

## Gastric Plication Offers Some Benefits for Obese Patients

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Early data indicate that gastric plication could become another surgical option to help very obese individuals shed excess weight, but head-to-head randomized trials comparing the new approach with other bariatric procedures, such as [sleeve gastrectomy](#) and adjustable gastric banding, are still needed.

"If it turns out to be something that is safe and effective in the long term, I would hope that it would fill a gap in the risk-benefit spectrum of what we can offer. I don't anticipate that it would replace anything that we're currently doing. It's something else that we can offer patients that might appeal to more patients," Dr. Stacy A. Brethauer said in an interview.

In a recent study with 15 patients, Dr. Brethauer and his coinvestigators demonstrated that plication of the anterior stomach or greater curvature – particularly the latter – can lead to early and significant [weight loss](#) in morbidly obese individuals ([Surg. Obes. Relat. Dis. 2011;7:15-22](#)).

At 1 year following the procedure, those in the anterior plication (AP) and greater curvature plication (GCP) groups had excess weight losses of 23.3% and 53.4%, respectively. The difference in weight loss for the two groups was marginally statistically significant ( $P = .0649$ ).

Both techniques involve folding the stomach in on itself and suturing the fold in place, creating a smaller stomach space. "The idea is that rather than removing part of the stomach, as we do with [sleeve gastrectomy](#), we are folding the stomach inward to create a narrow tubular stomach," said Dr. Brethauer, a surgeon at the Cleveland Clinic Bariatric and Metabolic Institute.

In this study, "the anterior gastric wall was folded inward from the fundus to the antrum using at least two rows of 2-0 polypropylene running suture. The greater and lesser curvatures were approximated on the anterior surface of the stomach to create an intraluminal fold," the investigators wrote.

For GCP, "the short gastric vessels were divided starting 4 cm from the pylorus and continuing up to the left crus of the diaphragm, similar to the dissection performed for sleeve gastrectomy. After the fundus and body were completely mobilized, the greater curvature was imbricated with at least 2 suture lines of 2-0 polypropylene suture to create a large intraluminal gastric fold. The fold was started just below the angle of His and continued distally to within 4 cm of the pylorus," they wrote.

"We tried the anterior plication first because it seemed less risky, as we didn't have to mobilize the

entire greater curvature of the stomach. ... [It] was the least invasive way to try the technique initially, but we did not see good weight-loss results. So we moved to the greater curvature technique to try to get more of the stomach folded in," Dr. Brethauer said.

"With the anterior plication, you can really make the anterior wall of the stomach very tight but you still have all the posterior stomach volume that is unchanged. I think that's probably why the patients didn't do as well. They still had a lot of capacity posteriorly that we weren't addressing." For this reason, the investigators are not pursuing AP in further [clinical studies](#). GCP "more closely mimics the sleeve gastrectomy in terms of how much volume reduction you get in the stomach," he explained.

GCP is performed laparoscopically, which offers fast recovery and less pain. Theoretically, the procedure is reversible. "We've not reversed any in humans. But unlike the sleeve, where you're actually removing something, this is something that could be reversible – I like to use the term revisable," said Dr. Brethauer. "If we needed to do something else down the road, we could restore the normal anatomy and convert the patient to another weight-loss procedure."

From a patient's perspective, "reversibility is an important factor. I think that has kept some patients away from pursuing the sleeve gastrectomy or the [gastric bypass](#). The sleeve, of course, is irreversible and the bypass is difficult to reverse and is perceived by patients as irreversible."

It's too early to know the true costs, but gastric plication appears to be less expensive than sleeve gastrectomy. "It can be a relatively low-cost operation because you're not using any staplers and you're not placing any devices," said Dr. Brethauer, adding that it's becoming popular in certain countries outside the United States.

Although the procedure is fairly straightforward, there is a learning curve. Dr. Brethauer noted a couple of lessons learned: A fold that is too tight can cause severe dysphagia or an obstruction of the gastric lumen, whereas a fold that is too loose, leaving a large gastric volume, would likely lead to a high rate of weight regain in the long term.

Gastric plication is a restrictive operation. "In our experience so far with the 50-plus patients that we've done, their satiety is very good. Patients are achieving rapid weight loss and are very satisfied with their early outcomes. Our clinical experience with this procedure so far has been promising," he said.

It's unknown what, if any, nutritional consequences may be associated with the procedure. "Even with sleeve gastrectomy, we don't have a lot of very good data on the long-term nutritional consequences of the sleeve. Presumably, there will be some micronutrient deficiencies with gastric plication because the overall dietary intake is lower," Dr. Brethauer noted.

"We're treating this – from a nutritional standpoint – similarly to what we do with the sleeve ... multivitamins with iron and extra supplementation as needed, based on our follow-up labs. ... There's no good data to say what effect this has on micronutrients at this point, so we're being conservative in our approach."

Nausea, a common side effect, typically resolves within several days after surgery, according to Dr. Brethauer.

Because gastric plication is an investigational procedure, patients currently must pay for it out of pocket. Patients increasingly are interested in this approach, but much more data with favorable long-term outcomes will be needed before insurers will agree to cover it, according to Dr. Brethauer.

Thus far, most patients who have undergone this investigational procedure have had a body mass index of 35-50 kg/m<sup>2</sup>. "We're trying not to go to the very high BMIs at this point until we have more experience," Dr. Brethauer said.

GCP is not yet an outpatient procedure. "We've kept patients for 1 or 2 nights in the hospital just because we are still learning about the procedure. But I think that as we get more experience with it, carefully selected patients may be able to go home [on] the same day as the operation."

The study was funded by Ethicon Endo-Surgery, and the sponsor paid for all the preoperative testing and consultations, surgery, treatment of any potential complications, as well as all the follow-up testing and visits after surgery during the study period. Dr. Brethauer is a consultant, speaker, and advisory board member for Ethicon Endo-Surgery, a speaker for Covidien, and a consultant for Apollo Endosurgery.

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