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Early effects of bougie size on sleeve gastrectomy outcome

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Abstract

BACKGROUND: When performing sleeve gastrectomy, a bougie (32 to 60 French) is used. We evaluated 2 different bougie sizes on early postoperative outcomes and long-term weight loss.

METHODS: A 1-year prospective study was conducted on patients undergoing sleeve gastrectomy. In the first 6 months, patients had 32-French bougies (Group 1); in the second 6 months, they had 36-French bougies (Group 2).

RESULTS: We evaluated 131 patients. No intraoperative complications or mortality occurred. Postoperatively, Group 1 (n = 72) had a longer hospital stay (1.6 ± .8 vs 1.3 ± .5 days, $P = .04$) and used more Ondansetron for nausea than Group 2 (n = 59) (6.7 ± 8.0 vs 5.3 ± 4.5 mg, $P = .2$, respectively). Ten (14%) patients in Group 1 returned to the emergency department compared with 5 (9%) in Group 2. One-year percent excess weight loss was similar (73.0 ± 20.6% vs 71.1 ± 20.9%, $P = .73$, respectively).

CONCLUSIONS: The smaller bougie resulted in a longer hospital stay, with tendency toward increased nausea, more emergency department visits, and readmissions. Long-term weight loss was not affected.

Morbid obesity has become increasingly prevalent in the United States and in other countries. Recent analysis shows that approximately 6% of adults in the United States are morbidly obese.[1] Because medical management has demonstrated variable success, other methods have emerged offering surgical options as alternatives for weight loss with promising outcomes. Sleeve gastrectomy (SG) was originally constructed as the initial stage of biliopancreatic diversion with duodenal switch. Today, SG, used as a standalone operation, is becoming an effective primary weight loss procedure showing weight loss close to Roux-en-Y Gastric Bypass and biliopancreatic diversion with duodenal switch.[2] Consensus on surgical technique, in particular bougie size used during sleeve construction, has yet to be uniformly established. Parikh et al[3] showed that

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SG resulted in substantial percent excess weight loss (%EWL), near 50% at 1 year, with no significant correlation with bougie size. Our goal was to evaluate the early effects of bougie size on patient outcomes, primarily hospital length of stay (LOS), nausea, 30-day morbidity and mortality, including emergency department (ED) returns and hospital readmissions, and %EWL, using 2 different bougie sizes: 32 and 36 French.

Patients and Methods

We conducted a prospective study on all patients who were candidates to undergo elective SG in 1 year. Intraoperative and postoperative data were recorded and subsequently analyzed at the end of the study period to prevent any bias or changes in the technique of the procedure. Patients who had any secondary procedure that may affect the outcome were excluded, such as cholecystectomy or hiatal hernia repair. Also, patients who had Ondansetron (Zofran) ordered around the clock or had other antiemetic medication were excluded. The cohort was divided into 2 groups based on the size of the bougie that was used. In the first 6 months of the study period, all patients received a 32-French bougie during the SG (Group 1). In the second 6 months of the study, all patients received a 36-French bougie (Group 2). The endpoints included postoperative hospital LOS, nausea as determined by the amount of the antiemetic Ondansetron (Zofran) required, 30-day morbidity and mortality, and return to the ED. In addition, %EWL at 1 month and at 1 year was analyzed. We excluded patients whose postoperative order of antiemetic was inadvertently placed around the clock or did not have long-term data on weight loss.

The study was conducted in 2 facilities after Institutional Review Board approval: a tertiary care hospital with teaching residency program and a small community hospital. These procedures were shared between the surgical residents and the minimally invasive fellow at the tertiary hospital and by the fellow only at the small community hospital. Data were analyzed using Student *t* test and Pearson's chi-square using SPSS version 22.0 (IBM, Armonk, NY 10504). A *P* value of .05 or less was considered to indicate statistical significance.

Technique

Because the operative technique can influence the surgical outcome, we used the same procedure in all patients to minimize any variation that may influence this outcome. After gaining access to the abdominal cavity using 5 incisions and 4 trocars, the short gastric vessels were transected using Sonosurg ultrasonic device (Olympus, Tokyo, Japan) from the antrum to the fundus of the stomach. A blunt tip bougie (size: 32 French first then 36 French) was placed through the esophagus and directed into the antrum. A stapler device 4.8 mm was used to transect the stomach. We started at about 6 cm from the pylorus with a 45° angle on the stapler staying about 2 to 3 cm from the incisura angularis. The stapler then hugs the bougie without stretching of the stomach. We stayed at the edge of the gastric fat pad. The final cut was done leaving about 2 cm from the esophageal junction. We did not reinforce the staple line by suturing, inverting or placing sutures at the crossing of the staples so that we do not create a narrowing in the gastric lumen.

Results

One hundred forty-six patients underwent laparoscopic SG without a concomitant procedure in 1 year; of these, 9 patients were excluded because of having an order for around the clock Ondansetron (Zofran), and 6 patients were excluded because of inadequate long-term data. The remaining 131 patients fit the inclusion criteria. Their data were recorded and subsequently analyzed. Group 1 had 72 patients and Group 2 had 59 patients. Both groups were similar in age distribution and initial weight and body mass index. In addition, there was no difference between the 2 groups in term of race, type of insurance, or comorbidities (Tables 1 and 2)

Table 1 Preoperative data

	Group 1 (n = 72)	Group 2 (n = 59)	*P* value
Age (years)	44.0 ± 12	45.6 ± 12	.46
Weight (lbs)	289 ± 60	285 ± 59	.74
BMI (kg/m^2)	47.5 ± 8.3	46.5 ± 7.3	.73
Race			
White	70.8% (51)	79.7% (47)	.247
Black	29.2% (21)	20.3% (12)	
Insurance			
Commercial	90.3% (65)	86.4% (51)	.773
Medicare	4.2% (3)	5.1% (3)	
Medicaid	5.6% (4)	8.5% (5)	

BMI = body mass index.

Table 2 Comorbidities

	Group 1	Group 2	*P* value
Hypertension	52.8% (38)	59.3% (35)	.453
Diabetes	26.4% (19)	33.9% (20)	.35
Sleep apnea	27.8% (20)	27.1% (16)	.933
Hyperlipidemia	27.8% (20)	37.3% (22)	.246
Reflux	36.1% (26)	50.8% (30)	.09
Arthritis	29.2% (21)	25.4% (15)	.633
Asthma	15.3% (11)	11.9% (7)	.572
CAD/MI	4.2% (3)	6.8% (4)	.508
Depression	6.9% (5)	8.5% (5)	.743
Fibromyalgia	2.8% (2)	1.7% (1)	.68

CAD = coronary artery disease; MI = myocardial infarction.