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Physicians' Attitudes about Referring their Type 2 Diabetes Patients for Bariatric Surgery

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Abstract

Background—Despite increasing evidence about the beneficial effects of bariatric surgery, little is known about physicians' attitudes toward it as a treatment for type 2 diabetes.

Objective—To investigate physicians' attitudes about referring patients with type 2 diabetes for bariatric surgery.

Setting—Physicians at an academic medical center (142) and community-based physicians (197) in the Philadelphia area in specialties likely to treat type 2 diabetes.

Methods—Physicians identified from the Pennsylvania Integrated Clinical and Administrative Research Database (PICARD) and non-PICARD databases were surveyed about perceptions of the safety and efficacy of bariatric surgery as a treatment for obesity and type 2 diabetes.

Results—Ninety-three physicians returned the survey for a combined response rate of 27.4%. Respondents reported having positive impressions of bariatric surgery as a treatment for obesity and type 2 diabetes (79.6% and 67.4%, respectively). Only 20.8% of respondents indicated that they would be likely to refer their type 2 diabetes patients with body mass index (BMI) of 30 to 34.9 kg/m^2 to a randomized research trial of bariatric surgery.

Conclusions—In general, physicians who see patients with type 2 diabetes had favorable impressions about bariatric surgery as a treatment for obesity and type 2 diabetes. However, only a minority were willing to refer their type 2 diabetic patients with BMIs of 30-34.9 kg/m^2 to randomized research trials of bariatric surgery. This reluctance to refer patients represents an important barrier to the successful completion of studies of the efficacy of bariatric surgery for persons with type 2 diabetes and BMIs < 35 kg/m^2.

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Keywords

type 2 diabetes; physicians' attitudes

Introduction

The twin epidemics of obesity and type 2 diabetes threaten the health and well being of millions of Americans. Thirty two percent of U.S. adults are obese, and obesity dramatically increases the risk of type 2 diabetes.[1] Approximately 13% of all adults have diabetes (which is undiagnosed in 40% of individuals), with 90-95% having type 2 diabetes.[2] Type 2 diabetes may well be associated with the greatest burden of suffering among obesity-related diseases.[3]

As many as 80% of patients with type 2 diabetes who undergo Roux-en-Y gastric bypass (RYGB) experience diabetes remission. In contrast, only 57% of diabetic individuals who undergo laparoscopic adjustable banding achieve remission.[4,5] Nonsurgical weight loss programs—including lifestyle modification with or without pharmacotherapy—generally produce more modest weight losses and improvements in glycemic control compared to bariatric surgery.[5,6] In light of these findings, in early 2011 the US Food and Drug Administration approved the use of Allergan's LapBand for individuals with a body mass index (BMI) ≥ 30 kg/m^2 and with obesity-related comorbidities like type 2 diabetes.[7]

Unfortunately, bariatric surgery remains an underutilized treatment. While approximately 5% of the US population has a BMI greater than 40 kg/m^2, and are thus candidates for bariatric surgery, less than 1% of these individuals undergo bariatric procedures.[8] The disparity between those who would benefit from surgical treatment and those who receive it becomes even greater when those persons with BMIs between 30-40 kg/m^2 and who have type 2 diabetes are considered. The reasons for this disparity are multifactorial. The lack of uniform coverage from third party payors is likely a major contributor. At the same time, there appears to be a lack of appropriate knowledge about the surgeries, both among patients and healthcare providers.[9-11] Physicians who treat obese type 2 diabetic patients can play an informed role in recommending non-surgical weight loss treatments, but little is known about their role in informing patients about bariatric surgery.[12,13]

The present study was undertaken to obtain information on physicians' perceptions of the safety and efficacy of different treatments for obesity and type 2 diabetes. Given the recent momentum among professional groups to recommend bariatric surgery for persons with type 2 diabetes and BMIs between 30-35 kg/m^2,[14] physicians also were asked about their willingness to refer their type 2 diabetes patients to randomized research trials investigating the safety and efficacy of bariatric surgery for these patients.

