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"Bariatic Surgery for Obese Adolescents"

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"Bariatric Surgery for Obese Adolescents"

by

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Abstract

With the rise of adolescent obesity, the need for treatment of this life-threatening disease is under consideration. There are several methods for the treatment of this disease, but a newer method is on the rise. Bariatric surgery for adolescents is a new techniques that has been performed on adults for years, but the effects on the younger population are still unknown. There are certain criteria and guidelines for the patients undergoing this surgery, but the results seem to be promising. Nutritional and surgical complications are of great concern, but are the chronic disease health benefits brought on by weight loss from this surgery worth the risk? Experts are divided on this topic.

Introduction

We are currently living in a land that provides for a rich and abundant life with plentiful resources for a large majority of its population. The majority of people have what they require for daily living and then some. Most have a roof over their head and food on their plate. But usually the average person has much more. Not only do they have a roof over their head, but they live in a beautiful and spacious home. Not only do they have food on their plates, they are eating massive amounts of food or merely throwing out large quantities. The times have changed and it shows in the health concerns, in comparing concerns of centuries ago to what are the pressing health concerns of today. Previously health professionals dealt with mortality and morbidity caused by infectious disease, compared with today's concern with chronic diseases such as cardiovascular diseases and diabetes. (1)

There has been an epidemiologic transition from infectious to chronic diseases. One of the major contributors for this transition is the fact that we are living in a land of plenty and obesity has come with that. Most of the chronic diseases people are plagued with today may come as a result of obesity. Statistics show that nearly two-thirds of U.S. adults are overweight with a body mass index (BMI) greater than 25 which also includes those adults that are obese (2). Nearly one-third of U.S. adults are obese with a BMI greater than 30 (2). The majority of obese adults are women with 34.7 million women being obese, where men amounting to 30.6 million (2). The method by which one determines overweight or obese status is by measuring one's BMI. This is found by dividing a person's weight in kilograms by height in meters squared [weight (kg) / height squared (m^2)] (2). Unfortunately for us, this does not only affect adults, but it affects the adolescents on a very large scale as well.

Obesity in adolescents is of great concern. Reports show that in the U.S. forms of obesity affect the lives of anywhere between 16-33% of our very own youth (2). Unhealthy weight gain because of poor diet and sedentary lifestyle is responsible for over 300,000 deaths each year (2). The annual cost to society for obesity is estimated at nearly $117 billion (2). As children become obese, they begin to suffer from severe consequences that until now were considered diseases of adulthood (3). Some of these diseases are heart disease, sleep apnea, breathing problems such as asthma, diabetes Type II, joint pain and arthritis, gastroesophageal reflux, pseudotumor cerebri, hypertension and many others. All of these diseases could be avoided or improved by decreasing BMI and losing the excess weight. These chronic diseases along with emotional and mental problems that are brought on by obesity may limit the life expectancy of many obese youth and most definitely affects their happiness during these crucial self-esteem building years. Yet it does not end there, these overweight children are much more likely to become overweight adults unless something changes.

There are options for these children to make necessary changes, unfortunately for them, they have tried most if not all of the weight-loss methods that are available, from weight management programs with dietitians to medications, with even the strangest options in between. Some could be affected by these methods, but not all of the situations are as simple to solve. For some children, this disease involves more than just exercise and eating, but goes even further into their genetic make-up. The majority of the obese children are not suffering from medical complications that cause them to gain weight, but are rather dealing with genetic factors and lifestyles that have been taught to them in the home. A new practice being done for these cases is a procedure called bariatric surgery or weight loss surgery. This procedure is most regularly done by laparoscopic gastric bypass procedures, but the FDA has recently approved the

procedure of a gastric band (4). These methods have been performed in adults for several years, but with the rise in childhood obesity it has become a new area of research and concern. The demand for this surgery is increasing with the amount of obese children, but not all of the experts are convinced on the long-term effects for these growing children. Despite the fact that there are several skeptics, with the rise of overweight and obese teens increasing every year, the physicians and hospitals must react to the call for help. Many health care professionals and hospitals are offering at least some type of procedure for this population. Many hospitals are adopting this procedure to their specialties and we will see a considerable growth in the number of these procedures performed in the next coming years.

