On Vs Off: Perceptions of Four Patients’ Experiences of Coronary Artery Bypass Surgery
Pilot Study
On Vs Off: Perceptions of Four Patients’ Experiences of Coronary Artery Bypass Surgery
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The benefits of Off-Pump Coronary Artery Bypass surgery (OPCAB) are well documented, but little information is available that explores the patient’s perception of the experience. The purpose of this study was to explore the differences in perceptions and experiences in patients who have undergone both OPCAB and onpump Coronary Artery Bypass Grafting procedures. Guided by naturalistic inquiry, semistructured qualitative interviews were conducted and audio taped with 4 men living independently. Inductive analysis of the transcripts revealed 7 themes: general comparisons, health care seeking symptoms, loss of control, faith and trust, postoperative depression, interactions with health care professionals, and sharing the life-time experience. The findings from this study will help to guide future research in the area of cardiovascular surgery. Prog Cardiovasc Nurs. 2008;23:178–183. &2008 Wiley Periodicals, Inc.

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Technological advances have changed the face of cardiac surgery, but at times, it is a return to a previous technique, which proves beneficial. Before the introduction of cardiopulmonary bypass, cardiac surgery was performed on a beating heart, but due to the lack of an appropriate immobilizing device, the surgery was extremely demanding.1 With the introduction of stabilization devices, immobilization has become easier and beating heart surgery has gained popularity once again. Many studies have compared Off-Pump Coronary Artery Bypass (OPCAB) with conventional Coronary Artery Bypass Grafting (CABG),1–10 but none has explored the patient’s perception of the perioperative open heart surgery experience. Further research is needed to provide health care professionals the information necessary to effectively prepare patients and their families for bypass grafting.

LITERATURE REVIEW
Through prospective, randomized trials that have been performed, the literature clearly shows the short-term benefits of OPCAB. The quantitative literature supports the notion that OPCAB is beneficial for many patients, especially women, the elderly and those with significant cardiac disease or other comorbid conditions.11,12 OPCAB patients experience less blood loss, have a decreased need for transfusions, sustain less cognitive dysfunction, and suffer less renal insufficiency.12 Literature has shown that there is no difference in the length of stay in the critical care unit or hospital, and time to extubation.12 However, gaps in the literature still exist and the long-term effects of OPCAB compared with the “gold standard” of CABG remain inadequately defined.12,13 Questions continue about reduced graft patency in OPCAB vs CABG patients.12,13

While the quantitative literature is unclear as to which procedure provides the best long-term outcomes, qualitative work has begun to look at the patient’s perioperative experience.
Qualitative studies analyzed specific aspects of the CABG patient experience. Uncertainty in the presurgical waiting period, perceptions of health and the benefits of CABG, and having a faith were all specific aspects of the patient experience noted in the literature. Faith has been identified as an important component to support the patients as they go through the chaotic perioperative experience. McCormick et al. noted that patients want to return to normal daily activities after surgery, while Allen found that resumption of leisure activities did not always occur after CABG. Another study reported that physical and emotional quality of life was higher after OPCAB as compared with CABG, but none of the literature reviewed compared the overall patient perceptions of each surgery.

In this literature review, no qualitative studies were found that explored the experiences of patients who have undergone OPCAB or both procedures. This pilot study explored the perceptions of 4 patients, who have experienced both types of bypass surgery, to help health care personnel understand educational, psychological, and supportive factors that these patients need. The purpose of this study was to explore the experiences and perceptions of persons who have undergone both OPCAB and CABG.

**METHODS**

**Design**

This exploratory design consisted of qualitative, semistructured interview sessions using naturalistic inquiry techniques as described by Lincoln and Guba. The naturalistic elements incorporated into the study were purposive sampling, naturalistic setting, and inductive data analysis. Participants responded to open ended questions and statements such as ‘’Please describe your surgical experiences,’’ ‘’What would you like to tell doctors or other health care professionals about the surgical experience?’’ and ‘’What advice would you give to a person who was about to have off-pump surgery performed? On-pump?’’ Subsequent dialogue focused on in-depth exploration of their answers.