Methods

One hundred and forty two physicians affiliated with our academic medical center were identified from the Pennsylvania Integrated Clinical and Administrative Research Database (PICARD). In order to assess the attitudes of community-based physicians who were not affiliated with an academic medical center, an additional 197 physicians from the Philadelphia area were identified using a physician database (Physician Databases Directory Service, Montville, NJ).

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Survey Design

A novel survey was developed by the authors for the purpose of this study (Appendix A). Content validity was assessed by a primary care practitioner and an endocrinologist. The survey contained 25 questions in which physicians were asked to rate their impressions of bariatric surgery and the likelihood that they would recommend it as a treatment option for obesity and/or type 2 diabetes. Responses were graded on a 5-point Likert scale (e.g., 1 = very positive; 5 = very negative). Physicians were also asked to identify: (1) specific bariatric procedures that they have recommended as treatment for either obesity or type 2 diabetes; (2) factors and outcomes that are important for recommending bariatric surgery to obese patients with type 2 diabetes; (3) likelihood of significant diabetes improvement with various weight loss treatments; (4) likelihood of complications or death from various weight loss treatments; and (5) the BMI ranges for which they would be likely to recommend participation in randomized trials of weight loss interventions. Demographic data, including age, gender, race, BMI, years in practice since residency, primary clinical specialty, and type of clinical practice were also collected.

Survey Administration

Physicians identified through the PICARD database received an e-mail invitation to complete the survey anonymously. A link to the survey was provided in the email. Physicians in the community who were not affiliated with an academic medical center were sent a similar email invitation, with the added incentive of a voluntary raffle for two $50 gift certificates for those who completed the survey. Three weekly reminder emails were sent following the initial survey invitations. These reminder emails, in some instances, doubled the number of new responses from the week prior.

Statistical Analysis

Summary statistics (i.e., frequencies, means, standard deviations, medians, and interquartile ranges) for all variables were examined to assess integrity of survey responses. Differences between PICARD and non-PICARD survey respondents were examined using Wilcoxon rank sum tests, for continuous variables, and chi-squared or Fisher's exact test, for categorical variables. For all analyses, an alpha (α) level of 5% ($p < 0.05$) was established as statistically significant. Statistical tests were conducted using common statistical software (Statistical Package for the Social Sciences, version 16.0, SPSS, Chicago, IL; Statistical Analysis System, version 9.2, SAS, Cary, NC).

Results

Among the 339 eligible physicians, 93 (27.4%) completed the survey. Forty-two (59.2%) respondents were primary care physicians (internists or family practitioners), and 20 (28.2%) were endocrinologists. Table 1 summarizes the demographic and practice characteristics of the respondents. Response rates for physicians affiliated with an academic medical center were significantly greater than those identified from the community (48.6% versus 12.2%, $p < 0.0001$). There were also significant differences between age ($p < 0.0001$), years practicing medicine since completing residency ($p < 0.0001$), and BMI ($p < 0.003$). However, chi-squared and Fisher's exact tests for responses from academic medical center physicians and community-based physicians revealed no significant differences between the two groups (see Table 2). Therefore, responses from academic medical center and community-based physicians were combined in all analyses. Respondents had comparable gender representation, but were predominantly white (90.1%), worked within a teaching hospital practice (71.2%), and were trained in internal medicine without further subspecialization (50.7%). The median (interquartile range) age was 36.5 (30.5, 55.0) years. The median (interquartile range) self-reported BMI was 23.5 (21.6, 25.0) kg/m^2.

