was developed to organize the quotes and capture the full range and depth of participant response; and 3) the structure, frequency, and interrelationships of the coded quotes were used to develop a conceptual model of Spine Surgery Recovery. A hierarchical coding system was developed by an experienced qualitative researcher (D.G.D) and quotes were organized into 16 major themes with categories (Table 2). These categories were further subdivided as needed (Supplemental Digital Content). Codes and associated quotes and categories were imported into SPSS (SPSS, version 22) for analysis. From the interviews and focus groups, 1,355 coded quotes were analyzed.

RESULTS

Using an iterative inductive/deductive qualitative analysis approach[24-26], a conceptual model for Spine Surgery Recovery (Figure 1) was developed that describes how the patients' decision to have surgery is affected by pain and its impact on daily function, coping strategies, and patient expectations. The conceptual model also presents a framework for understanding how expectations and post-surgical experiences and actions contribute to satisfaction and the perception of successful surgical outcomes. Patients' fulfilled expectations and their level of satisfaction may fluctuate throughout the recovery period as pain and function improve, stabilize, or worsen, relating back to postsurgical experiences and actions as a dynamic process. Tables 3 and 4 present participant quotes associated with the Spine Surgery Recovery conceptual model.

Chronic Pain and Its Impact on Daily Function

Participants described a range of experiences with chronic pain prior to surgery, but the largest number of quotes coded in this category described extreme pain (9-10 on a scale of 10). Pain intensity varied, with some episodes worse than others. Many participants expressed having back and leg pain, with the leg pain described as particularly unbearable. All participants discussed the effect of pain on physical function, including movement (standing, bending, walking, lifting, and transitions) and daily activities (dressing, housework, yard work, sleeping, and driving), as well as on social interactions, employment, and emotions. Participants found it challenging to sit through a movie or a meal and attend sporting or church events. Several participants described chronic pain limiting their ability to engage with their children and grandchildren: "*I think of stuff that I'm missing and it's putting a toll on me.*" Participants also described the acute and long-term effects pain had on emotions including stress, anxiety, depression, and irritability.

Coping with Pain

Participants described attempting many alternative treatment options before choosing back surgery including physical therapy, injections, and chiropractic care. Most participants took over-the-counter or used narcotic medication, with few experiencing sufficient relief. The decision to have surgery for most participants occurred when the pain had become unbearable, they experienced activity limitations that severely impacted quality of life, or when doctors told them it would be the best or only option for pain relief.

Expectations

Patients who chose surgery had outcome expectations derived from a variety of sources including interactions with healthcare providers, websites, and conversations with friends and family. The most frequently coded expectations were for pain relief and improvement in physical movement and daily activities. Most quotes suggested that participants had very positive expectations that their pain would be completely relieved by the surgery: *"I thought when I had the surgery that my back would not hurt."* Participants expected to regain much of the daily function they had lost because of chronic pain, with most participants expecting a quick recovery with little pain.

The quality of communication with healthcare providers appeared to play a key role in forming outcome expectations. Important themes included time spent listening to patients as well as clear explanations of recovery. The recovery time also appeared to be discussed, with some participants remembering that they were told it would take 6 months to return to normal activity. Several participants, however, discussed less than ideal communication with the surgeon. They felt that the surgeon did not devote adequate time to addressing their questions and experience with pain or to explaining the procedure and what to expect. These participants expressed that their expectations may have been unrealistically high, especially those who expected a pain free recovery: *"I was expecting a miracle. I really was. I thought – all right I'll have this surgery and [the pain] is all going to be gone, all of it."*

Post-Surgical Experiences and Actions

Many patients reported a lengthy period of recovery and adjustment after surgery. Changes in pain after surgery were mixed, especially in comparison to expectations of complete relief. About half of the participants reported that their pain went away or improved, and the other half found that the pain stayed the same or worsened over time. A few participants never reached a stable recovery, as they went from one surgery that did not produce the desired results to another.