**Sample**

Communication was made with a Midwestern cardiovascular surgeon’s office. After receiving institutional review board approval, information about the study was provided to the surgeon whose office staff contacted potential participants. Once permission was received from the prospective participants, the staff provided the researcher with names and phone numbers of

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people who met the inclusion criteria of having both CABG and OPCAB. Of the 6 men identified, 4 agreed to participate. Because it is uncommon for people to have both types of coronary artery bypass surgery, a small sample was anticipated. The researcher requested more participants if possible and at least 1 female, but no other potential participants were identified.

The purposive sample consisted of 4 men aged 56 to 72 years who had experienced both on-pump and off-pump surgery. Each of these participants experienced the CABG procedure first. Table presents the demographic characteristics of the participants.

**Procedure**
Qualitative interview sessions were completed with each participant. These face-to-face semistructured interviews lasted approximately 1 hour. Each interview was audio taped and transcribed. The participants also completed a demographic data questionnaire. Although this was a pilot study, consistent trends were noted in all interviews.

To establish trustworthiness, the researcher recorded field notes during each of the interviews and referred to the notes during data analysis. Prolonged engagement allowed the researcher to get to know each of the participants and also to establish a thorough understanding of the current literature, enhancing credibility. Thick descriptions helped to support transferability, and an audit trail was kept to help establish dependability. The process of peer-debriefing and researcher triangulation as described by Lincoln and Guba was utilized to strengthen confirmability. Two independent researchers reviewed the data to ascertain themes, and any disagreements were discussed until consensus was reached.

**Analysis of Data**
The researchers applied inductive data analysis methods, using unitizing and categorizing. The themes that emerged were broken into subthemes until confidence was gained that categorization was complete. To complete the data analysis, the researchers first reviewed each audio taped interview and recorded notes. One researcher then transcribed the interviews and after transcription, each researcher independently categorized the data searching for common themes. The researchers met multiple times throughout the analysis phase to review categories and determine appropriate themes. This iterative process continued until the researchers were confident they had captured the essence of the data.

**RESULTS**
Seven major themes emerged from the data analysis. The themes were general comparisons, health care seeking symptoms, loss of control, faith and trust, postoperative depression, interactions with health care professionals, and sharing the life-time experience.

**General Comparisons**
Each of these participants had vivid memories of their CABG and OPCAB surgeries and provided rich descriptions of the experiences. By the second procedure (OPCAB), although these men had previous experience with open heart surgery, their disease processes were also more advanced. The positive benefit of having experienced an open heart surgery was potentially outweighed by the disease progression. Repeat bypass surgery is anticipated to be more complex than the first bypass grafting, but these men described their OPCAB experience as ‘‘easy.’’
“It’s like a horse and a car trying to get to a certain point, that’s how much different it is.” This was 1 man’s explanation of the difference between CABG and OPCAB. All of the participants stated, in various ways, that OPCAB was much easier than CABG. A sampling of their feelings included:

“‘It was like, like I had my appendix out’ and ‘I was in at 2, came out at 8 . . . I was aware of things going on to the point that . . . I asked (my son) who won the basketball game, . . . 2 o’clock in the morning that’s actually 12 hours after I went in, not 12 hours after the operation, some nurse came in and said get up, sit at the side of the bed . . .’”

The participants all indicated that with their CABG surgeries they experienced more pain, less alertness, and extreme weakness. Two of the participants indicated that it could have been the number of years between the 2 surgeries and advances in technology that helped to improve their OPCAB outcomes.

All of the participants indicated that they recovered more quickly after OPCAB, but that they were able to regain their independence after each of the surgeries. The rehabilitation process was described as being very similar, but the time that the participants spent in each phase of rehabilitation and the length of time before enrollment varied between the surgeries. One man stated that he did not even enroll in rehabilitation for 2 months following CABG due to pain and depression. Another man said it was “a good year maybe before I felt like doing anything (after CABG) . . . I just mentally didn’t want to.” Within 3 weeks after the OPCAB, 1 participant indicated that he had gone back to work part-time. Another participant indicated that he was living independently 2 weeks after OPCAB surgery. He also reported that he felt that it took longer to regain his strength after CABG, stating “I did recover a lot quicker (after OPCAB). Number one, I got out of the hospital quicker, I felt so much different.” Additionally, another man described attending his son’s wedding in Georgia <2 weeks after his OPCAB.