Bariatric Surgery

Bariatric surgery has shown to be an effective weight-loss method for the obese, and the long-term side effects are minimal in adults. Therefore, the great success in adults would allow us to assume that this surgery will play a large role in the treatment of a great deal of these adolescents (5). Despite this assumption, this procedure is just beginning with children, and there are few people that have had the surgery at a young age and are old enough to look at the long-lasting effects on their overall health status. The nature of the surgery and the type of procedure raise concerns for this age group.

There are three types of bariatric surgeries that are currently performed on adolescents (6). The first is the gastric bypass. For this surgery the stomach is stapled off to create a small gastric pouch, which is usually the size of an egg. Then, 2-6 feet of the small intestine are bypassed, rerouted and connected to this stomach pouch. The laparoscopic gastric bypass method is very similarly to the gastric bypass and most commonly seen among this population. This procedure is done by making several tiny incisions in the abdomen and inserting a fiber-optic

tube with a video camera called a laparoscope. By using this instrument you can reroute the small intestine to the top of the stomach diminishing the size of the stomach considerably with little surgical damage. The last type of bariatric surgery is the laparoscopic adjustable gastric band. A silicon gastric band is applied through six incisions in the abdomen and is used on the top part of the stomach, limiting the food intake. Once this band is in the correct location it can then be tightened or loosened by a simple injection of saline. This band can also easily be removed if needs be. Many say that gastric banding is not a wise choice, due to the fact that these adolescents are still growing and becoming older, they will most likely need to have several replacements as they age (6). This is the opinion of some, yet this procedure seems to becoming increasingly popular among the younger bariatric surgery patients (6). This may be due to the easiness of changing the band or the quick recovery time because of the less invasive procedure. The effectiveness of all of these procedures still remains to be seen.

Because this is a new area of concern and risk for physicians as well as patients, not everyone is able to undergo such a treatment. A group of national pediatric obesity experts met and developed some guidelines for adolescents interested in undergoing bariatric surgery and these guidelines will continue to be revised as we learn more (6). Adolescents being considered should: have failed $\geq$ 6 months of organized weight management, have reached a physiological maturity of age thirteen in girls and fifteen in boys and their adult height, be severely obese (BMI $\geq$ 40 kg/m^2) accompanied by serious obesity-related comorbidities, show a commitment to receiving medical and psychological evaluations both before and after surgery, avoid pregnancy for at least one year following surgery, be willing to adhere to nutritional guidelines postoperatively, and have a supportive family environment (6). The criteria for receiving such a

procedure are very strict and more demanding than those for adults. Because of the lack of research in this age-group doctors are very cautious and restrictive.

Affirmative vs. Negative Opinions

Not everyone is in agreement that bariatric surgery is the answer to the obesity epidemic in our teens. Both the affirmative side as well as the negative side has valid concerns for their reasoning. By allowing young patients to have this procedure done there are several benefits. The most crucial benefit is the reduction or even ridding the obesity-related comorbities they have become ailed with. By losing weight, one is able to reduce the likelihood of getting chronic diseases. Simple weight loss can improve cardiovascular disease (CVD) and improve the blood lipid levels that increase the risk of CVD. Diabetes can also be improved by weight-loss. A study of obese patients with diabetes mellitus, that were able to lose even 5% of their current body weight and maintained that loss, showed a significant improvement in their glycosylated hemoglobin values after one year (8). This showed that long-term weight loss could have an effect on glycemic control. Weight loss brought on by this surgery is a useful therapy for diabetes management. Weight reduction also aides in the lowering of blood pressure. This is beneficial for improving hypertension in obese adolescents. Joint pain and asthma are also improved with weight loss by decreasing the amount of effort an adolescent must put worth in performing daily activities such as walking. They begin to carry around less weight and their joints and lungs do not have to do as much work.

