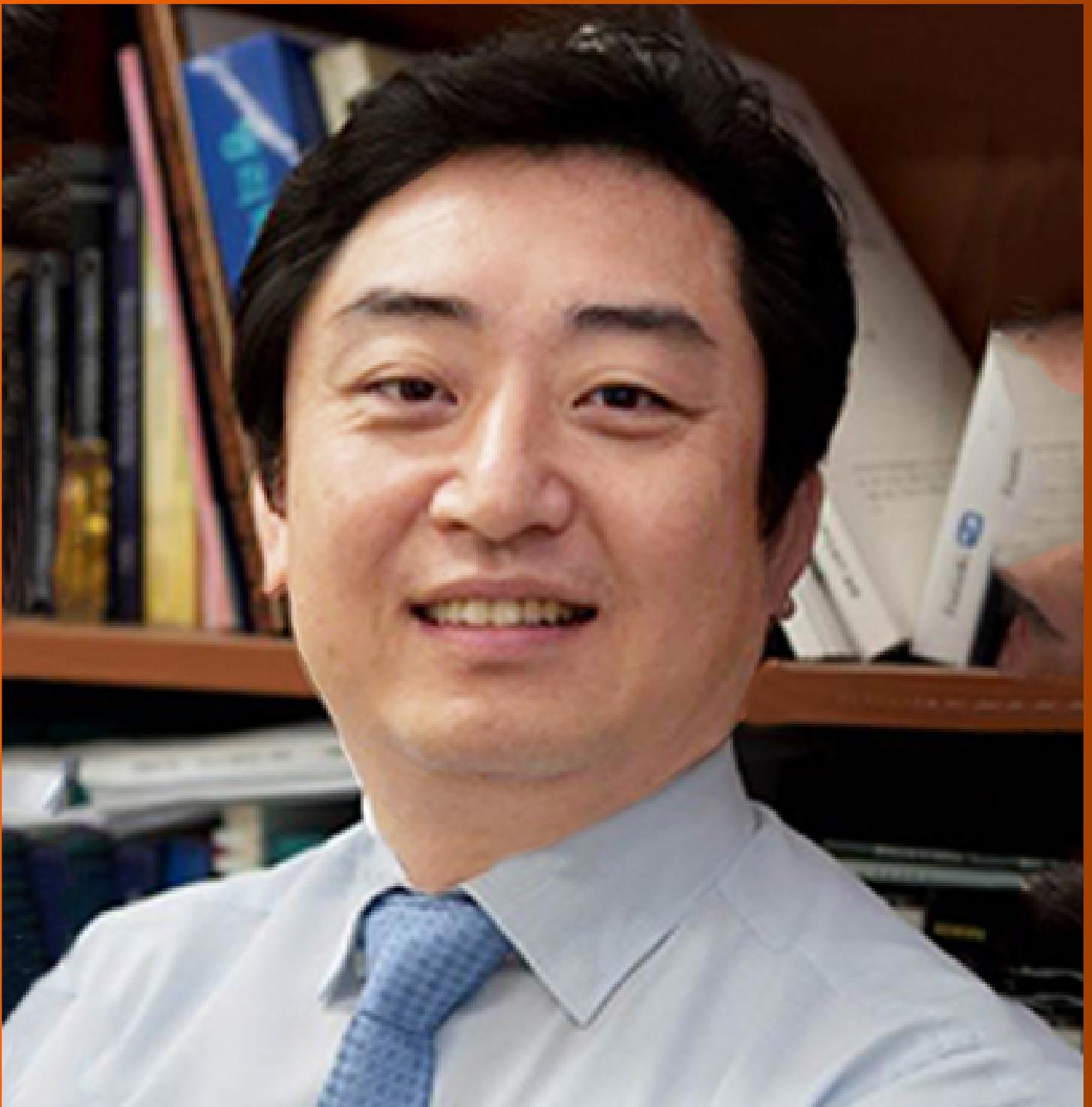


# World Journal of *Gastroenterology*

*World J Gastroenterol* 2020 March 21; 26(11): 1107-1230



**OPINION REVIEW**

- 1107 Current status of endoscopic sleeve gastropasty: An opinion review  
*Wang JW, Chen CY*

**REVIEW**

- 1113 Circulating microRNAs as non-invasive biomarkers for hepatitis B virus liver fibrosis  
*Jacob DG, Rosca A, Ruta SM*