Despite the continued pain, many participants reported having improvement in physical function. Participants described being able to walk again and go back to work inside and outside the home. Overall, activity slowly increased over the first 6 months after surgery. However, participants expressed that the outcomes of surgery were not the same every day, and some talked about having good and bad days. Participants also discussed the return of numbness and tingling in the legs and feet. Some participants also reported greater or continued limitations with certain daily activities, such as with driving and traveling long distances.

With respect to emotional challenges after surgery, the categories most frequently coded were fear and anxiety followed by depression. Many participants experienced anxiety later in the recovery period, becoming worried that pain would never improve or that performing higher-level activities could worsen pain or reinjure their back: *"Before this, I was an avid tennis player. I've tried to play a couple times, but there's a lot of fear that I'm going to fall."* Other participants experienced fear that they would not be able to return to their normal activities: *"…it wasn't until I actually went back to work, that I really got scared of anything. That's when I realized; I'm just not going to be able to do what I used to do."*

Accepting limitations and adjusting expectations played a role in recovery for many participants. Many found it necessary to accept a new level of functioning that was better than before surgery, but less than what they were able to do earlier in their lives: *"I began to realize that I was not going to go back and do everything that I thought I was going to do, without some pain."* Several patients were able to experience a better outcome after surgery only after adjusting their expectations: *"I'm still so very grateful for how much relief it did give me, and that I'm just not going to be able to work like I used to."*

Besides adjusting expectations, several participants expressed the importance of remaining positive and optimistic while actively participating in their recovery. Setting specific goals helped participants early in the recovery process. These included simple accomplishments such as walking for 10 minutes without pain, lifting a small amount of weight, or standing for more than 30 minutes. As recovery continued, other milestones become salient such as resuming household chores and actively playing with children. Other important postsurgical actions included managing pain and symptoms, receiving support from family and friends, and communicating with the healthcare team.

Satisfaction

Participants experienced varying degrees of satisfaction ranging from "*very satisfied*" to *"very unsatisfied."* Dissatisfaction focused on lack of symptom improvement following surgery and some participants mentioned that they were *"expecting way too much."* Most participants measured the success of their surgery against the level of pain and function they experienced preoperatively. Participants expressed *"relief from all pain"* as being the measure of a positive outcome, as well as the ability to do most or all *"things used to do."*

DISCUSSION

"I was expecting a miracle. I really was. I thought – all right I'll have this surgery and [the pain] is all going to be gone. All of it." Although this statement may seem idealistic, it represents the beliefs shared by most patients who participated in this qualitative study of patients undergoing lumbar spine surgery. This sentiment is often in stark contrast to patients' postoperative commentary: "*It wasn't until I actually went back to work…that I realized; I'm just not going to be able to do what I used to do. That scared me."* To date, in-depth patient-driven perspectives of this dichotomy between patients' preoperative expectations and their long-term postoperative reality, and the factors that influence surgical recovery is missing from the literature. Our Spine Surgery Recovery conceptual model organizes the patient narrative into a framework to inform future research and clinical

practice in pre- and post-operative areas that are meaningful to patients. Results confirmed and expanded findings from prior quantitative studies that chronic pain impact on daily function, pain coping, and patient expectations are important components of patients' decision to have surgery as well as the postoperative recovery process. In addition, findings highlighted several post-surgical experiences and actions not well-studied in this patient population. Factors such as accepting limitations, adjusting expectations, and optimism may be related to post-surgical satisfaction and warrant further study in patients who undergo lumbar spine surgery.

Participants described the physical, emotional, and social burden of both chronic back and leg pain leading to their decision to undergo spine surgery. The decision to have surgery is usually made after trying many other treatments without lasting benefit and with the recommendation of a trusted physician. Participants' reasons for electing spine surgery align with prior quantitative studies indicating that pain reduction,[11,12,14,27] walking tolerance,[12,14] physical function,[27] overall quality of life,[13] other therapies not helping,[14] and surgeon/doctor recommendation[27] are important factors influencing patients' decision to undergo spine surgery.