There it is a good example of a difference in operations. I had it done let’s say on the 8th of September and my son got married on the 21st of September in Georgia and I went. I should tell you we went. [The doctor] said you can go but she drives . . . I danced with the bride, just one dance and that was it . . . we were there til the end.

Not only were these men discharged from the hospital more quickly after OPCAB, they were functioning, dancing, and enjoying life.

Health Care Seeking Symptoms

Major discrepancies exist among symptoms before the diagnosis of coronary artery disease.\textsuperscript{20,21} The participants in this study described their preoperative symptoms similarly between their CABG and OPCAB experiences. With the exception of 1 man having a heart attack days before his CABG, none of the participants ever experienced chest pain or the typical symptoms associated with a heart attack or heart problems. Each of the men described shortness of breath and fatigue as the main reasons for seeking health care . . . “I’d be mowing the grass and I’d
have to stop because I couldn’t [takes a deep breath] . . . really breathing heavy and I’d stop for a minute . . . that’s when it all went to hell in a handbag.’’ Another man described vomiting and arm pain as his major symptoms. A third participant stated: “I got tired easy. I went into my doctor and I says if old age is like this I don’t want any part of it and that’s when she started giving me tests.” The descriptions of shortness of breath and fatigue as the major symptoms that caused the men to seek treatment highlights the lack of knowledge regarding symptoms of coronary artery disease.

**Loss of Control**
Each of the participants struggled to understand the depth of their diagnosis and each man coped in a different way. The men all conveyed that they experienced a loss of control with the decision to undergo CABG, while none of the men specifically described this feeling with the decision to undergo OPCAB. The participants identified that before the CABG they never truly knew if they were making the correct decision to have the procedure. One participant stated

“I was doomed to have a heart attack and death or take the surgery, the bypass . . . you’re going to go down this road very quickly and . . . this is going to happen to you or you can take a chance and you’ll have a full life after that and that’s the way it worked out.”

This participant indicated that he felt that the situation was somewhat out-of-control (going down the road very quickly), but that he did want to improve his quality of life by living a “full life” after the surgery. Another participant indicated that “you just got to realize that you may make it and you may not . . . I mean a lot of people worry about whether they are going to come out of it.” The participants also indicated they believed they had a lack of knowledge related to the surgery, which contributed to their “loss of control” feelings. This sense of lack of knowledge was not as prominent before their OPCAB because they had each previously experienced a bypass surgery, which may be the reason this loss of control was primarily felt before the CABG.

**Faith and Trust**

Faith and trust were important aspects of both the CABG and OPCAB experience. Each of the participants cited trust in the physicians and the health care team as a concern of primary importance before each of their surgeries. “I think you do need to trust your doctor.” None of these men knew their surgeon until 1 or 2 days before the surgery, but the way that the surgeon portrayed himself gave the participants confidence in his surgical ability. “Did I ever feel that I knew absolutely that I did the right thing . . . I was just having faith . . . faith in the doctors, faith in my religion and that was it.” Another stated “If you just put your faith in your doctor and in God, you will make it through.” Two of the 4 indicated that they were appreciative that the surgeon kept them informed and was truthful about the severity of their condition.

**Postoperative Depression**
An unexpected theme of postoperative depression emerged from the data. While the question of depression was not specifically asked, each of the participants discussed their experience
with depression in the weeks and months following each of the surgeries. One man indicated that it was possibly the longest repercussion of his CABG. Three of the 4 participants experienced depression after the CABG surgery, and only one of these remembered any depression after the OPCAB. One of the men described his depression as mild and stated that it was not any worse after 1 surgery than the other. After his CABG, he experienced some memory loss and thought that this could be the cause of the depression. Before the OPCAB, he had experienced significant life changes including a death in the family and relocation to a new town and indicated that those life changes coupled with the surgery could have caused the depression. The other 2 participants experienced depression after their CABG surgeries, but not the OPCAB. One participant recollected that “everything hurt,” he developed insomnia, and was “very unhappy.” One participant, the youngest, stated that he did not experience depression after the CABG or OPCAB procedure.