**MINIREVIEWS**

- 1128 Similarities and differences in guidelines for the management of pancreatic cysts  
*Lanke G, Lee JH*

**ORIGINAL ARTICLE****Basic Study**

- 1142 Effect of prolonged omeprazole administration on segmental intestinal Mg<sup>2+</sup> absorption in male Sprague-Dawley rats  
*Suksridechacin N, Kulwong P, Chamniansawat S, Thongon N*
- 1156 Protective effects of panax notoginseng saponin on dextran sulfate sodium-induced colitis in rats through phosphoinositide-3-kinase protein kinase B signaling pathway inhibition  
*Lu QG, Zeng L, Li XH, Liu Y, Du XF, Bai GM, Yan X*

**Retrospective Cohort Study**

- 1172 Non-robotic minimally invasive gastrectomy as an independent risk factor for postoperative intra-abdominal infectious complications: A single-center, retrospective and propensity score-matched analysis  
*Shibasaki S, Suda K, Nakauchi M, Nakamura K, Kikuchi K, Inaba K, Uyama I*
- 1185 Preoperative albumin levels predict prolonged postoperative ileus in gastrointestinal surgery  
*Liang WQ, Zhang KC, Li H, Cui JX, Xi HQ, Li JY, Cai AZ, Liu YH, Zhang W, Zhang L, Wei B, Chen L*

**Retrospective Study**

- 1197 Landscape of BRIP1 molecular lesions in gastrointestinal cancers from published genomic studies  
*Voutsadakis IA*
- 1208 Radiomics model based on preoperative gadoteric acid-enhanced MRI for predicting liver failure  
*Zhu WS, Shi SY, Yang ZH, Song C, Shen J*

**Observational Study**

- 1221 Subtle skills: Using objective structured clinical examinations to assess gastroenterology fellow performance in system based practice milestones  
*Papademetriou M, Perrault G, Pitman M, Gillespie C, Zabar S, Weinshel E, Williams R*

**ABOUT COVER**

Associate Editor of *World Journal of Gastroenterology*, Suk Woo Nam, PhD, Professor, Department of Pathology, The Catholic University of Korea, College of Medicine, Seoul 137-701, South Korea

**AIMS AND SCOPE**

The primary aim of *World Journal of Gastroenterology* (*WJG*, *World J Gastroenterol*) is to provide scholars and readers from various fields of gastroenterology and hepatology with a platform to publish high-quality basic and clinical research articles and communicate their research findings online.

*WJG* mainly publishes articles reporting research results and findings obtained in the field of gastroenterology and hepatology and covering a wide range of topics including gastroenterology, hepatology, gastrointestinal endoscopy, gastrointestinal surgery, gastrointestinal oncology, and pediatric gastroenterology.

**INDEXING/ABSTRACTING**

The *WJG* is now indexed in Current Contents®/Clinical Medicine, Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports®, Index Medicus, MEDLINE, PubMed, PubMed Central, and Scopus. The 2019 edition of Journal Citation Report® cites the 2018 impact factor for *WJG* as 3.411 (5-year impact factor: 3.579), ranking *WJG* as 35<sup>th</sup> among 84 journals in gastroenterology and hepatology (quartile in category Q2). CiteScore (2018): 3.43.

**RESPONSIBLE EDITORS FOR THIS ISSUE**

Responsible Electronic Editor: *Yu-Jie Ma*  
 Proofing Production Department Director: *Xiang Li*

**NAME OF JOURNAL**

*World Journal of Gastroenterology*

**ISSN**

ISSN 1007-9327 (print) ISSN 2219-2840 (online)