We found that pain relief and improvement in physical movement and daily activity were the most frequently discussed expectations, which is consistent with previous studies in this patient population.[27,28] Interestingly, participants did not share preoperative expectations for improved emotional well-being. This is in contrast to what Mancuso and colleagues found when they developed the Hospital for Special Surgery (HSS) Lumbar Spine Surgery Expectations Survey[28] from patient interviews. The HSS survey measures expectations related to pain, daily activity, and function as well as psychosocial issues, which includes emotional stress.[28] A more recent survey study found that 88% of patients expected mental well-being to be somewhat better to much better after spine surgery, but only 3.7% of patients rated mental well-being as the most important expected change.[27] Although preoperative expectations of improved emotions were not explicitly discussed by participants in our study, the emotional impacts of pain and functional limitations both before and after surgery emerged as important factors. It is possible that patients perceive improved emotional health as resulting from pain relief and therefore as a less proximally important surgical outcome. Patients may also be unaware of the potential benefit of spine surgery on mental health, despite evidence that psychological distress improves after surgery.[29-31]

In line with prior quantitative studies[19], this study demonstrates that many patients have expectations for recovery that exceed their actual reported outcomes (i.e., expectation-actuality discrepancy).[14] Approximately half of participants in our study expressed dissatisfaction with some aspect of their surgical outcomes. The degree to which expectations for surgical recovery are realistic can have an impact on patient satisfaction. Two studies have demonstrated that the expectation-actuality discrepancy is an important predictor of patient satisfaction up to 12 months after spine surgery.[14,18] In our conceptual model of Spine Surgery Recovery, fulfilled expectations is included as a postsurgical experience that may change over time depending on other patient experiences, such as social support and fear/anxiety, and post-surgical actions. Future studies are needed to

better understand how the factors shown in the conceptual model may relate to fulfilled expectations and patient satisfaction after lumbar spine surgery.

Although many participants in our study felt there had been sufficient communication with the healthcare team prior to surgery, some participants perceived that they had not been adequately informed of what to expect. Studies have found that patients' expectations for improvement after spine surgery tend to be more optimistic than those of surgeons.[32,33] Our results highlight the importance of discussing realistic expectations preoperatively through education programs. Preliminary work suggests that a single preoperative education session has the potential to improve satisfaction and fulfilled expectations for patients undergoing lumbar fusion.[34] In addition, administering an expectations survey to patients, such as the HSS Lumbar Spine Surgery Expectations Survey[28] could assist surgical teams with individually tailoring patient education in order to help patients set realistic expectations.

Prior studies evaluating the expectation-actuality discrepancy only measured expectations preoperatively.[14,18] Our findings suggest that patients adjust their expectations for further improvement during postoperative recovery and choose to accept the functional limitations they experience from pain. Adjusting expectations and acceptance appear to be important post-surgical actions. Chronic pain acceptance is a construct that has been validated in multiple chronic pain populations and shown to predict disability and distress.[35] Recommendations based on our findings include assessing these constructs with validated tools after lumbar spine surgery. Administering validated measures to larger patient samples will confirm whether these constructs are related to postoperative patient satisfaction. Postoperative clinic visits could provide opportunities to assess changes in patient expectations and deliver additional education as needed or provide acceptance-based interventions, such as Acceptance and Commitment Therapy (ACT).[36] ACT has been shown to reduce pain interference and pain-related distress for patients living with chronic pain.[37] Preliminary work has evaluated illness acceptance and ACT-based interventions in surgical patients, but there is very little work to date in orthopedic surgical populations.[38-40]

Optimism during surgical recovery emerged as an important positive psychological construct and is included in our Spine Surgery Recovery conceptual model under Post-Surgical Actions. Some participants described approaching their recovery with an optimistic, "*glass half full*" mindset, focusing less on problems and more on being proactive. Dispositional optimism[41] is an understudied characteristic in patients undergoing spine surgery. One study found that dispositional optimism measured prior to lumbar surgery was significantly associated with greater patient satisfaction 2 years after surgery.[42] Our study provides additional patient perspective with regard to positive factors that promote enhanced recovery. Pre- and post-operative screening for positive psychological factors including optimism could assist with developing and testing interventions designed to strengthen psychological resources that increase patient engagement and improve patient-reported outcomes.

