

# BARIATRIC

## T I M E S

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REVIEW

## Sleeve Gastrectomy Failure: Just When We Thought We Had the Perfect Operation



by AMIR MEHRAN, MD, FACS, FASMBS, and ALAA KOLEILAT

### INTRODUCTION

Unable to decide between multiple bariatric surgery options, patients often ask one of our least favorite questions, “What if it were your own family member? What would you recommend to him or her?” to which I usually reply, “Sleeve gastrectomy even though I honestly do not know its long-term outcomes.”

Initially utilized as a risk-reduction staging strategy for the biliopancreatic diversion/duodenal switch (BPD/DS), many surgeons have now adopted sleeve gastrectomy (SG) as a stand-alone operation. Whereas short-term studies have demonstrated the safety and efficacy of SG, its long-term outcomes and durability are

unknown.<sup>1-3</sup> Its mechanism of action as well as the technical nuances of the surgery, such as bougie size calibration and proximity to pylorus, remain controversial topics.<sup>4</sup> Equally debated are the causes for failure, the most appropriate revisional surgery should it become necessary, as well as the exact definition of the term *failure*.<sup>5</sup> A plethora of literature furthermore exists on factors behind inadequate weight loss or weight regain following various bariatric surgery procedures where both physiologic and psychological aspects are extensively discussed. The latter, however, remains beyond the scope of our discussion.<sup>6</sup>

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REVIEW

## WEIGHT LOSS BEFORE WEIGHT LOSS SURGERY: What Do We Know About Dropping Those Preoperative Pounds?



by LIZ GOLDENBERG, MPH, RD, CDN

### INTRODUCTION

Weight loss surgery is growing in popularity. According to the American Society for Metabolic and Bariatric Surgery (ASMBS), there were 220,000 bariatric surgeries performed in 2008 and this number is on the rise. **[[[AUT: Please provide reference.]]]** Considering that approximately five percent of American adults meet the criteria for morbid obesity, a large pool of surgical candidates remain.<sup>1</sup> As more operations are being performed and the morbidity and mortality statistics of these surgeries remain favorable, older and sicker patients may be finding their way to the bariatric surgeon’s office. These patients are considered to be at higher risk for complications, since age and the presence of medical comorbidities, along with male gender, body mass index (BMI), and fat distribution, have been identified among the factors that negatively impact the safety of the operation. Of these factors, few can be altered except BMI and fat distribution.

Physicians can choose to operate on higher risk patients by modifying the procedure, perhaps by performing a sleeve instead of, or prior to, a Roux-en-Y gastric bypass (RYGB).

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REVIEW

## PREGNANCY IN PATIENTS WITH MORBID OBESITY: Obstetric and Anesthetic Implications

by ANASUYA VASUDEVAN MD, FRCA

### INTRODUCTION

Obesity is an epidemic in the United States, and its prevalence is on the rise. The incidence of obesity is higher in women aged at least 20 years than in men of the same age.

The prevalence of obesity in women of ages at least 20 years is 30.7 percent in non-Hispanic white, 38.4 percent in the Mexican American women, and 49 percent among non-Hispanic black.<sup>1</sup> Obesity in young

women of childbearing age does not appear to be on the decline and is one of the leading health concerns in adults.

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# SLEEVE GASTRECTOMY FAILURE: Just When We Thought We Had the Perfect Operation

by AMIR MEHRAN, MD, FACS, FASMBS, and ALAA KOLEILAT

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## ABSTRACT

Sleeve gastrectomy is gaining popularity among the bariatric surgery community. Whereas short-term studies have demonstrated the safety and efficacy of sleeve gastrectomy, its long-term outcomes and durability are unknown. A paucity of such studies exists, with a few recent reports and presentations pointing to failure rates as high as 30 percent. Similar to other bariatric surgery procedures, sleeve gastrectomy failure is likely to be multifactorial and related to a combination of technical, physiological, and psychological parameters, such as gradual sleeve dilation, hormonal adaptation, and recurrence of improper eating behaviors, respectively. Our goal is to provide an updated summary of the current bariatric literature in regard to sleeve gastrectomy failure.

## KEY WORDS

Sleeve gastrectomy, bariatric surgery, weight loss surgery, sleeve gastrectomy failure

## Continued from page 1

The exact failure rate of sleeve gastrectomy is unknown. Using the Spanish National Registry for bariatric surgery, Sanchez-Santos et al<sup>7</sup> reviewed 540 patients who had undergone SG either as a primary or staged procedure over a six-year period. The authors reported excellent overall outcomes; however, 15 percent of the subjects were considered failures based on weight recidivism in the first three years, with 3.3 percent of patients submitting to a second bariatric procedure. Younger age, lower body mass index (BMI), and thinner bougie size were attributed to improved sustainable outcomes. Similarly, Himpens, in an article by Deitel et al,<sup>8</sup> presented his early five-year results after sleeve gastrectomy at the First International Consensus Summit for Sleeve Gastrectomy in 2007. In 46 such patients, he reported a disappointing 37 and 23 percent inadequate weight loss and second procedure rates, respectively.