**LAUNCH DATE**

October 1, 1995

**FREQUENCY**

Weekly

**EDITORS-IN-CHIEF**

Subrata Ghosh, Andrzej S Tarnawski

**EDITORIAL BOARD MEMBERS**

<http://www.wjgnet.com/1007-9327/editorialboard.htm>

**EDITORIAL OFFICE**

Ze-Mao Gong, Director

**PUBLICATION DATE**

March 21, 2020

**COPYRIGHT**

© 2020 Baishideng Publishing Group Inc

**INSTRUCTIONS TO AUTHORS**

<https://www.wjgnet.com/bpg/gerinfo/204>

**GUIDELINES FOR ETHICS DOCUMENTS**

<https://www.wjgnet.com/bpg/GerInfo/287>

**GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH**

<https://www.wjgnet.com/bpg/gerinfo/240>

**PUBLICATION MISCONDUCT**

<https://www.wjgnet.com/bpg/gerinfo/208>

**ARTICLE PROCESSING CHARGE**

<https://www.wjgnet.com/bpg/gerinfo/242>

**STEPS FOR SUBMITTING MANUSCRIPTS**

<https://www.wjgnet.com/bpg/GerInfo/239>

**ONLINE SUBMISSION**

<https://www.f6publishing.com>

## Current status of endoscopic sleeve gastropasty: An opinion review

Jiunn-Wei Wang, Chih-Yen Chen

**ORCID number:** Jiunn-Wei Wang (0000-0003-2534-438X); Chih-Yen Chen (0000-0003-0937-0596).

**Author contributions:** Chen CY conceived and designed the study; Wang JW reviewed the literature and wrote the manuscript; Chen CY and Wang JW made critical revisions and approved the final version of the manuscript.

**Conflict-of-interest statement:** Jiunn-Wei Wang and Chih-Yen Chen have no potential conflicts of interest to declare.

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

**Manuscript source:** Invited manuscript

**Received:** November 12, 2019

**Peer-review started:** November 12, 2019

**First decision:** February 24, 2020

**Revised:** February 27, 2020

**Accepted:** March 9, 2020

**Article in press:** March 9, 2020

**Published online:** March 21, 2020

**P-Reviewer:** Fogli L

**S-Editor:** Wang YQ

**L-Editor:** A

**Jiunn-Wei Wang**, Division of Gastroenterology, Department of Internal medicine, Kaohsiung Medical University Hospital, Kaohsiung 80756, Taiwan

**Jiunn-Wei Wang**, Department of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung 80756, Taiwan

**Jiunn-Wei Wang**, Graduate Institute of Clinical Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung 80756, Taiwan

**Chih-Yen Chen**, Division of Gastroenterology and Hepatology, Department of Medicine, Taipei Veterans General Hospital, Taipei 11217, Taiwan

**Chih-Yen Chen**, Endoscopy Center for Diagnosis and Treatment, Taipei Veterans General Hospital, Taipei 11217, Taiwan

**Chih-Yen Chen**, Faculty of Medicine and Institute of Emergency and Critical Medicine, National Yang-Ming University School of Medicine, Taipei 11217, Taiwan

**Chih-Yen Chen**, Institutional Review Board, Taipei Veterans General Hospital, Taipei 11217, Taiwan

**Chih-Yen Chen**, Chinese Taipei Society for the Study of Obesity, Taipei 11031, Taiwan

**Corresponding author:** Chih-Yen Chen, AGAF, MD, PhD, Professor, Division of Gastroenterology and Hepatology, Department of Medicine, Taipei Veterans General Hospital, 201, Section 2, Shih-Pai Road, Taipei 11217, Taiwan. [chency@vghtpe.gov.tw](mailto:chency@vghtpe.gov.tw)

### Abstract

Bariatric surgeries have been demonstrated to be safe and effective treatment options for morbid obesity patients, but operative risks and high health care costs limit their clinical application. Endoscopic bariatric therapies are emerging as valuable alternatives for patients with doubts about bariatric surgery or ineligible for it. Endoscopic sleeve gastropasty (ESG), a relatively novel technique of endoscopic bariatric therapies, has gained standing in the past few years. The safety, feasibility, repeatability, and potential for reversibility of ESG have been proven by multicenter studies. Compared to other weight loss strategies, current evidence demonstrates that ESG offers satisfactory efficacy in weight loss. Even though it is inferior to laparoscopic sleeve gastrectomy, it has lower risks of adverse events than surgical interventions and intragastric balloon within one-year follow-up. Furthermore, ESG may be the ideal weight control strategy for patients who have poor adherence to behavioral interventions. Even so, trends in decreased weight loss effect over time, post-procedure weight regain, post-procedure gut hormone alteration, and possible effects of race and ethnicity on ESG still remain undetermined due to very limited reports and very short follow-

E-Editor: Ma YJ



ups. Further clinical trials are required to validate and answer these questions.

**Key words:** Obesity; Endoscopic bariatric therapy; Endoscopic sleeve gastroplasty; Laparoscopic sleeve gastrectomy; Intra-gastric balloon; Behavioral weight loss intervention

©The Author(s) 2020. Published by Baishideng Publishing Group Inc. All rights reserved.