Our conceptual model highlights that patients perceive fear, anxiety and depression as important aspects of both preoperative and postoperative experiences. Robust literature supports preoperative psychological distress and fear of movement as significant risk factors for poorer post-surgical outcomes,[30,43-46] while a smaller body of research has found

early postoperative fear of movement, anxiety and depression predicts worse spine surgery outcomes.[29,31,47,48] Our findings appear to indicate that additional work is needed to better understand the patient trajectory relating to mental well-being and that patients may benefit from additional assessment of fear and anxiety after surgery. Participants described a range of fears after surgery such as fear of falling, fear of worsening pain leading to another surgery, and fear of current pain becoming permanent damage. A recommendation based on our conceptual model is to screen for fear and psychological distress both preoperatively and postoperatively to identify at-risk patients and inform early interventions that can reduce distress and improve outcomes.

A limitation of the study is that the qualitative interviews were conducted at a single time point more than 12 months after surgery rather than longitudinally from pre- to post-surgery. Prior to completing qualitative interviews, participants completed a trial comparing CBPT to education after lumbar spine surgery, reported high baseline fear of movement to be eligible for the trial, and were largely of self-reported white race. In addition, patients were excluded from the trial if undergoing lumbar spine surgery for spinal deformity, pseudarthrosis, trauma, infection, or if they were involved in litigation related to a workplace injury. Thus, the results of this study will not generalize to all patients undergoing lumbar spine surgery.

This qualitative study captured the in-depth, lived experiences of patients from the decision to undergo lumbar spine surgery through long-term postoperative recovery. A conceptual model of Spine Surgery Recovery was developed that highlights the importance of the impact of chronic pain on daily function, pain coping, and patient expectations on the decision to have surgery and of post-surgical experiences and actions on patient satisfaction. Results demonstrated that fulfilled expectations and setting realistic expectations are key factors for patient satisfaction, which is consistent with the literature, while less known constructs of accepting limitations, adjusting expectations, and optimism were found by many patients to be essential for a successful recovery. Future research may want to assess the benefits of educational, acceptance-based, or positive psychological interventions in addressing these factors. Findings also suggest that fear, anxiety and depression should be assessed postoperatively as well as prior to surgery in order to help patients manage emotional challenges.

Overall, our Spine Surgery Recovery conceptual model provides guidance for future research as well as clinical practice considerations to optimize treatment and improve overall patient satisfaction.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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KEY POINTS

- Patients undergoing lumbar spine surgery have high expectations for pain relief and improved function.
- Engaging patients and setting realistic expectations of short-term and long-term recovery is important to optimize satisfaction with outcomes.
- Patients with unfulfilled expectations benefit from accepting a certain degree of pain and functional limitations after surgery and adjusting their expectations for improvement.
- Patients benefit from positive psychological resources, including an optimistic mindset and active engagement in rehabilitation.
- Assessing and supporting patients' emotional needs is necessary throughout postoperative recovery.

