

Editorial

The Obesity Epidemic. A Problem that Starts in Childhood and Results in Premature Death

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Obesity is one of the most important health problems in the 21st century; its impact has reached pandemic proportions. As of this year the American Medical Association recognizes obesity as a major healthcare problem as well as a major public health problem and urges all physicians to treat it as such.

More than one-third of U.S. adults (35.7%) are obese.

Obesity-related conditions include heart disease, stroke, type 2 diabetes and certain types of cancer, some of the leading causes of preventable death.

The estimated annual medical cost of obesity in the U.S. was \$147 billion in 2008 U.S. dollars; the medical costs for people who are obese were \$1,429 higher than those of normal weight.

Non-Hispanic blacks have the highest age-adjusted rates of obesity (49.5%) compared with Mexican Americans (40.4%), all Hispanics (39.1%) and non-Hispanic whites (34.3%)

It is estimated that obesity affects 20 to 25 percent of the children and adolescent population.

This dramatic increase in childhood and adolescent obesity has led to a myriad of medical problems previously only seen in the adult population. As in adults, children with morbid obesity will likely fail non-surgical intervention and almost invariably will become obese adults. The optimal management of obesity in children and adolescents is still unknown. It is thought that surgical treatment could be offered to a well-selected group of patients. The adequate type and timing of the operation should be carefully evaluated before strong recommendations can be made for use in children and adolescents.

Its impact on normal physical and psychological development is dramatic [1,2]. The epidemic increase of childhood obesity in the United States has resulted in significant obesity-related co-morbid conditions that previously were only seen in the adult population [3].

Currently the surgical treatment strategies for obesity in childhood and adolescence are not well defined, and they may need to be somewhat different compared to those strategies used in the adult population. Some also suggest that the criteria for indications for weight loss surgery in children and adolescents should be different

from the National Institute of Health (NIH) recommendations for adults. New studies, however, suggest that we can use the same NIH standards for the adolescent population [4].

Although surgery is not without risk, many healthcare professionals view it as an acceptable option. It is debatable if surgical treatment of childhood and adolescent obesity should be postponed until adulthood when the individual has the legal authority to provide with informed consent and has full understanding of the possible implications of a bariatric operation. At the same time, however, adolescents are probably one of the groups of patients that suffer the most from the social and psychological problems related to obesity.

Risks of Obesity in Adolescents

Multiple, severe, co-morbid conditions have been associated with obesity in childhood and adolescence. It is thought that about 50 percent of obese children and adolescents suffer from clinically significant depression. An increase in hypertension, cardiovascular risk factors, insulin resistance (leading to diabetes), and the development of nonalcoholic fatty liver disease (NAFLD) have been closely related to obesity. Nearly all adolescents who are obese will remain obese throughout their lives without intervention. Lifestyle and dietary modifications have proved, much like in the adult population with morbid obesity, to be inadequate, rendering poor results in the long term with frequent weight regain [1-3].

The Use of Weight Loss Surgery in Adolescents

Over the past four decades, bariatric surgery has been practiced successfully and safely in adults, with a dramatic increase in popularity during the last two decades due to the advent of minimally invasive procedures [3]. However, the surgical treatment of obesity is relatively new to the field of pediatric and adolescent medicine, and the long-term implications are, to date, not well studied. The number of bariatric operations has increased more than five-fold compared to 2002. To date, the surgical treatment of obesity in adolescents is only carried out in a few institutions, mostly academic centers with high bariatric surgery volumes. These operations are carried out under strict protocols.

Bariatric surgery in adolescents, much like in adults, should be part of a multidisciplinary approach. The data suggest that the morbidity of bariatric operations performed in adolescents is significantly lower when compared to adults; however, the mortality is comparable [3,5].

The treatment goal for overweight children and adolescents is the reversal of co-morbidities and the reduction of life-threatening risk factors. However, it is not clear that reversing co-morbid conditions at such early age has an impact in the long term, compared to waiting until the second decade of life when, for the most part, normal growth and development is considered to be complete. Bariatric operations are not and should not be viewed as cosmetic procedures.

Which Weight Loss Procedure should be used in Adolescents?

