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Predictors of Bariatric Surgery among an Interested Population

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Abstract

Background—Severely obese patients considering bariatric surgery face a difficult decision given the tradeoff between the benefits and risks of surgery.

Objectives—To study the forces driving this decision and improve our understanding of the decision making process.

Setting—University Hospital

Methods—A 64-item survey was developed to assess factors in the decision making process for bariatric surgery. The survey included the decisional conflict scale, decision self-efficacy scale, EuroQol 5D, and the standard gamble. Subjects were recruited from a regularly scheduled bariatric surgery 'interest group meeting' associated with a large, university-based bariatric practice and administered a survey at the conclusion of the interest group. Logistic regression models were used to predict who pursued or still planned to pursue surgery at 12 months.

Results—200 subjects were recruited over an 8-month period. Mean age was 45 years; mean BMI was 48 kg/m², and 77% were female. The 12-month follow-up rate was 95%. At 12 months, 33 subjects (17.6%) had surgery and 30 (16.0%) still planned to have surgery. There was no association between age, gender, or obesity-associated conditions and surgery or plan to have surgery. Subjects having surgery or still planning to have surgery had significantly worse scores for quality of life, and better scores for decisional conflict (indicating readiness to make a decision).

Conclusions—The decision to have bariatric surgery is strongly associated with patients' perceptions of their current quality of life. In addition, lower decisional conflict and higher self-efficacy are predictive of surgery. Interestingly, factors clinicians might consider important, such

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as gender, age, and the presence of obesity-associated co-morbidities did not influence patients' decisions.

Keywords

Quality of life; decisions; bariatric surgery

Introduction

Bariatric surgery remains the most effective treatment for severe obesity. However, severely obese patients considering bariatric surgery may face a difficult decision given the tradeoffs between the benefits^(1–6) and risks^(1,7–9) of surgery. Patients who seek bariatric surgery have been shown to have more obesity associated conditions and lower quality of life than patients not seeking bariatric surgery^(10–12).

Several studies have explored the attitudes of physicians and patients regarding bariatric surgery. Physicians are willing to refer patients with type 2 diabetes for bariatric surgery when they meet the current criteria for bariatric surgery with a body mass index (BMI) over 35 kg/m²⁽¹³⁾. However, obese patients with type 2 diabetes are less likely to have positive views about bariatric surgery and are more concerned about its safety and effectiveness⁽¹⁴⁾. Given this disconnect between physician and patient comfort with bariatric surgery, shared decision making between the physician and patient is critical.

Shared decision making involves information sharing between the two parties involved and a treatment decision to which both parties agree⁽¹⁵⁾. To help patients make an informed decision regarding bariatric surgery and facilitate shared decision making, many surgical weight loss programs offer an initial interest group meeting as a forum to discuss the various benefits and risks associated with bariatric surgery.

The goal of this study was to establish what factors influenced patient decision-making when considering the decision to have bariatric surgery. We hypothesized that patients with higher BMI's, more obesity-associated conditions and lower health related quality of life would be more likely to decide to pursue bariatric surgery.

Materials and Methods

We conducted a prospective study of morbidly obese adults considering bariatric surgery, recruited from the bariatric surgery 'interest group meeting' associated with a large, multidisciplinary, university-based bariatric practice. The interest group meeting is the first step in the process towards bariatric surgery, and patients are self-referred. All patients undergoing bariatric surgery at the weight loss practice must attend the meeting. No screening occurs prior to the interest group. The purpose of the interest group meeting is to educate the attendees on the various weight loss procedures, the risks and benefits of each procedure and have an open forum for questions and answers. They typically are attended by 25 participants, run by a bariatric surgeon or trained physician assistant, and last around 2 hours on average. The Institutional Review Board reviewed and approved all study procedures.

Based on published models of shared decision-making, we developed a 64-item survey to assess potential predictors of having bariatric surgery. The survey included quality of life measures, an assessment regarding knowledge of bariatric surgical risks, the decisional conflict scale, the decision self-efficacy scale and potential clinical predictors of surgery. The survey was administered at the conclusion of the interest group from which they were recruited.