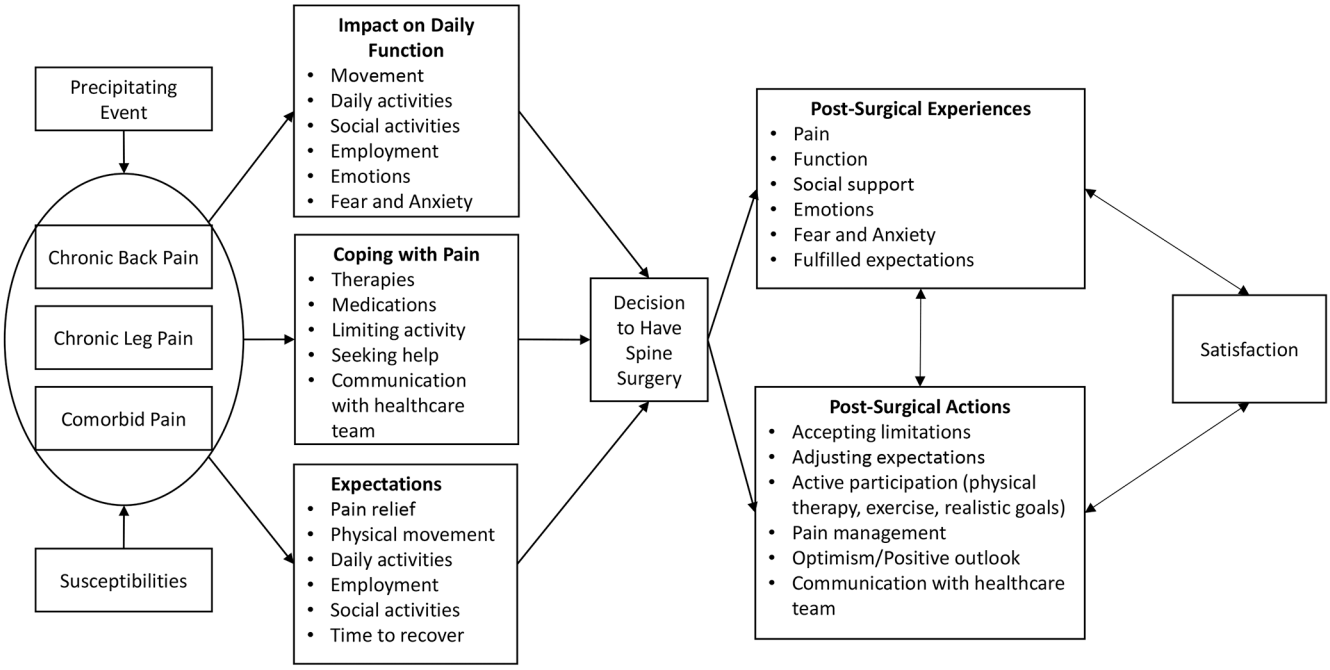

Figure 1. Legend.
Conceptual model for Spine Surgery Recovery

Table 1.

Demographic characteristics of interview and focus group participants.

Characteristics	Interview Group (N=20)	Focus Group (N=12)
Age in years, Mean ± SD	61.2 ± 11.1	62.0 ± 10.9
Female, N (%)	9 (45.0)	9 (75.0)
Self-Report White Race, N (%)	18 (90.0)	11 (91.7)
More than high school education, N (%)	13 (65.0)	11 (91.7)
Married, N (%)	18 (90.0)	8 (66.7)
Obese BMI category, N (%)	9 (45.0)	5 (41.7)
Preoperative Opioids, N (%)	9 (45.0)	7 (58.0)
Co-morbidities, N (%)		
None	15 (75.0)	6 (50.0)
1	3 (15.0)	4 (33.3)
2 or more	2 (10.0)	2 (16.7)
Fusion surgery, N (%)	15 (75.0)	8 (66.7)

Abbreviations: BMI = body mass index

Table 2.

Coding system with 16 major categories and subcategories

Major Categories	Subcategories
Pain	Sources of pain before surgery
	Sources of pain after surgery
	Energy level before surgery
	Energy level after surgery
Condition Before Surgery	Location of pre-surgical pain
	Degree of pre-surgical pain
Time Since Surgery	6 Months or less
	6-12 Months
	More than a year
Previous Surgeries	Had previous surgery
	No previous surgery
Decision to have Surgery	Doctor told them it would be the best thing to do, they trusted them and did it
	Hoping to be done with the pain
Function	Movement before the Surgery
	Movement after the Surgery
	Daily activities before the Surgery
	Daily activities after the Surgery
	Vocation/education before surgery
	Vocation/education after surgery
	Social interactions and relationships before surgery
	Social interactions and relationships after surgery
	Emotional impact before surgery
	Emotional impact after surgery
	Pain treatment before surgery
	Pain treatment after surgery
Expectations for Surgery	Pain level changes
	Physical movement
	Daily activities
	Social events
	Recovery expectations
Outcomes	Pain level changes
	Tingling/numbing sensation
	Recovery process
	Physical movement
	Daily activities
	Social events
	Degree of pain
Communication	Physician/surgeon
Satisfaction	Degree of satisfaction