**Core tip:** Endoscopic sleeve gastroplasty offers satisfactory efficacy in weight loss, even though it is inferior to laparoscopic sleeve gastrectomy and has lower risks of adverse events than surgical interventions and intra-gastric balloon within one-year follow-up. Furthermore, it may be the ideal weight control strategy for patients who have poor adherence to behavioral interventions.

**Citation:** Wang JW, Chen CY. Current status of endoscopic sleeve gastroplasty: An opinion review. *World J Gastroenterol* 2020; 26(11): 1107-1112

**URL:** <https://www.wjgnet.com/1007-9327/full/v26/i11/1107.htm>

**DOI:** <https://dx.doi.org/10.3748/wjg.v26.i11.1107>

## INTRODUCTION

Growing prevalence of obesity has become a current worldwide public health epidemic in adults, children, and adolescents. The increasing trend in obesity is also of concern owing to the high comorbidity and mortality in obesity patients and the expanding economic burden for society<sup>[1,2]</sup>. Bariatric surgeries have been demonstrated to be safe and effective treatment options for morbid obesity patients, but low patient acceptance due to fear of operative risks and high health care costs limit its clinical application<sup>[3]</sup>. In this situation, endoscopic bariatric therapies (EBTs), with their characteristics of minimally invasive nature, reversibility, and high applicability, are emerging as valuable alternatives for patients with doubts about bariatric surgery or ineligible for it<sup>[4]</sup>. Endoscopic sleeve gastroplasty (ESG), a relatively novel technique of EBTs, was first published by the Mayo Clinic in the USA in 2013 and has gained standing in the past few years<sup>[5]</sup>. ESG is an incisionless transoral endoscopic procedure that uses a full-thickness endoscopic suturing system to reduce stomach volume into a tubular gastric cavity<sup>[6]</sup>. The safety, feasibility, repeatability, and potential for reversibility of ESG have been shown by several multicenter studies<sup>[7,8]</sup>. Furthermore, there are many studies making a direct comparison between ESG and other weight loss strategies<sup>[9-12]</sup>, which are separately discussed in the following sections.

## ESG VS LAPAROSCOPIC SLEEVE GASTRECTOMY

Laparoscopic sleeve gastrectomy (LSG) is the most popular restrictive bariatric surgical procedure because of its high efficiency in weight loss, reduction in obesity-related morbidities, and simple surgical technique<sup>[13]</sup>. Novikov *et al*<sup>[9]</sup> conducted an unmatched cohort study to compare the outcomes of ESG with surgical interventions. The study showed that LSG achieved greater body mass index (BMI) decrease and percent total body weight loss (%TBWL) than ESG at 12-mo follow-up (29.28% *vs* 17.57%,  $P < 0.001$ ). Furthermore, and there were no significant differences ( $P = 0.21$ ) in %TBWL between the two procedures in the subgroup of patients with BMI  $< 40$  kg/m<sup>2</sup> after multivariable adjustment. Significantly lower post-procedure length of stay (0.34 d  $\pm$  0.73 d *vs* 3.09 d  $\pm$  1.47 d,  $P < 0.01$ ) and adverse event rate (2.20% *vs* 9.17%,  $P < 0.05$ ) were both observed in ESG compared with those in LSG. The other case-match study by Fayad *et al*<sup>[10]</sup> enrolled 54 ESG and 83 LSG patients. ESG initially presented more %TBWL and BMI decrease than LSG at 30 d (9.8% *vs* 6.6%,  $P < 0.001$ ; 9.4% *vs* 6.7%,  $P < 0.001$ , respectively), but reverse outcomes in both %TBWL and BMI decrease for ESG and LSG (17.1% *vs* 23.6%,  $P < 0.001$ ; 17.2% *vs* 23.7%,  $P < 0.001$ , respectively) were shown at 6-mo follow-up. Moreover, a significantly lower rate of adverse events was observed in ESG than in LSG (5.2% *vs* 16.9%,  $P < 0.05$ ), especially in new onset gastroesophageal reflux disease (1.9% *vs* 14.5%,  $P < 0.05$ ). Both comparison

studies both demonstrated the superior weight loss effects of LSG and increased safety of ESG at 6-mo and 12-mo follow-up. In addition, the recent case-match retrospective study evaluated 6-mo quality of life after operation between 23 pairs of ESG and LSG patients with questionnaire<sup>[14]</sup>. ESG cohort reported significantly better results in gastrointestinal symptoms subdomain than LSG cohort ( $P = 0.001$ ). No ESG patients but 7 LSG patients developed postoperative gastroesophageal reflux disease and required daily proton-pump inhibitors use ( $P = 0.004$ ). Nevertheless, the current results are limited due to the retrospective nature of the studies and short-term follow-up, and they should be validated in future randomized controlled trials with longer follow-up.