Three measures of quality of life or utility were included in the survey. We used the EuroQol-5D, a well validated five-item questionnaire, to characterize the patient's current health-related quality of life⁽¹⁶⁾. These five questions were then used to calculate the EQ-5D index score based upon the U.S. population's preference weights. We used the paper standard gamble to assess patients' utilities for obesity⁽¹⁷⁾. This is a validated utility assessment tool designed for self-completion and consists of a series of questions that ascertain how much risk they are willing to accept in exchange for a cure to their obesity. The third quality of life measure used was a visual analog scale, or "feeling thermometer", upon which patients indicate their current health level on a scale of 0 to 100⁽¹⁸⁾.

The decisional conflict scale is a 16 item questionnaire with 5 response categories for each statement⁽¹⁹⁾. The scale measures personal perceptions of uncertainty in choosing options, modifiable factors contributing to uncertainty, and effective decision making. Scores range from 0 (no decisional conflict) to 100 (extremely high decisional conflict). This scale has been used in more than 30 studies and is well validated⁽²⁰⁾. It has been used in both medical and surgical studies of patient decision making including studies of breast cancer surgery^(21–23), surgical treatment of benign prostatic hyperplasia⁽²⁴⁾ and bariatric surgery⁽²⁵⁾. Scores have been shown to be responsive to change in evaluation studies of decision support interventions⁽²⁶⁾. Scores less than 25 on this scale are associated with implementing a decision.

The decision self-efficacy scale is an 11 item questionnaire with 5 response categories for each statement⁽²⁶⁾. The scale measures self-confidence in decision-making. Scores range from 0 (extremely low self-efficacy) to 100 (extremely high self-efficacy). It has been used in evaluation studies of decision aids.

Subjects were contacted by telephone six months after attending the interest group to determine if they had undergone bariatric surgery, still planned to undergo bariatric surgery or had decided against surgery. The reasons for deciding against surgery were also ascertained during the telephone interview. Those subjects who reported still being interested in having surgery at six months but had not undergone surgery were contacted again at one year to determine if they had surgery or still planned to at that time.

Other potential clinical predictors of having bariatric surgery including gender, age, body mass index, the presence of obesity associated conditions (hypertension, diabetes, obstructive sleep apnea, hypercholesterolemia, osteoarthritis and depression), and factors related to the bariatric surgery program visited were collected at the interest group.

Statistical Analysis

We calculated means, medians, and frequencies for variables to characterize the study sample. Because both the decisional conflict scale and the self efficacy scale utilize ordinal ratings, we computed linear person measures utilizing the Rasch Model⁽²⁷⁾. Patients having bariatric surgery or still planning to have bariatric surgery were compared to those deciding against surgery using t-tests and Chi Square tests where appropriate. Each potential predictor of deciding to have bariatric surgery (having had bariatric surgery or still planning to) was considered for inclusion in a multivariable logistic regression model. A multivariable logistic regression model was developed to assess the relationship between the predictors of interest and the decision to have bariatric surgery. All analyses were conducted using SAS version 9.2 (Cary, NC).

Results

200 subjects out of a potential 201 (>99%) completed the initial survey at the bariatric surgery interest group over an eight month period. 10 subjects were lost to follow-up (95% follow-up) and 3 were excluded from analysis for not meeting inclusion criteria because their BMI was less than 35 kg/m² at the time of the interest meeting. Thus, 187 subjects were included in the final analysis. Their mean age was 45.4 years, 75% were female, and the mean BMI was 48.4 kg/m². 95% of subjects had at least one obesity-associated condition and 60% of subjects had at least three.

At the six month telephone follow-up, 25 subjects reported having had bariatric surgery, 65 subjects still planned to have surgery in the near future and 88 subjects reported deciding against having bariatric surgery. Subjects who had surgery or still planned to have surgery were similar to those deciding against surgery in many respects (Table 1). There were no significant differences with respect to demographic data or clinical data. Those who had surgery or still planned to have surgery were significantly more likely to have checked their insurance coverage prior to the interest group, had lower standard gamble scores, indicating poor quality of life, and had lower decisional conflict scores indicating more confidence in decision making.