There is ongoing debate whether the bariatric operations performed in adolescents should be restrictive, malabsorptive, or both. The issue of long-term nutritional complications as well as reversibility invariably comes up in every forum. As in adults, bariatric operations are not meant to be reversed, since this will almost universally lead to weight regain; however, there are a small number of patients in which reversal is required to treat complications of these procedures. At the same time, reversibility is a concept that some surgeons and parents agree is a good option for adolescents, so that when they reach the legal age to make their own decisions they will be able to decide for themselves, knowing all the facts, which procedure, if any, they are willing to accept.

To date, the most popular operations are gastric bypass and adjustable gastric banding; however, we, as many authors, believe that sleeve gastrectomy is also a very good option. In adults sleeve gastrectomy has exponentially grown and is now becoming one of the most commonly performed procedures. It is important to keep in mind that no large series or prospective data are available to scrutinize bariatric operations in adolescents. Most of the information available is from case series and a few short-term, prospective studies [6-9]. Unfortunately, long-term outcomes are not available.

Laparoscopic adjustable gastric banding (LAGB). Restrictive operations, such as adjustable gastric banding, are popular due to their low morbidity and mortality and their reversibility. It is generally accepted that gastric banding provides adequate and sustained excess weight loss; however, this weight loss is more gradual and might not be as dramatic as that achieved with gastric bypass. Gastric banding is technically less challenging than gastric bypass—the gastrointestinal anatomy is preserved intact and therefore is reversible, which makes the procedure attractive for the surgeon taking care of this young population. LAGB can be performed with very low perioperative morbidity and virtually no mortality. The safety and efficacy of LAGB has been proven in many trials in adult population [12]; however, the long-term complications of a prosthetic material being placed in the gastro esophageal junction are likely to be underreported [10]. There is a decreased trend toward the use of LAGB in the United States, the number of bands being placed in other parts of the world is declining.

Sleeve gastrectomy. Sleeve gastrectomy is an attractive option for the treatment of adolescent morbid obesity. This purely restrictive procedure has demonstrated adequate and sustained weight loss in the short and medium term [13]. The conformational change to the gastrointestinal anatomy is unlikely to cause any significant nutritional derangements. Since it is purely restrictive, it can be performed with acceptable morbidity and is technically less challenging than LAGB; however, sleeve gastrectomy is not reversible. Sleeve gastrectomy has the advantage that it can be converted to a combined or malabsorptive operation with relative ease. The major drawback of sleeve gastrectomy as a one-stage bariatric operation is that no long term (greater than 10 year) data are available either in the adult or adolescent population. 10 year follow up may not be enough. In the adult population is one of the most frequently performed procedures. The latest consensus for sleeve gastrectomy evaluates over 12,000 patients with successful outcomes.

Gastric bypass. Gastric bypass is the gold standard operation for the treatment of morbid obesity in adults; however, the conformational changes in the gastrointestinal anatomy may lead to significant nutritional deficiencies that can be potentially detrimental to growth and development in adolescents. Gastric bypass is the only bariatric procedure that has withstood the test of time—it provides better sustained weight loss in long-term follow-up when compared to restrictive operations and it also has less metabolic and nutritional complications on the long term when compared to malabsorptive operations.

Informed Consent in Adolescents

In the adolescent patient population, major issues with informed consent arise from weight loss surgery, particularly in those procedures that are not reversible. LAGB is reversible, but because the procedure utilizes an implant, it requires approval by the US Food and Drug Administration (FDA) for use in this patient population, which currently it does not have. The laparoscopic Roux-en-Y gastric bypass (LRYGB), on the other hand, does not need approval from the FDA to be used in children or adolescents, but it is not reversible and insurance coverage can be an obstacle.

Family involvement and counseling are very important steps in adolescent weight loss surgery cases. The adolescent him- or herself must be very involved and supportive of the decision to have weight loss surgery, as well as be very involved in the treatment process. In our own experience, we have found that if the parent wants the procedure done on the adolescent but the adolescent does not want the procedure, then no good results will be achieved. We must have the full cooperation of the patient to achieve good outcomes.

In conclusion; more data is needed before any of these surgical procedures can be recommended as the standard of care for children or adolescents with morbid obesity. The need is there, however, because a fair amount of these adolescent patients with obesity cannot and should not wait until they are adults to get the treatment they need [11,14].

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