

## Reply to Gagner's Letter RE Features of MGB and OAGB

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We read with interest and some perplexity Dr. Gagner's letter regarding the Mini-One Anastomosis Gastric Bypass (MGB-OAGB) [1]. Indeed, the reader might sense that he is criticizing not the third most frequently performed bariatric operation [2], but rather an experimental surgery that a few stubborn surgeons continue to perform and casually present, despite poor results.

Actually, his criticism pertains to IFSO, where after a thorough literature review, the MGB-OAGB was endorsed [3]. Dr. Gagner states that this is "a decision based on unknown incidence of bile gastritis and its effects long-term, late occurrences of life-threatening marginal ulcers, and inadequate nutritional long-term data." It is noteworthy that the group entrusted by IFSO was a balanced mix of authors who perform the MGB-OAGB and authors who do not perform the operation.

We comment, according to published scientific evidence, on some observations by Gagner.

Bile reflux in the stomach (but not in esophagus) [4] has a known incidence following MGB-OAGB, reported in large retrospective series [5–11] and examined in the IFSO statement. Despite the flow of proximal intestinal fluid into the stomach following the loop reconstruction, a symptomatic harmful

reflux remains a rare event, ranging from 0.9 to 4% and is often transient [6, 7, 14]. Perhaps long-term effects of bile gastritis following MGB-OAGB are still unknown, but it is noteworthy that no cancer in the gastric conduit or esophagus has been found following a MGB-OAGB, 21 years after its introduction [6, 12, 13]. Indeed, Deitel found no incidence of gastric cancer 55 years after > 1000 vagotomy and pyloroplasties for peptic ulcer disease, following which bile was always found in the lower stomach [14]. Furthermore, following the Billroth II, the incidence of gastric cancer decreased [15–19].

After MGB, with its wide gastro-jejunostomy, Tolone et al. [20] demonstrated decreased gastric tube pressure and decreased gastro-esophageal reflux (unlike after the sleeve gastrectomy).

After other bariatric operations, the bariatric community should focus its attention on cancer [21, 22] and pre-cancerous lesions. Mion et al. [23] and Doulami et al. [24] demonstrated that the sleeve gastrectomy (SG) has a high-pressure channel, accounting for its incidence of esophageal reflux disease in 83.3% [24]. After SG, papers have reported an alarming incidence of de novo Barrett's lesions [25–28], ranging from 15 to > 30%. Moreover, SG has also shown weight regain when all weight-loss graphs were permitted to be published [29–31].

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Marginal ulcer (MU) remains a long-term complication following MGB-OAGB, ranging from 0.5 to 8% [6, 9, 11, 32]. A higher MU incidence, up to 16%, is reported after Roux-en-Y gastric bypass (RYGB) and also weight regain [33–37].

Nutritional issues are discussed in almost every MGB-OAGB paper, and if a technique is performed with a biliopancreatic limb > 200 cm, malabsorption could occur. As Gagner noted, Jammu found hypoalbuminemia in vegetarian MGB super-obese patients with a > 230-cm bypass, but this was rare with a bypass of 200 cm or less [10]. We reject Dr. Gagner's speculation of a resemblance of the MGB-OAGB to the BPD-DS [38]. Nutritional principles are also emphasized in the MGB-OAGB International Club's textbook, including prevention of iron, vitamin, or other micronutrient deficiency [14]. Carbajo, besides an accurate report of nutritional status in a series of 1200 OAGB patients with a cumulative follow-up of > 800 at 6–12 years, has reported protein malnutrition in 1.1% and severe iron deficiency anemia in 1.2% of patients [6]. Lee's group in a series of 1731 MGB patients with a follow-up of 15 years, reported malnutrition, protein malnutrition, and iron deficiency anemia in 2.5%, 0.8%, and 1.4% respectively [13, 37]. Malnutrition following major malabsorptive procedures such as BPD is a different issue, as Nicola Scopinaro taught us [39].

Finally, despite very rare case reports of internal hernia after MGB-OAGB, Gagner noted that comparison with the RYGB remains considerably favorable for the MGB-OAGB in this regard. Large long-term series report an internal hernia rate of 0 [6, 13] to 0.1% [10] for the single anastomosis procedure, while conversely a significant internal hernia rate of 5.4% [33] to 16% [34] is reported after RYGB. The superiority of MGB-OAGB over RYGB has been confirmed in a recent randomized trial from Spain [40].

In conclusion, if we agree that MGB-OAGB must stimulate further study, we respond to Gagner's J.K. Galbraith quote with a wise citation attributed to Gandhi: "Popular revolutions pass through four stages – first they ignore you, then they laugh at you, then they fight you, then you win." Published evidence suggests that the fourth stage is close. Furthermore, we agree with Dr. Gagner that the laparoscopic sleeve gastrectomy warrants a thorough unprejudiced review of results by an IFSO Committee, to be certain of its safety and efficacy. Interesting and relevant information will be acquired if other procedures were assessed under the same scrutiny MGB-OAGB has been evaluated during the past decade.

## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Ethical Approval** Does not apply.

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