**Interactions with Health Care Professionals**

Participants indicated that interaction with health care providers relating to several topics was important. These included adequate education, simple instructions, and knowledge of the surgeon’s experience. Participants were unable to identify if their preoperative teaching had prepared them adequately for their experience. They stated that they did not know what adequate preparation was, and only wanted to be educated on the basics. Although health care professionals were following established educational protocols, these men indicated they still had a lack of knowledge regarding postoperative care. One participant indicated that pain management was a postoperative care need that was not adequately addressed before his CABG. He feared addiction to pain medications after his CABG, and, therefore, did not take the prescribed medication. He stated “I would sit at the table and I’d bawl and I told mother maybe I did the wrong thing. Maybe I shouldn’t even had the operation.” The same participant reported having less of a problem after his OPCAB because he was instructed to utilize the pain medications and avoid letting the pain become overwhelming. He was told that he would not become addicted and that controlling the pain was an important step toward recovery.

“Keep it simple.” These male participants indicated that before surgery they were not ready for an in-depth teaching session including medical terminology and detailed explanations. These patients and their families were fearful and apprehensive so it was important to provide teaching using simple, concise explanations. One participant stated:

> The doctors get so technical and you can get so confused, but just giving simple choice, simply explaining what’s going to happen, what could happen . . . All I want to know is that I do have a well-experienced group of people working. I think I’m more interested in how many times you did this than we’re going to take two grafts out of your left leg, one out of your right leg . . . you’re too confused to really have that register. You are, you’re scared, and so keep it simple.

Two of the participants stated that they wanted to hear that the surgeon had performed the operation multiple times. “I think it sort of gives you self-confidence.”
Sharing the Life-Time Experience
When asked what type of advice they would give to people who were about to undergo bypass surgery each participant had a slightly different answer, but they were all in agreement that OPCAB was the best procedure to have if a choice was offered. “Off pump. There’s no question.” One participant even stated “if you’re going to go on the pump God bless you, I mean they’re still doing it, but it’s so much easier off the pump it’s unbelievable.” The participants stated that after their OPCAB they were extubated in the operating room and had fewer lines and tubes. Each of the aforementioned differences made the OPCAB experience “easier.” One participant recalled “I can remember that I had the tubes in my mouth for at least 3 days (after CABG) . . . I was not aware of everything that was going on . . . afterwards I remember my family mentioning how terrible I looked as far as gray.” The participants were also discharged from the hospital sooner with OPCAB than CABG and felt that they regained their strength more quickly.

Two men stated that talking to someone who had been through the procedure was very beneficial, to facilitate gaining insight into what they were going to experience. One man indicated that previous bypass patients could be very helpful because they could provide support and counseling to people who were trying to decide whether open heart surgery was a good option. He had experienced the opportunity to counsel a friend regarding bypass surgery, and his friend’s family later told him that he was the person who had been the deciding factor in the man opting to have the procedure. His advice was

“‘What do you got now? What do you got a chance for? And that’s it, there you go . . . you can be a vegetable, you can die, or you take a chance and have a good life and those are the choices that every person has to make for themselves. Yes, it’s painful; yes you know you are scared.’”

Another participant stated “It’s a life-time experience.” He indicated that only a person who has undergone the experience can truly let another patient know what to expect. This man also stated that he valued his improved quality of life, and sharing his insight and decision making process would benefit others as they prepared for surgery.

DISCUSSION
This study focused on the perceptions and experiences of 4 men who had undergone both OPCAB and CABG surgeries. These men explained their feelings, fears, needs, and wants. Demographic characteristics of the participants and several themes identified were supported by the literature. Statistics have shown that a higher percentage of initial and reoperative cardiac surgery patients are male. 17 Three of the 4 participants described their surgical experience as occurring at the same hospital, possibly explaining why their preoperative phase and instructions were very similar. These men described health care seeking symptoms as those not generally associated with heart disease. This is consistent with previous findings. 22 Fatigue, weakness, vomiting, and shortness of breath, though not generally associated with heart disease, need to be recognized so that prompt medical attention can be sought and delivered.