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Physicians' Impressions of Bariatric Surgery as a Treatment for Obesity

Table 2 summarizes responses to survey questions grouped by practice type (affiliated with an academic medical center versus community-based) as well as for the two groups combined. In general, respondents had favorable impressions of bariatric surgery, with 79.6% reporting "very positive" or "positive" impressions of it as a treatment for obesity, with no statistically significant differences between endocrinologists and primary care physicians. Most respondents (79.4%) reported that they had recommended gastric bypass (43.3%), banding (31.2%), or sleeve gastrectomy (5.0%) to a patient as a treatment for obesity. Only 4.4% of respondents rated death from bariatric surgery as "very likely" or "likely". However, few thought that complications from bariatric surgeries were either "very unlikely" or "unlikely" (22.1%). Furthermore, a statistically significant majority ($p = 0.04$) of those rating low likelihood of complications from sleeve gastrectomy surgeries were more experienced physicians with median (interquartile range) years in practice of 15.5 (10.5, 25.5).

Physicians' Impressions of Bariatric Surgery as a Treatment for Type 2 Diabetes

Sixty-seven percent of respondents reported positive impressions of bariatric surgery as a treatment for type 2 diabetes, with no statistically significant differences between endocrinologists and primary care physicians. However, a statistically significant majority ($p = 0.04$) of these positive respondents were more experienced physicians, with median (interquartile range) years in practice of 12 (1.3, 22). Most respondents indicated that significant diabetes improvements among obese patients would be either "very likely" or "likely" with gastric bypass (97.1%), gastric banding (82.9%), or sleeve gastrectomy (62.7%). Most respondents (81.8%) had also recommended these bariatric procedures to their obese type 2 diabetic patients. However, only 14.5% indicated that they would recommend bariatric surgery to their type 2 diabetic patients with a BMI of 30 to 34.9 kg/m^2.

Physicians' Willingness to Refer their Patients with Type 2 Diabetes to Randomized Controlled Trials of Surgical and Non-Surgical Weight Loss Interventions

Willingness to refer obese type 2 diabetic patients to randomized research studies involving bariatric surgery was 87.8% for patients with a BMI of greater than 40 kg/m^2. This willingness decreased to 64.9% for patients with a BMI of 35-39.9 kg/m^2. Willingness further decreased to 20.8% for patients with a BMI of 30-34.9 kg/m^2. As was the case for positive impressions of bariatric surgery, more experienced respondents were significantly more likely ($p = 0.03$) to be willing to recommend their obese type 2 diabetic patients to randomized research studies of bariatric surgery, with median (interquartile range) years in practice of 9.5 (1.0, 22).

Discussion

Overall, physicians surveyed had positive impressions of bariatric surgery as treatments for both obesity and type 2 diabetes. These findings did not differ by gender, age, physician specialty (endocrinology or primary care), or BMI. Thus, while patients who present for bariatric surgery will, on occasion, report that their physicians are not supportive of their interest in surgery, this appeared to be more the exception rather than the rule, at least among physicians at or around a major metropolitan area. Thus, physicians' attitudes toward bariatric surgery, in general, do not appear to be a significant barrier to surgery.

Physicians in the present study had relatively favorable attitudes towards bariatric surgery as a treatment for type 2 diabetes; however, few thought that bariatric surgery complications were unlikely. Of the physicians surveyed, those who had more years of post-residency

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experience in the treatment of type 2 diabetes, saw less risk and more value in bariatric surgery, particularly the gastric bypass procedure. These findings contrast with the more negative physician attitudes that have been reported in other studies, many of which were limited to primary care providers and did not include subspecialists (e.g., endocrinologists) who may be more likely to refer diabetic patients for bariatric surgery. In a survey of 500 family physicians in New Jersey, Ferrante and colleagues found that bariatric surgery was infrequently recommended as a treatment option for individuals with severe obesity. Knowledge about surgical interventions was poor, with only 44% of the physicians reporting that they knew much or very much about the various types of procedures.[11] Balduf and Farrell surveyed 611 family physicians and found that 35% felt that they did not have adequate resources to provide good quality long-term medical care to patients who undergo bariatric surgery, and only 45.2% felt competent to address the medical complications of obesity surgery.[15] In a survey that included primary care physicians as well as subspecialists, bariatric surgery was perceived to achieve good to excellent long-term results. However, only 15.4% of patients were referred for bariatric surgery. Lack of physician knowledge about guidelines was cited as an important barrier.[10]