---

## ESG VS INTRAGASTRIC BALLOON INSERTION

---

EBTs have several promising applications in metabolic obesity disease, and one of them is intragastric balloon (IGB), whose efficacy in body weight loss and safety were demonstrated by a systematic review and meta-analysis<sup>[15]</sup>. IGB was introduced 30 years ago and underwent several upgraded product developments but, so far, weight regain remains the major limitation because of necessary removal of the balloon at 6 mo<sup>[16]</sup>. Likewise, ESG, a new emerging EBT, presented satisfactory effects against obesity disease. One recent retrospective study reported by Fayad and his colleague compared the two EBTs (ESG and IGB)<sup>[11]</sup>. All 58 ESG and 47 IGB patients achieved meaningful body weight loss. The ESG group showed significant higher mean %TBWL than the IGB group over 12 mo post-procedure (at 12-mo follow-up, 21.3% *vs* 13.9%,  $P = 0.005$ , respectively). Notably, a decreasing trend in %TBWL was seen in the ESG group and decreasing %TBWL presented after 6 mo for the IGB group, which can be explained by balloon removal at 6 mo. There was a significantly lower rate of adverse events in the ESG group than in the IGB group (5.2% *vs* 17.0%,  $P = 0.048$ , respectively). Up to 17% of IGB patients had adverse events requiring balloon removal, and these events completely subsided after balloon removal. In contrast, ESG-associated adverse events are more likely to require medical treatment. This study provided evidence that ESG may be a more appropriate EBT than IGB in clinical practice even with limitation of selection bias.

---

## ESG VS BEHAVIORAL INTERVENTIONS

---

The United States Department of Health and Human Services has proposed lifestyle interventions, such as dietary therapy and physical activity, as first-line treatment for weight loss and maintenance since 1998<sup>[17]</sup>. One systemic review and meta-analysis revealed that behavioral interventions bring about small but significant benefits for weight loss and maintenance<sup>[18]</sup>. Certain obese patients prefer these non-surgical interventions over invasive therapies. Cheskin *et al*<sup>[12]</sup> conducted a case-matched study of 105 patients who underwent ESG and 281 patients who underwent high-intensity diet and lifestyle therapy (HIDLT) to compare weight loss between the two groups. The ESG group had a significantly greater mean %TBWL than the HIDLT group throughout the 12-mo follow-up (20.6% *vs* 14.3%, respectively). It is worth noting that ESG had no superiority in weight loss over 6 mo post-procedure compared with HIDLT in BMI > 40 kg/m<sup>2</sup> patients. In addition, a low proportion of patients (4.8%) experienced moderate-to-severe adverse events in the ESG group, and no subjects suffered from any adverse event in the HIDLT group. Consequently, ESG is likely a valuable alternative for patients who do not comply with HIDLT.

---

## CONCLUSION

---

Current evidence, summarized in [Table 1](#), indicates that ESG offers satisfactory efficacy in weight loss even if inferior to LSG, and has lower risks of adverse events compared to surgical interventions and IGB within one-year follow-up. Moreover, ESG may be the ideal weight control strategy for patients who have poor adherence to behavioral interventions. Even so, the reasons for the trends in decreased weight loss effect with time and post-procedure weight regain in ESG still remain undetermined. As gut hormones<sup>[19,20]</sup>, cytokines<sup>[21]</sup>, adipokines<sup>[22]</sup>, hepatokines<sup>[23]</sup>, and bile acids<sup>[24]</sup> play important roles in promoting weight loss, ameliorating type 2 diabetes mellitus and improving fatty liver disease, basic mechanistic insights into EBT, including ESG, are required. Since the Y-Y paradox exists between Caucasians and Asians<sup>[25]</sup>, direct extrapolation of the results obtained from Western countries may not be proper in

Eastern countries. Thus, analyses of the possible effects of race, ethnicity, and comorbidities on weight loss outcomes in each cohort become more and more imperative. With very limited reports and very short follow-ups, this novel endoscopic technique for obesity treatment, ESG, will require more large-scale randomized controlled trials in order to validate its clinical efficacy and safety in long-term follow-up.