Findings from this study identified in the qualitative literature included loss of control and faith and trust. Loss of control was termed the “‘experience of uncertainty’” in anticipation of surgery
in 1 study. In the current study, participants voiced a need for more time with the physician and nurses before surgery to develop a faith and trust in the team and in the physician. Campbell also reported that faith in the hospital staff and in God was important. These families especially indicated the need for much teaching. ‘‘Going down this road very quickly’’ indicates that they felt somewhat out of control and looked to health care professionals to provide stability.

Three of the 4 men hoped to improve their quality of life after their cardiac surgery. Allen found that exercise tolerance and angina relief occurred after CABG, but resumption of social and leisure activities was not demonstrated. In the current study, participant statements such as ‘‘What do you got now? What do you got a chance for? And that’s it, there you go’’ indicate these patients’ decisions to proceed with either surgery expressed their desire to increase their chances for a ‘‘good life.’’ McCormick et al. also found that presurgical CABG patients wanted to ‘‘get (their) life back.’’ The instance of 1 participant dancing <2 weeks after OPCAB was a prime example of return to social or leisure activities. These findings were also supported by Kastanoti et al. who found that physical and emotional quality of life was comparably higher after OPCAB than CABG surgery. Participants in the current study reported being ‘‘functional’’ more quickly with OPCAB than CABG. This increased functionality and sense of well-being was the result of a faster recovery after the OPCAB as compared with the CABG.

Changes in psychological status, such as depression after CABG were consistent with previous findings. Three participants in this small pilot study experienced depression after CABG, while only 1 experienced depression after OPCAB. These differences, although inconclusive, have been noted in the literature as 21% of OPCAB patients experiencing postoperative depression compared with 29% of CABG patients. Another theme supported by the qualitative literature was the participants’ description of bypass grafting as a life-changing or life-time experience. This finding was supported in a study by Lindsay et al., which reported that CABG is regarded as a ‘‘significant major life event.’’ One participant even said ‘‘Didn’t they take my heart out?’’ indicating that this experience was emotional and frightening. The realization, that this experience is not limited to a 4-hour surgery, will help health care providers to understand that it is a transformation that will affect the rest of these patient’s lives.

**Limitations**

Several limitations to the study existed. The small size and single-gender sample made it difficult to transfer these findings to a larger population. No attempt was made to control for the number of years between the surgeries or the order in which the procedures were done. Advances in technology and differences in standard of care may have occurred and may explain some of the differences in outcomes, as voiced by one of the participants. Also, there may be inherent differences in the experience of first time vs the second-time surgical candidates, but there also may be more risks involved. This study does not clearly identify whether the differences discovered are attributable to the fact that the surgical procedures were different or that OPCAB was the second cardiac surgery experience. Another limitation may have been the geographical location—all of the surgeries were performed at 1 of 2 Midwestern hospitals, possibly providing a homogeneous sample.
**Implications**
Information from this pilot study can serve as a groundwork from which larger, more comprehensive studies can be developed. By understanding their fears and perceptions, nurses can better prepare future cardiac surgical patients for this life-changing experience. The information provided by this study is important to help health care providers realize that this week-long hospitalization is a life-time experience. The themes discovered and the understanding of patient’s perceptions and experiences may lead to better preparation whether undergoing OPCAB or CABG. Overall, the findings from this study provided an avenue for future research to increase the knowledge and understanding of the educational, psychological, and general supportive factors for cardiac surgery patients.

Further investigation into this phenomenon is needed to develop a more complete understanding of the patient’s perceptions and experiences. With information from larger studies, it may be possible to develop more comprehensive educational protocols to guide health care professionals in preoperative teaching. Future research, with a more diverse sample, should emphasize and promote collaborative practice in the care of heart surgical patients and should incorporate triangulation of qualitative and quantitative methods.

**REFERENCES**