Besides improving on comorbidities considerable improvement on their emotional and mental well being is also observed. Walter Pories, MD, President of American Society for Bariatric Surgery performed gastric bypass on two 16-year-olds and says this about their

emotional status, "The change was dramatic, in many ways. Before their surgery, they were rebellious, sexually promiscuous, and doing poorly in school. After the surgery, their grades went up and they became celibate" (4). Many obese teens suffer emotionally due to their physical state. Many receive comments in regards to their weight at school and in public settings. These teens become callused to such comments and some even quit appearing in public places all together. It doesn't take long for their self-esteem to become affected and they enter into a state of depression. "A recent survey in the Journal of American Medical Association showed obese children rate their quality of life as low as do young cancer patients undergoing chemotherapy" (9). These teens are not usually happy and deal with these feelings on a daily basis. By performing this surgery and experiencing the weight-loss, their self-esteem increases immensely. They begin partaking in social events once again and feel confident around their peers. They are able to enjoy their teen years as they should.

By treating the obesity in adolescents, we are also reducing the risk of adulthood obesity. Seventy-five percent of obese adolescents will continue on to become obese adults (5). By taking care of this disease in adolescence we are able to prevent future health complications that one may experience in adulthood. After so many years of being obese and having that disease for many years, the situation only becomes worse and they may not even make it to adulthood.

Although the support in behalf of performing this surgery on adolescents is convincing, the information against is just as strong. There are several reasons to why critics of this procedure are not willing to give in. Adolescents are notorious to resisting doctors' orders, which becomes dangerous when lifelong shots or supplements must be taken to prevent serious complications. Postoperatively, these adolescent patients will require continual follow-up with dietitian counseling as well as psychological surveillance (6). It is important for long-term health

and weight-loss to be successful that a patient be put into a multi-disciplinary education program (6). This program should involve several components, including the patient as well as both parents in order to teach about the anatomic and physiologic changes that take place after the surgery and that strict adherence to nutritional guidelines and daily physical activity are crucial to patient success (6). These educational programs should incorporate behavioral strategies to help them make these required lifestyle changes. Adolescents are very focussed on the "here and now," so helping them understand how their actions today will affect them in the future can be a difficulty. Strict adherence with this age group can be very challenging.

Nutritional inadequacies are of great concern for this population. During the life stage of adolescence, it is a period of rapid growth and increased metabolic demands (4). Malnutrition can affect normal growth and development during these puberty years, putting bariatric patients that are at high risk for malnutrition in a compromised state (4). Due to the fact that with any form of bariatric surgery, the small intestine is rerouted and is unable to absorb some of the nutrients, malabsorption is very likely. In adults that have experienced this type of surgery, approximately thirty percent of patients developed nutritional deficiencies that lead to complications such as anemia or osteoporosis (7). Some questions posed by Dr. Sue Kimm, an expert in childhood obesity at the University of Pittsburgh in regard to adolescent nutrient deficiencies are: "Will chronic nutritional deficiencies starting in childhood affect learning? Sexual development? Intestinal diseases?" (9). Some nutrient malabsorptions that concern these patients are with calcium, vitamin B12, folate, thiamin, and iron. Calcium is of great concern because bone formation for your lifetime is determined in adolescence (4). When there is a risk of malabsorption of calcium, these adolescents could experience osteoporosis at a very young age. Deficiency in any of these nutrients can cause considerable amount of damage. A

deficiency in B12 can cause severe neural damage and is irreversible. Deficiency of iron can show signs of lack of concentration and anemia (4). Fortunately though, all of these nutrients can and must be supplemented after gastric bypass and patients should consult with a bariatric dietitian who can help with the monitoring and meal planning for sufficient intake (6).

As stated previously, this procedure is new for the adolescent population, so the long-term effects are unknown. The critics of this procedure claim that the risks outweigh the benefits. Some risks besides nutrient malabsorption are surgical or postoperative complications. "According to the National Institutes of Health, ten to twenty percent of patients need additional surgery for complications such as bleeding, blood clots, bowel obstructions, hernias, and severe infections from leaks where the stomach and small intestine have been cut and sealed or reconnected" (6). Some other complications that have been found due to the surgery are pneumonia, "dumping syndrome", and obstructed intestines. In the most severe cases, it is reported that and average of one or two in every two hundred dies (9). That amounts to a one or two percent chance of dying due to the complications of this surgery. These are the statistics for adults that undergo this same procedure. They seem to be comparable to adolescent statistics thus far. The complications can be difficult and recovery is extremely painful and slow, yet adolescents that have experienced them report that they would do it again. For many the benefits outweigh the risks.