Table 1 Summary of comparison studies for weight control strategies

Ref.	Type of study	Comparison	Subject numbers	Length of follow-up (mo)	Weight loss efficacy (%TBWL)	Adverse event rate
Novikov <i>et al</i> <sup>[9]</sup> 2018	Retrospective cohort study, case-unmatched	ESG vs LSG vs LABG	91 ESG/120 LSG/67 LABG	12	LSG (29.28%) > ESG (17.57%) > LABG (13.30%), <i>P</i> < 0.001	LSG (9.17%) > LABG (8.96%) > ESG (2.20%), <i>P</i> < 0.05
Fayad <i>et al</i> <sup>[10]</sup> 2019	Retrospective cohort study, case-matched	ESG vs LSG	54 ESG/83 LSG	6	LSG (23.6%) > ESG (17.1%), <i>P</i> < 0.001	LSG (16.9%) > ESG (5.2%), <i>P</i> < 0.05
Fiorillo <i>et al</i> <sup>[14]</sup> 2020	Retrospective cohort study, case-matched	ESG vs LSG	23 ESG/23 LSG	6	LSG (18.8%) > ESG (13.4%), <i>P</i> = 0.03	GERD symptoms LSG (30.7%) > ESG (0%), <i>P</i> = 0.004
Fayad <i>et al</i> <sup>[11]</sup> 2019	Retrospective cohort study, case-matched	ESG vs IGB	58 ESG/47 IGB	12	ESG (21.3%) > IGB (13.9%), <i>P</i> = 0.005	IGB (17.0%) > ESG (5.2%), <i>P</i> = 0.048
Cheskin <i>et al</i> <sup>[12]</sup> 2019	Retrospective cohort study, case-unmatched	ESG vs HIDLT	105 ESG/281 HIDLT	12	ESG (20.6%) > HIDLT (14.3%), <i>P</i> < 0.001	ESG (4.8%) > HIDLT (0.0%)

ESG: Endoscopic sleeve gastroplasty; GERD: Gastroesophageal reflux disease; HIDLT: High-intensity diet and lifestyle therapy; IGB: Intra-gastric balloon; LABG: Laparoscopic adjustable gastric banding; LSG: Laparoscopic sleeve gastrectomy; %TBWL: Percent total body weight loss.

