



New prevention strategy could lead to caries-free generation

Martin J. Davis
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Report offers guidelines for bariatric surgery in youths



by Thomas H. Inge, M.D., Ph.D., FAAP

During the past several years, media coverage of the escalating prevalence of obesity and obesity-related disease among adolescents has made millions of Americans aware of this all too frequent problem.

Dr. Inge

As information regarding surgical weight-loss options similarly makes its way into the public domain, parents of affected adolescents increasingly are seeking the advice of practitioners.

Cincinnati Children's Hospital Medical Center began offering bariatric services to adolescents more than three years ago, and more than 50 adolescents with an average weight of 375 pounds have undergone bariatric surgery. Weight loss of 40% at one year after surgery has been achieved in these patients, who had been unable to sustain weight loss with any other measures.

In an effort to standardize approaches, a multi-institutional group of pediatric specialists recently authored a report outlining cautions and guidelines (Inge TH, et al. *Pediatrics*. 2004;114:217-223).

Presented here is a brief overview of the key issues discussed in that report.

Identifying potential surgical candidates

Bariatric surgery should not be viewed as a quick-fix, but rather as a reasonable, albeit imperfect, alternative for the most severely obese adolescents who have failed conventional non-operative weight loss attempts accessible to them.

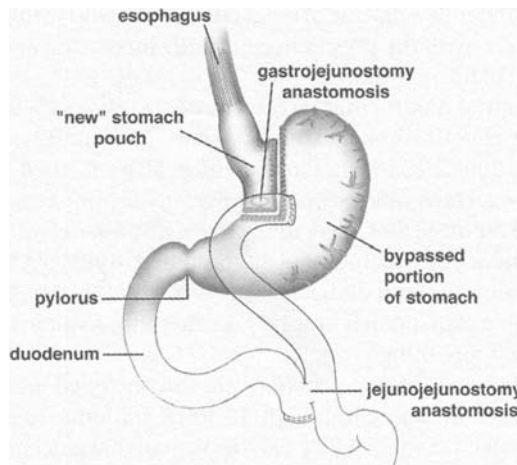


Figure 1: Roux-en-Y gastric bypass

Potential adolescent surgical candidates should: 1) have a body mass index (BMI) of 40 or greater; 2) have serious comorbid conditions (e.g., diabetes, sleep apnea) that are likely to be remedied by sustained weight loss; and 3) have a supportive family and personal maturity that will enable postoperative regimen adherence.

Patients with BMI values greater than 50 with less serious comorbid conditions (e.g., hypertension, hyperlipidemia, glucose intolerance or weight-related handicaps in activities of daily living) also may benefit significantly from a surgical approach.

Physicians should remember that bariatric surgery may be the wrong choice if the patient's ability to understand the implications of the surgical procedure is inadequate or when compliance with the required postoperative dietary regimen and lifestyle

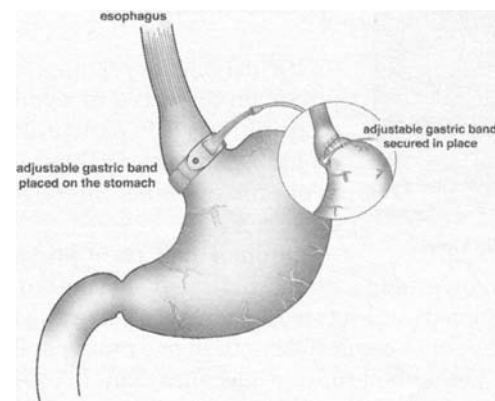


Figure 2: Adjustable gastric band

changes are unlikely due either to patient limitations or family dynamics.

Need for multidisciplinary teams

It generally is agreed that likely surgical candidates should be evaluated by multidisciplinary pediatric teams skilled in medical and psychosocial assessment of this age group. Ideally, these teams should be comprised of specialists in adolescent obesity management, psychology, nutrition, physical activity and bariatric surgery (Inge TH, et al. *J Pediatr Surg*. 2004;39:442-447; discussion 446-447).

Teams must carefully consider the indications, contraindications, risks and benefits of an operative approach on an individual basis.

The report stresses that surgery should be performed only in institutions equipped to meet the ter-

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by Martin J. Davis, D.D.S.

Discussing dental decay (caries) as an infectious disease is a relatively recent development in dentistry.

It has been known for decades that acidogenic microorganisms are responsible for the demineralization of teeth, leading to the frank cavitation of tooth surfaces. Fluoride and sealants have been extraordinarily useful preventive measures for addressing, respectively, smooth surface decay and pit and fissure decay. Distressingly, dental caries still affects at least 50% of U.S. children under the age of 12.

The caries infection typically is transmitted from mother to child during an age-defined window of opportunity. Even when another family member or childcare provider has extensive contact with the child, the mother's organisms are the infective agent.

The primary "marker" organism for caries initiation is *Streptococcus mutans*, although it alone is incapable of producing dental decay. Although *S. mutans* is essential to caries development, it requires a group of symbiotes to accomplish inception of the disease.

The window of opportunity for the infection is approximately between ages 6 months, when the first primary teeth typically erupt, and 18 months, when

all but the last four of the 20 primary teeth have erupted. It has been documented through organism DNA sampling that the mother is the primary source. It is clear that a mother who has a larger "load" of the organism, as a result of poor hygiene or higher levels of active dental disease, is more likely to transmit the infectious organism to her child. Further, there is no passive immunity during this window of opportunity for infection since the mother herself has no immunity to *S. mutans*.

A new strategy is evolving to prevent the acidogenic *S. mutans* from initially infecting the child. By replacing the *S. mutans* in the oral environment with an alternative organism, the damaging highly acidic bacteria could never colonize the child's mouth. Initial approval has been obtained for research using genetically altered, less cariogenic *S. mutans*.

The specific protocol is to provide exposure to and infection by the less acidogenic organism, which then would occupy the biological niche permanently. This would prevent the highly acidogenic subspecies from being able to colonize and ultimately produce caries in the child.

The procedure in an office setting could be as simple as swabbing an appropriately modified *S. mutans* culture into a child's mouth at perhaps 6 to 10 months of age, thereby gaining immunity to smooth surface caries for life.

Such a simple and readily accessible approach to prevention, coupled with low-level daily exposure to fluoride and the use of sealants to protect the pits and fissures of permanent teeth, could create the long sought "caries-free generation."

For now, however, that generation remains well in the future. The current reality, as noted by the Surgeon General's report, *Oral Health in America* (www.nidcr.nih.gov/NR/rdonlyres/E0ED35AB-6D4A-440E-B1CA-A80A72F95824/2123/execsumm.pdf), is that only 20% of U.S. children have sealants on the first permanent molars, and only 60% of the population has the benefit of water fluoridation. In addition, 80% of the caries are in children from the lowest socioeconomic groups, who have the poorest access to care.

If this new approach of "infection prevention" proves of value and is without unwelcome sequelae, the value to children at highest risk who have the least access to care will be extraordinary. Equally important, such an advance would more strongly support the AAP Policy *Oral Health Risk Assessment Timing and Establishment of a Dental Home*, which calls for an oral health risk assessment by 6 months to 1 year of age (*Pediatrics*. 2003;111:1113-1116).

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