More recent unpublished presentations by Himpens indicate failure rates as high as 30 percent in five years.<sup>9</sup> Studying the Austrian experience with SG as a stand-alone operation, Felberbauer et al<sup>10</sup> reported a seven-percent failure rate at three years based on a cutoff of 25 percent excess

weight loss (EWL). Applying the traditional 50-percent EWL criteria, the failure rate increased to 25 percent.<sup>10</sup>

A common motif in several articles has been the effect of the initial resected fundus volume and bougie size, as well as the role of gradual gastric remnant dilation in the failure of SG. Following 120 patients who underwent SG over five years, Weiner et al<sup>11</sup> reported a 13-percent failure rate, with a resected gastric volume of less than 500cc being a predictor for such failures. In a subsequent unpublished presentation of longer term follow-up data in patients who underwent a second procedure, the same group reported prepyloric dilation, fundal extension, and improper eating behavior as causes of sleeve failure in 54, 8, and 38 percent of cases.<sup>9</sup> Similarly, in 2009, Jossart<sup>12</sup> reported improved mid-term weight-loss outcomes in his subset of patients with a larger resected gastric volume versus those with less, albeit at the price of increased short-term complications.

In contrast, however, in five SG conversions to Roux-en-Y gastric bypass (RYGB), Langer et al<sup>13</sup> demonstrated that weight regain was not due to initial inadequate gastric fundus reduction. In a different study,<sup>14</sup> the same Austrian group could not correlate radiographic evidence of

sleeve dilation with postoperative weight regain at one year after sleeve gastrectomy. Finally, a review of multiple other authors' results have found initial sleeve size and weight loss percentages to be independent of each other.<sup>1-3,4</sup>

Adding pre-emptive additional restrictive adjuncts to a SG has also been proposed in a few animal studies. Banding of the gastric remnant at the time of SG in rats prevents postoperative gastric dilation. Use of polytetrafluorethylene (PTFE) mesh in a porcine model to reinforce the gastric sleeve, furthermore, demonstrated a reduction in weight regain compared to a control SG alone group.<sup>15</sup> In a human study, Alexander et al<sup>16</sup> utilized a strip of biologic mesh tissue to wrap around the SG approximately 6cm below the gastroesophageal junction to limit food intake volume and restrict downstream dilation. At two years, the weight loss results were found to be equal to a similar cohort of gastric bypass patients and no mesh-related complications were reported. The authors, however, did not use a nonmesh SG group as control. The results, therefore, may not be related to the mesh itself, especially since it was an absorbable type. In the absence of long-term studies on the outcomes and complications of foreign body use in SG, routine utilization should not be advocated.

If purely mechanical factors cannot account for weight recidivism after sleeve gastrectomy, could physiologic and hormonal factors play a role? The concept of SG as a metabolic and not a purely restrictive operation has been discussed extensively in the bariatric literature.<sup>3,4</sup> In one such recent review, Abu-Jaish and Rosenthal<sup>1</sup> summarized some of these findings, such as markedly lower post-SG ghrelin levels, increased paracrine effects of incretins (GLP-1, GIP, PYY), and decreased insulin resistance.<sup>1</sup> Most of the literature focus has been on ghrelin or

appetite hormone. It has been postulated that SG failure is partly due to rising ghrelin levels, which may or may not be related to sleeve dilation. Bohdjalian et al<sup>17</sup> studied this hypothesis in a small subgroup of their SG patients who were followed for five years and had had ghrelin levels at various time intervals. The authors did report a small increase in ghrelin levels, especially in those who had regained weight, but the spike was very small in both groups and was found to be negligible. Small sample size, however, prevents drawing any firm conclusions. The current bariatric literature furthermore is devoid of any other studies examining long-term hormonal changes after SG.

Barring specific technical nuances, should a decision be made to convert a SG to another operation? Opinions vary as to the best option with the majority favoring DS and RYGB.<sup>4,12</sup> However, the bariatric surgery literature contains a variety of other salvage procedures as well including re-sleeve gastrectomy (RSG), adjustable and nonadjustable foreign bodies, and endoscopic attempts.

RSG has been proposed as a safe, simple second procedure with very good early results in two patients,<sup>18</sup> however, in both cases it was performed as part of conversion to DS. Himpens et al<sup>19</sup> recently presented their RSG data at the 2010 ASMBS conference. Comparing past SG patients undergoing RSG versus DS, they found the former to be feasible, but less effective in terms of weight loss at two years and that it carries a higher risk of gastric fistula, which is very difficult to treat in SG. RSG, therefore, was discouraged as a salvage procedure for weight regain.

Multiple case studies exist about adjustable banding as a salvage procedure for failed RYGB. It has also been successfully attempted by Greenstein and Jacob<sup>20</sup> in one patient

whom they believed did not have adequate restriction after the initial SG performed three years prior. However, the initial SG was performed utilizing a 60Fr bougie. Enough gastric tissue, therefore, was available to allow gastric plication over the band, which may not be the case in most SG cases. At the latest Sleeve Gastrectomy Consensus Summit, adjustable bands were not considered as an acceptable salvage procedure by any of the attendees.<sup>4</sup>

As with any other revisional surgery, conversion of SG to another procedure carries a higher risk profile and should not be attempted without a thorough repeat preoperative psychological and dietary evaluation. In our practice, we reserve revisional surgery after SG only for those patients who have not been able to reach their desired weight loss or comorbidity resolution goals in spite of maintaining the necessary lifestyle and eating behavioral changes.

**CONCLUSION**

In summary, SG as a stand-alone operation is gaining popularity among both bariatric surgeons and patients. This enthusiasm, however, has to be balanced against a paucity of data in regards to potential long-term failure rates. Similar to other bariatric surgery procedures, SG failure is likely to be multifactorial and related to a combination of technical, physiological, and psychological parameters. When discussing SG, bariatric surgeons must review these unknowns with their patients to ensure they will make informed, long-term, surgical decisions based on all available information.

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