Bariatric surgery complication rates have decreased considerably over the past 20 years, with a 2004 meta analysis reporting a significant complication rate of approximately 10%.[16] A more recent nationwide meta analyses of bariatric surgery outcomes from 2001-2006 showed that increases in procedure volume, laparoscopic techniques, and increased use of gastric banding procedures have reduced risk-adjusted rates of readmission with complications from 9.8% to 6.8%.[17] Given the more recent growth in bariatric surgery, as well as the increased use of the sleeve gastrectomy (which was not assessed in the present study) in recent years, additional research on postoperative complication rates is warranted, with the goal of appropriately communicating these findings to the physicians who are in position to recommend surgery to their patients.

The generally favorable responses that were seen in the present study may reflect greater acceptance of bariatric surgery by the medical community, in light of compelling data on rates of diabetes remission and further endorsement and guidance on postoperative management from professional societies. For the first time in 2009, the American Diabetes Association (ADA) acknowledged that bariatric surgery should be considered in select patients with diabetes. While the ADA fell short of endorsing bariatric surgery as a treatment option, the International Diabetes Federation (IDF) recently released a position statement that includes bariatric surgery in the treatment paradigm for obese individuals with type 2 diabetes.[14] The American Association of Clinical Endocrinologists, The Obesity Society, and American Society of Metabolic and Bariatric Surgery also have released clinical practice guidelines on the management of bariatric patients and also have commented specifically on the issue of bariatric surgery for the treatment of type 2 diabetes[18] Thus, the present results may reflect physicians' increasing awareness and perhaps knowledge about the management of bariatric surgery patients. Additionally, the more favorable response observed in the present study may also reflect the fact that endocrinologists (who frequently manage patients with type 2 diabetes both before and after surgery) were sampled, whereas the previous studies were limited to primary care providers who may have less experience with bariatric surgery.

Despite positive views towards bariatric surgery as a treatment for obesity and type 2 diabetes, physicians were far less enthusiastic about their willingness to refer patients for research studies related to bariatric surgery. This was particularly clear for patients with BMIs of 30 to 34.9 kg/m^2, which is the main focus of several ongoing clinical trials as well as current lobbying efforts of professional societies. This reluctance to refer patients

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represents an important barrier to the successful completion of studies of the efficacy of bariatric surgery for persons with type 2 diabetes and BMIs less than 35 kg/m^2.

The primary limitation of our study was the low response rate (27.4%). Those who responded may have been biased towards more favorable views of bariatric surgery compared to nonrespondents, and may therefore not be representative of Philadelphia area physicians, in general. The small sample size of this study also limits our ability to conclude that our sample is representative of the population of practitioners who see patients with type 2 diabetes. A strength of this study, however, is that respondents may better reflect physicians who care for patients with diabetes (92.9%) compared to previous studies.

In summary, this study provides novel information on physicians' attitudes toward bariatric surgery as a treatment for type 2 diabetes. While a majority of physicians appear to be reasonably well informed about the potential benefits of the surgical procedures, they appear to be reluctant to refer their patients with lower BMIs to randomized controlled trials of the safety and efficacy of bariatric surgery for type 2 diabetes. Additional research should focus on the patients' attitudes toward bariatric surgery and their willingness to participate in research studies of the issue.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Demographic and practice characteristics of PICARD, non-PICARD, and combined survey respondents.