Major Categories	Subcategories
	Area of satisfaction
Life after Surgery	Back strengthening
	Expectation that possible treatment option may help regain a normal life
	Family interaction
	Adjusting expectations
	Goals
Advice for Future Patients	Find a reputable doctor
	Find a reputable hospital
	Do research on the doctors
	Have positive outlook
	Have support system for you after surgery
	Focus on therapy dedicated to recovery
	Have back surgery
Other	Not applicable
Successful and Unsuccessful Outcomes	Successful
	Unsuccessful
Other Forms of Treatment	Using other forms of treatment before surgery
	Using other forms of treatment after surgery
Complications from Surgery	Leg pain that did not exist before
	Infection
	Re-hospitalization
	Neuropathy
	Other complications

Table 3.

Factors impacting the decision to have surgery: selected participant quotes

Pain	
Chronic back pain	“For almost four years now I have not known what it is to be pain free or even a lot of pain free.”
Chronic Leg pain	“It was giving me shooting pain down my legs to my knees and actually would buckle my knees.”
Impact of pain on daily function	
Movement	“Even lying in bed and trying to roll over at night. You’re trying to roll over. The movement is just like somebody stabbing me with a knife.”
	“I had gotten to the point where I couldn’t walk, I couldn’t sit, I couldn’t stand long enough to brush my teeth.”
Daily activities	“I just wasn't really able to go with my daily routine without some pain medicine, and my weekends and my time off were basically … I could get some relief if I laid down, so I was pretty much always finding myself coming home after work and laying down to try to get out of pain….”
	“I would cook supper and I’d be leaning on the cabinet cooking. Basically, laundry and cooking were about all I did. Sometimes it’s so bad; I can’t even go to church.”
Social activities	“Well, I don't really have a social life and I get to go to church every once in a while.”
	“I guess the other personal thing that has changed in my life would be the relationship between me and my wife as far as our love life. A big part of that kind of went away, because, there again, it’s hard to be romantic when you’re just in pain constantly.”
Employment	“That’s what finished me off. I just couldn’t work. I couldn’t work, and I couldn’t do anything at home either. I was just that bad hurting.”
	“I was substitute teaching about twice a week. I had to give that up altogether. I really stayed home. I couldn't do anything. It was awful.”
Emotions	“I had gotten recluse quite a bit and I’m not that way. I also knew with the pain I was more irritable to other people.”
	“I got quite depressed. I got to the point actually that I told my husband, I said, “I don’t believe in this but I can totally understand why somebody would want to end it if they had pain that they could not get to go away.”
Fear and anxiety	“I was afraid that my wife might leave me or something like that because I can't take care of myself.”
Coping with Pain	
Therapies	“Well, I weighed my options. I tried the physical therapy. They pretty much said that injections wouldn't do no good for the severity of my injury.”
Medications	“In my lower back, I just … night and day, pain there and never could get it to relieve, and I was taking a lot of pain medicine and stuff like that just to get through my regular day.”
	“My pain just doubled, and I was eating Tylenol, the 600 milligrams, and 1200, and I was doubling it just trying to work.”
Limiting activity	“I did my Christmas shopping two years in a row on the Internet before they started talking about doing it on the Internet, because I couldn’t go shopping.”
Seeking help	“It got where I couldn't live with it. I said, they're going to have to do something. I couldn't stand it”
Communication with healthcare team	“…a lot of it to me was they actually listened and let me tell them where I’m hurting, how I’m hurt and not be ready to just give me a pill or give me a therapy and say, “Hey this will make it feel all better,” because it didn’t.”
Expectations	
Pain relief	“I thought that once this healed up, I would be better. In the long run, I would feel better. I wouldn't hurt.”
	“He told me that I would probably have more back pain and my leg pain would be gone the next morning.”
Physical movement	“I expected to be able to get out and walk.”
Daily activities	“I thought once they got me through surgery and dismissed from the hospital and to come home and follow their directions, I thought I would improve day by day. Then finally get back to where I could do a lot of my own things that I need to be done.”
	“I just hoped I could get back to life and not be in pain all the time and start back with my hobbies and social life, etc. That’s all I was hoping for.”
Employment	“To really be built up you know, and get back to my regular routine, and doing the same kind of work. No different kind of work…”