## REFERENCES

- 1 **Flegal KM**, Kit BK, Orpana H, Graubard BI. Association of all-cause mortality with overweight and obesity using standard body mass index categories: a systematic review and meta-analysis. *JAMA* 2013; **309**: 71-82 [PMID: 23280227 DOI: 10.1001/jama.2012.113905]
- 2 **Wu WC**, Lee WJ, Yeh C, Chen SC, Chen CY. Impacts of Different Modes of Bariatric Surgery on Plasma Levels of Hepasocin in Patients with Diabetes Mellitus. *Reports* 2019; **2**: 24 [DOI: 10.3390/reports2040024]
- 3 **Welbourn R**, Pournaras DJ, Dixon J, Higa K, Kinsman R, Ottosson J, Ramos A, van Wagensveld B, Walton P, Weiner R, Zundel N. Bariatric Surgery Worldwide: Baseline Demographic Description and One-Year Outcomes from the Second IFSO Global Registry Report 2013-2015. *Obes Surg* 2018; **28**: 313-322 [PMID: 28822052 DOI: 10.1007/s11695-017-2845-9]
- 4 **Hill C**, Khashab MA, Kalloo AN, Kumbhari V. Endoluminal weight loss and metabolic therapies: current and future techniques. *Ann N Y Acad Sci* 2018; **1411**: 36-52 [PMID: 28884820 DOI: 10.1111/nyas.13441]
- 5 **Abu Dayyeh BK**, Rajan E, Gostout CJ. Endoscopic sleeve gastroplasty: a potential endoscopic alternative to surgical sleeve gastrectomy for treatment of obesity. *Gastrointest Endosc* 2013; **78**: 530-535 [PMID: 23711556 DOI: 10.1016/j.gie.2013.04.197]
- 6 **Lopez-Nava G**, Galvão MP, da Bautista-Castaño I, Jimenez A, De Grado T, Fernandez-Corbelle JP. Endoscopic sleeve gastroplasty for the treatment of obesity. *Endoscopy* 2015; **47**: 449-452 [PMID: 25380508 DOI: 10.1055/s-0034-1390766]
- 7 **Lopez-Nava G**, Sharaiha RZ, Vargas EJ, Bazerbachi F, Manoel GN, Bautista-Castaño I, Acosta A, Topazian MD, Mundi MS, Kumta N, Kahaleh M, Herr AM, Shukla A, Aronne L, Gostout CJ, Abu Dayyeh BK. Endoscopic Sleeve Gastroplasty for Obesity: a Multicenter Study of 248 Patients with 24 Months Follow-Up. *Obes Surg* 2017; **27**: 2649-2655 [PMID: 28451929 DOI: 10.1007/s11695-017-2693-7]
- 8 **Sartoretto A**, Sui Z, Hill C, Dunlap M, Rivera AR, Khashab MA, Kalloo AN, Fayad L, Cheskin LJ, Marinos G, Wilson E, Kumbhari V. Endoscopic Sleeve Gastroplasty (ESG) Is a Reproducible and Effective Endoscopic Bariatric Therapy Suitable for Widespread Clinical Adoption: a Large, International Multicenter Study. *Obes Surg* 2018; **28**: 1812-1821 [PMID: 29450845 DOI: 10.1007/s11695-018-3135-x]
- 9 **Novikov AA**, Afaneh C, Saumoy M, Parra V, Shukla A, Dakin GF, Pomp A, Dawod E, Shah S, Aronne LJ, Sharaiha RZ. Endoscopic Sleeve Gastroplasty, Laparoscopic Sleeve Gastrectomy, and Laparoscopic Band for Weight Loss: How Do They Compare? *J Gastrointest Surg* 2018; **22**: 267-273 [PMID: 29110192 DOI: 10.1007/s11605-017-3615-7]
- 10 **Fayad L**, Adam A, Schweitzer M, Cheskin LJ, Ajayi T, Dunlap M, Badurdeen DS, Hill C, Paranjani N, Lalezari S, Kalloo AN, Khashab MA, Kumbhari V. Endoscopic sleeve gastroplasty versus laparoscopic sleeve gastrectomy: a case-matched study. *Gastrointest Endosc* 2019; **89**: 782-788 [PMID: 30148991 DOI: 10.1016/j.gie.2018.08.030]
- 11 **Fayad L**, Cheskin LJ, Adam A, Badurdeen DS, Hill C, Agnihotri A, Dunlap M, Simsek C, Khashab MA, Kalloo AN, Kumbhari V. Endoscopic sleeve gastroplasty versus intra-gastric balloon insertion: efficacy, durability, and safety. *Endoscopy* 2019; **51**: 532-539 [PMID: 30841009 DOI: 10.1055/a-0852-3441]
- 12 **Cheskin LJ**, Hill C, Adam A, Fayad L, Dunlap M, Badurdeen D, Koller K, Bunyard L, Frutchey R, Al-Grain H, Kahan S, Hedjoudje A, Khashab MA, Kalloo AN, Kumbhari V. Endoscopic sleeve gastroplasty versus high-intensity diet and lifestyle therapy: a case-matched study. *Gastrointest Endosc* 2020; **91**: 342-349.e1 [PMID: 31568769 DOI: 10.1016/j.gie.2019.09.029]
- 13 **Benaiges D**, Más-Lorenzo A, Goday A, Ramon JM, Chillarón JJ, Pedro-Botet J, Flores-Le Roux JA. Laparoscopic sleeve gastrectomy: More than a restrictive bariatric surgery procedure? *World J Gastroenterol* 2015; **21**: 11804-11814 [PMID: 26557004 DOI: 10.3748/wjg.v21.i41.11804]
- 14 **Fiorillo C**, Quero G, Vix M, Guerriero L, Pizzicannella M, Lapergola A, D'Urso A, Swanstrom L, Mutter D, Dallemagne B, Perretta S. 6-Month Gastrointestinal Quality of Life (QoL) Results after Endoscopic Sleeve Gastroplasty and Laparoscopic Sleeve Gastrectomy: A Propensity Score Analysis. *Obes Surg* 2020 [PMID: 31965488 DOI: 10.1007/s11695-020-04419-1]
- 15 **ASGE Bariatric Endoscopy Task Force and ASGE Technology Committee**, Abu Dayyeh BK, Kumar