Characteristics		PICARD N = 69	Non-PICARD N = 24	Combined N = 93
Age (years) *		37.0 ± 10.4	61.4 ± 8.4	42.7 ± 14.4
Gender (%)	Male	40.7	93.8	52.9
	Female	59.3	6.3	47.1
Race/ethnicity (%)	White	87.3	100.0	90.1
	Black	5.5	0.0	4.2
	Hispanic	1.8	0.0	1.4
	Asian	5.5	0.0	4.2
	Other	0.0	0.0	0.0
BMI (kg/m^2) †		23.1 ± 2.82	24.3 ± 1.53	23.4 ± 2.60
Primary specialty (%)	Endocrinology	27.3	31.3	28.2
	Family Medicine	1.8	0.0	1.4
	Internal Medicine non-subspecialty trained	63.6	6.3	50.7
	Internal Medicine subspecialty trained	3.6	18.8	7.0
	Other	3.6	43.8	12.7
Practice Type (%)	Solo practice	0.0	25.0	5.5
	Group practice	7.0	31.3	12.3
	Teaching hospital practice	82.5	31.3	71.2
	Other	10.5	12.5	11.0
See patients with type 2 diabetes (%)		96.8	81.0	92.9
Years practicing medicine since completing residency *		7.5 ± 10.1	29.2 ± 7.9	12.1 ± 13.2

Superscripts indicate statistically significant differences between PICARD and non-PICARD groups using Wilcoxon rank sum tests

* ($p < 0.0001$,

† $p < 0.003$).

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Table 2

Percentage of physicians endorsing specific views of bariatric surgery.

	Combined N = 93		PICARD N = 69		Non-PICARD N = 24		
Question	**n**	**%**	**n**	**%**	**n**	**%**	**p**
Obesity Treatments							
Positive impressions of bariatric surgery	74	80	57	83	17	71	0.22
Belief that complications (not death) are likely for:							
Gastric bypass surgery	48	64	40	68	8	50	0.19
Lap Band® surgery	26	35	23	39	3	19	0.13
Sleeve gastrectomy surgery	28	39	24	43	4	25	0.20
Weight loss medications	31	42	28	48	3	19	0.03
Diet and exercise	1	1	1	2	0	0	0.99
Belief that death (as complication) is likely for:							
Gastric bypass surgery	5	7	5	8	0	0	0.53
Lap Band® surgery	2	3	2	3	0	0	0.99
Sleeve gastrectomy surgery	3	4	3	5	0	0	0.99
Weight loss medications	2	3	2	3	0	0	0.99
Diet and exercise	1	1	1	2	0	0	0.99
Type 2 Diabetes Treatments							
Positive impressions of bariatric surgery as type 2 diabetes treatment	62	67	48	70	14	61	0.44
Willingness to randomly assign obese type 2 diabetics to:							
Self-directed weight loss	66	93	52	91	14	100	0.58

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	Combined N = 93		PICARD N = 69		Non-PICARD N = 24		
Question	**n**	**%**	**n**	**%**	**n**	**%**	**p**
One-on-one dietary counseling	70	99	56	98	14	100	0.99
Exercise programs	70	99	56	98	14	100	0.99
Formal weight loss programs	70	99	57	100	13	93	0.20
Dietary supplements for weight loss	13	18	8	14	5	36	0.12
Prescription weight loss medication	22	31	16	28	6	43	0.34
Meal replacements	43	61	35	61	8	62	0.99
Weight loss surgery	56	80	44	79	12	86	0.72
Diabetes education classes	71	100	57	100	14	100	N/A
Oral diabetes medication	68	96	54	95	14	100	0.99
Insulin	65	92	52	91	13	93	0.99
Other injections for diabetes	60	86	50	88	10	77	0.38
Believe that obese patients will have significant diabetes improvement with:							
Gastric bypass surgery	68	97	55	96	13	100	0.99
Lap Band® surgery	58	83	47	82	11	85	0.99
Sleeve gastrectomy surgery	42	63	31	57	11	85	0.11
Weight loss medications	13	19	11	20	2	15	0.99
Diet and exercise	45	65	39	70	6	46	0.19

Chi-squared or Fisher’s exact tests, where appropriate, were used to determine statistical differences between PICARD and non-PICARD groups.

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