Social activities	“Well, I guess just, most of it was just return to a normal life as much as possible, or as … you know, with the family, with my grandchildren.”
Time to recover	“He told me that it would literally probably take me 6 months to a year to get back to fully being able to lift and bend and squat.”

Table 4.

Factors impacting satisfaction with surgical outcomes: selected participant quotes

Post-Surgical Experiences	
Pain	“I still have a lot of pain now. So, now, after 3 surgeries, I still experience a lot of pain … especially in the car. Driving is horrendous, even with the steroid shots.”
Function	“Well, in the beginning I couldn't do too much. After I had the rehab I got stronger, could take care of myself, and start to cook, do some housekeeping and things like that, cleaning and whatever.”
	“It just started out with being able to take care of myself so I didn't have to rely on anyone else and then, I was able to go back to work.”
Social support	“I was happier about things when I got home. I had a lot of people come by and see me and things.”
Emotions	“So, emotionally, I was a basket case for the first couple of weeks especially.”
	“I was a little depressed then.”
	“Just such relief. It just felt freer and felt, yeah, I'm going to be able to plan next week to have this outing or to do something and to feel confident that I'll feel OK to do it.”
Fear and anxiety	“Well, I have concerns that the pains that I’m having are going to end up being permanent nerve damage.”
	“I am very careful of having more pain than I have already and not being able to drive. I find that’s scary to me, losing all my independence if I can’t drive. I also have a fear that if the pain gets worse, I’ll end up having a fusion again.”
Fulfilled expectations	“I was hoping at about three months that I'd be back to normal, and it took longer than that. I'm going to say about eight months.”
	“I was hoping I would get out of pain, and it has helped. I am out of that constant pain, but I have experienced some side effects from the surgery that I didn't even know were possible.”
	“But, as soon as I got home, which I thought it [the pain] would just continue to get better from there, it didn’t. It went downhill.”
Post-Surgical Actions	
Accepting limitations	“My main thing is to constantly be conscious of what my limitations are and don't overdo it.”
	“Again, I just can't say it enough, I am satisfied, I'd do it again. I have no regrets. Whatever limitations I have, I can live with it, I can accept it, it's no problem.”
Adjusting expectations	“Well, I had to realize that I'm still not able to do the things that I need to do. I just work towards getting it taken care of again.”
	“Yeah, because they said that this deal in my leg should go away, but it hasn't, so I've had to adjust.”
Active participation	“…be willing to participate in your own recovery. Your own healing and your own recovery.”
	“At first twelve weeks was stabilization. Then the next twelve weeks was strengthening because one of my goals was to take care of X, who, as I said, was getting heavier and more active.”
Pain management	“I was taking pain medicine until about six months, I think it was. That was a struggle to get off pain medicine.”
Optimism	“You almost pretty much have a bad day every day while you're healing because you're still in pain, but you could look at it as a glass half empty or a glass half full, and I just decided to always look at it as a glass half full.”
	“I had a lot of things to do so I don’t have time to sit around and think I’m going to be bad or anything. I just rather think about that I’m going to get stronger.”
Communication with healthcare team	“I remember at week six, I can remember that like it was yesterday. She could just tell a difference in my voice. I was having a little bit of depression, and she said the most wonderful thing. She says, "This happens to everybody on week six." That made me feel so much better…”