- N, Edmundowicz SA, Jonnalagadda S, Larsen M, Sullivan S, Thompson CC, Banerjee S. ASGE Bariatric Endoscopy Task Force systematic review and meta-analysis assessing the ASGE PIVI thresholds for adopting endoscopic bariatric therapies. *Gastrointest Endosc* 2015; **82**: 425-438.e5 [PMID: 26232362 DOI: 10.1016/j.gie.2015.03.1964]
- 16 **Genco A**, López-Nava G, Wahlen C, Maselli R, Cipriano M, Sanchez MM, Jacobs C, Lorenzo M. Multi-centre European experience with intragastric balloon in overweight populations: 13 years of experience. *Obes Surg* 2013; **23**: 515-521 [PMID: 23224509 DOI: 10.1007/s11695-012-0829-3]
- 17 Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults--The Evidence Report. National Institutes of Health. *Obes Res* 1998; **6** Suppl 2: 51S-209S [PMID: 9813653]
- 18 **Dombrowski SU**, Knittle K, Avenell A, Araújo-Soares V, Sniehotta FF. Long term maintenance of weight loss with non-surgical interventions in obese adults: systematic review and meta-analyses of randomised controlled trials. *BMJ* 2014; **348**: g2646 [PMID: 25134100 DOI: 10.1136/bmj.g2646]
- 19 **Lee WJ**, Chen CY, Chong K, Lee YC, Chen SC, Lee SD. Changes in postprandial gut hormones after metabolic surgery: a comparison of gastric bypass and sleeve gastrectomy. *Surg Obes Relat Dis* 2011; **7**: 683-690 [PMID: 21996600 DOI: 10.1016/j.soard.2011.07.009]
- 20 **Lee WJ**, Chen CY, Ser KH, Chong K, Chen SC, Lee PC, Liao YD, Lee SD. Differential influences of gastric bypass and sleeve gastrectomy on plasma nesfatin-1 and obestatin levels in patients with type 2 diabetes mellitus. *Curr Pharm Des* 2013; **19**: 5830-5835 [PMID: 23768444 DOI: 10.2174/13816128113198880010]
- 21 **Chen CY**, Lee WJ, Asakawa A, Fujitsuka N, Chong K, Chen SC, Lee SD, Inui A. Insulin secretion and interleukin-1 $\beta$  dependent mechanisms in human diabetes remission after metabolic surgery. *Curr Med Chem* 2013; **20**: 2374-2388 [PMID: 23531221 DOI: 10.2174/0929867311320180008]
- 22 **Chen YC**, Inui A, Chang ES, Chen SC, Lee WJ, Chen CY. Comparison of gut hormones and adipokines stimulated by glucagon test among patients with type II diabetes mellitus after metabolic surgery. *Neuropeptides* 2016; **55**: 39-45 [PMID: 26621498 DOI: 10.1016/j.npep.2015.11.002]
- 23 **Huang HH**, Yeh C, Chen JC, Lee TH, Chen SC, Lee WJ, Chen CY. Does bariatric surgery influence plasma levels of fetuin-A and leukocyte cell-derived chemotaxin-2 in patients with type 2 diabetes mellitus? *PeerJ* 2018; **6**: e4884 [PMID: 29910974 DOI: 10.7717/peerj.4884]
- 24 **Huang HH**, Lee WJ, Chen SC, Chen TF, Lee SD, Chen CY. Bile Acid and Fibroblast Growth Factor 19 Regulation in Obese Diabetics, and Non-Alcoholic Fatty Liver Disease after Sleeve Gastrectomy. *J Clin Med* 2019; **8**: E815 [PMID: 31181641 DOI: 10.3390/jcm8060815]
- 25 **Chen CY**, Tsai CY. From endocrine to rheumatism: do gut hormones play roles in rheumatoid arthritis? *Rheumatology (Oxford)* 2014; **53**: 205-212 [PMID: 23882111 DOI: 10.1093/rheumatology/ket255]



Published By Baishideng Publishing Group Inc  
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA  
Telephone: +1-925-3991568  
E-mail: [bpgoffice@wjgnet.com](mailto:bpgoffice@wjgnet.com)  
Help Desk: <http://www.f6publishing.com/helpdesk>  
<http://www.wjgnet.com>