At the one year telephone follow-up, the 65 subjects who had reported still planning to have surgery were contacted. At this time, 8 of the 65 subjects had bariatric surgery, 27 subjects decided against surgery and 30 still planned to have surgery. We compared those who had surgery or still planned to have surgery and those who decided against surgery (Table 2). There were no significant differences between the two groups in demographic or clinical data. Subjects who had surgery or still planned to have surgery were more likely to have had checked their insurance coverage prior to the interest group, had significantly lower standard gamble scores and had lower decisional conflict scores, indicating more confidence in their decision making. While the decision self-efficacy scores were not significantly different, the subjects having surgery tended to have higher scores.

Of the patients who decided against surgery, 50 gave a primary reason for their decision. "Worried about the risks" was given by 22 and "Insurance would not cover" was given by 28.

When subjects were stratified by decisional conflict and decisional self efficacy scores, patients with both low decisional conflict and high self efficacy were more likely to have surgery or still plan to have surgery (Figure 1). A low decisional conflict score was a stronger predictor than a high self efficacy score.

In multivariable logistic regression models predicting which subjects had surgery or still planned to have surgery at one year, the decisional conflict score remained significant with an odds ratio of 0.77 for a 10 point change in score (95% C.I. 0.66, 0.89; P=0.001) and standard gamble score remained significant with an odds ratio of 0.81 for a 10 point change in score (95% C.I. 0.69, 0.95; P=0.008). Having checked insurance coverage prior to the interest group and decision self efficacy were not significant predictors.

Discussion

Bariatric surgery or continuing to plan on having surgery one year after attending an interest group is associated with lower decisional conflict, lower quality of life as measured by the standard gamble, and having checked insurance coverage prior to the interest group. The strongest predictor of surgery was a low decisional conflict score. Of note, following an interest group meeting, a minority of patients (33%) followed through with bariatric surgery.

Surprisingly, clinical factors were not an important determinant of those who had or still planned to have surgery. Prior to the study we hypothesized that the patients deciding to have bariatric surgery would be younger, with higher BMIs and more obesity-associated comorbid conditions. This was not the case. We found no significant differences between the groups in either demographic or clinical characteristics. One potential reason for not finding a difference is that patients who self-referred themselves to the interest group were already representative of the group having surgery and a different sample composed of patients not initially pursuing bariatric surgery would demonstrate a difference between those having surgery and those deciding not to pursue surgery.

As expected, a number of decision-making process measures were significant predictors of bariatric surgery. The decisional conflict score measures personal perceptions of uncertainty in choosing options, modifiable factors contributing to uncertainty, and effective decision-making. As demonstrated by this study, patients with low decisional conflict scores are more likely to make a decision to get surgery. Interventions designed to lower uncertainty may help patients make a better decision in pursuing bariatric surgery. Decisional self-efficacy, which measures self confidence in decision-making, also was associated with having bariatric surgery, but not as strongly as low decisional conflict.

Patients who checked their insurance status prior to the interest group were more likely to follow through with surgery or continue to plan to have surgery. It is likely that these patients were already farther down the path towards considering surgery and thus more certain of their decision to pursue surgery. Lack of insurance coverage was the most common reason for given for not having surgery but only 23% of patients not having surgery gave this as their primary reason.

We also hypothesized prior to our study that patients with lower quality of life or utility for their current state of health would be more likely to decide in favor of surgery. Interestingly, in our study, there was no difference in the rating scale and the EQ-5D, which are measures of utility that do not incorporate risk, between the group of subjects deciding against surgery and those that chose to have surgery or still planned to have surgery; however, patients who chose to have surgery had lower standard gamble scores for their current state of health. The standard gamble, which incorporates risk attitude, may be a more appropriate instrument in a setting that actually entails some degree of risk.

Other studies have looked at patient selection in bariatric surgery⁽²⁸⁾ or patient referral patterns⁽²⁹⁾ from a physician's perspective, but not from the patient's perspective. This is the first study to our knowledge that examines the patient's perspective in choosing to undergo bariatric surgery.

The development of shared decision making tools and decision aids is a key provision in the Affordable Care Act that was recently enacted into law⁽³⁰⁾. Decision aids have been developed and tested for other difficult decisions, including benign prostatic hypertrophy, hypertension treatment, hormone replacement therapy, and back surgery⁽³¹⁾. These decision aids have been shown to decrease decisional conflict and increase decisional self-efficacy⁽³¹⁾. A decision aid focusing on bariatric surgery has similar benefits, with improvements in knowledge and less decisional conflict⁽²⁵⁾.