Case Studies

Many adolescents have joined the increasingly large group of bariatric surgery patients. Most of which have been successful. One such example is 16-year-old Raechel Arnold. Raechel is a junior in high school and has recently undergone laparoscopic gastric bypass surgery. Before the surgery she weighed 323 pounds and is 5'10" tall. Raechel, like any other adolescent

has dreams. Some of her dreams are to pitch on a college softball team and the other is to be a normal weight (10). She had a realization, that if things didn't change, both dreams would become out of reach. Raechel's weight problem has been a burden on her shoulders for quite some time. When she was as young as nine years old, she attended Weight Watchers with her mother. Following weight watchers she tried several other attempts at losing weight, but always seemed to fail. She has been made fun of all through her schooling years and it has affected her emotionally. After researching the weight-loss surgery she decided this was what she wanted. She said this, "I'd rather live with those [taking vitamin and mineral supplements] than what I have to endure now. I have trouble walking and breathing. I have a very low self-image. It's horrible to be heavy" (10). She has felt the heavy burden of being overweight. The surgery was successful. Five days after the operation she was on several pain medications and recovery was painful. She ended up staying in the hospital a few extra days for recovery and had little appetite. After one week, Raechel had lost fifteen pounds and was readmitted into the hospital for pneumonia in her left lung from not breathing deeply for an extended period of time. Three weeks after her successful surgery, she had lost thirty-six pounds. She continued to be sore from the surgery and has suffered slight effects from "dumping syndrome", but other than that her side effects have been mild. Her story seems to be a success. That is the short-term story of Raechel. Unfortunately, the long-term story is still being written.

Another patient that received gastric bypass surgery is Josh Mathews. Josh was seventeen years old when experienced his surgery. Before surgery Josh weighed almost four hundred pounds and is 6'2" tall. He started dieting at a very young age as well. When only five years old, he started Richard Simmons' diet plan, with the coaxing of his parents (9). As time went on, things only got worse for Josh. By middle school the piggy noises the other kids made

at him in the lunchroom forced him to hide out in the library during lunchtime. By high school, it began affecting his emotional state. He began taking Paxil for his depression and anxiety. He was screaming for help. During the following nine years after surgery, Josh got down to two hundred and fifteen pounds. Now at the age of twenty-six, some of the complications of the surgery have caught up with him. Although he is taking eight vitamin pills daily, he has developed osteoporosis due to the lack of calcium absorption during adolescent years. He is currently taking Fosamax to prevent fractures of the bone in the future. Along with that, he receives monthly shots of iron and B12 for his severe anemia. He does not regret it, but the surgery did not come without complications.

Conclusion

Obesity among American's is an increasing epidemic in our society. People's lives are affected daily by it, but especially our adolescents. Physicians and health care providers must respond to the call of action and the cry for help. There are various methods available for response. Bariatric surgery on obese adolescents is most definitely an option to help improve the lives of those affected by this disease. Although it is indeed an option and there has been considerable success in several patients, but Dr. Alan Wittgrove, medical director of the bariatric program at San Diego's Alvarado Hospital Medical Center and experienced bariatric surgeon on adolescents, reminds us that; "gastric bypass is a tool. It's not a cure" (10). There are several risks one takes by undergoing the treatment and the day they have the procedure done is the day their eating habits and lifestyle change forever. Anyone looking into this surgery must do his or her homework. They must research and discover if this surgery is indeed for them. It should not be taken lightly and parents should be a large part of the decision making process as well as the recovery and lifestyle changes. This procedure will continue and advances will be made in the

experience as well and the long-term effects of this surgery. We will soon know more and be able to determine if this indeed is a beneficial procedure for today's obese adolescents.

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