Our study had several limitations. Since subjects may have had surgery outside our program, we could not confirm whether or not they had surgery through chart review and we relied on self-report. The subjects included in our study had demonstrated their interest in bariatric surgery by coming to the interest group from which they were recruited. This limits the generalizability of the study to patients already interested in bariatric surgery and not all morbidly obese patients. The study only included one site for the interest group recruitment, but subjects had bariatric surgery at a variety of sites. The reason for not following through with bariatric surgery was not accounted for in the analyses, including insurance issues such as preoperative diet requirements, high deductible or co-pay costs, or no benefits at all.

Conclusions

In summary, we have demonstrated that among patients interested in bariatric surgery, process measures of decision making -- but not demographic or clinical factors -- are the most important predictors of the decision to have surgery. Interventions to improve the use of bariatric surgery among appropriate patients should focus on decreasing decisional conflict and increasing self-efficacy possibly through the use of patient decision aids.

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Figure 1.

Plot of individual decisional conflict scores on the x-axis and decisional self efficacy scores on the y-axis. Lower decisional conflict scores indicate less decisional conflict, and higher self-efficacy scores indicate higher self efficacy. The lines represent the median score for each scale.

Table 1

Results at 6 months

	Decided Against Surgery (N=88)	Surgery or Plan to Have Surgery (N=90)	p- value
Age (mean, s.d.)	46.4 (11.5)	44.7 (11.1)	0.3123
Female	77.3%	76.7%	0.9235
BMI (mean, s.d.)	48.3 (10.0)	48.6 (9.0)	0.8416
Insurance Coverage*	46.6%	71.1%	0.0009
Hypertension	64.4%	60.0%	0.5492
Diabetes	41.4%	38.9%	0.7354
Sleep Apnea	44.8%	45.6%	0.9225
Hyperlipidemia	36.8%	37.8%	0.891
Osteoarthritis	58.6%	52.2%	0.392
Depression	48.3%	58.9%	0.1569
# of comorbid conditions	2.9 (1.5)	2.9 (1.5)	0.9474
Rating Scale	52.0 (19.0)	51.5 (16.6)	0.8512
Standard Gamble	88.4 (17.6)	80.5 (23.7)	0.0126
EQ-5D	0.612 (0.224)	0.588 (0.233)	0.4898
Decisional Conflict	41.2 (22.0)	31.9 (21.7)	0.005
Self Efficacy	83.8 (19.2)	86.7 (16.3)	0.2841

* Insurance coverage indicates that patients had checked their insurance coverage prior to the interest group, not that they were covered for the procedure by insurance.

Table 2

Results at 12 months

	Decided Against Surgery (N=115)	Surgery or Plan to Have Surgery (N=63)	p- value
Age (mean, s.d.)	45.7 (11.3)	45.3 (11.5)	0.8012
Female	76.5%	77.8%	0.8491
BMI (mean, s.d.)	47.9 (9.4)	49.3 (9.5)	0.3554
Insurance Coverage*	47.8%	71.4%	0.0125
Hypertension	62.3%	61.9%	0.9606
Diabetes	37.7%	44.4%	0.3821
Sleep Apnea	43.9%	47.6%	0.6304
Hyperlipidemia	36.0%	39.7%	0.6243
Osteoarthritis	55.3%	55.6%	0.9701
Depression	53.5%	54.0%	0.9532
# of comorbid conditions	2.9 (1.5)	3.0 (1.6)	0.5431
Rating Scale	51.7 (18.0)	51.9 (17.4)	0.9261
Standard Gamble	87.8 (17.1)	78.3 (26.3)	0.0039
EQ-5D	0.604 (0.226)	0.593 (0.23)	0.7697
Decisional Conflict	40.6 (22.6)	28.9 (21.6)	0.0004
Self Efficacy	83.8 (18.9)	87.9 (17.8)	0.1242

* Insurance coverage indicates that patients had checked their insurance coverage prior to the interest group, not that they were covered for the procedure by insurance.