

Endoscopic sleeve gastropasty (ESG) in Asia Pacific



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SURGERY CENTER INDORE,
INDIA (MBRSC)**



**NAPOLI
2023**

DISCLOSURE

Mohit Bhandari MD

Consultant to:

- Johnson and Johnson
- Medtronic
- Bariatric Solution
- Intuitive Surgical
- Karl Storz
- Stryker
- Apollo Endo-surgery
- Pentax
- Olympus

Mathias Fobi MD FACS, FICS, FACN

- Founding President, Bariatec Corporation

Manoel Galvao Neto

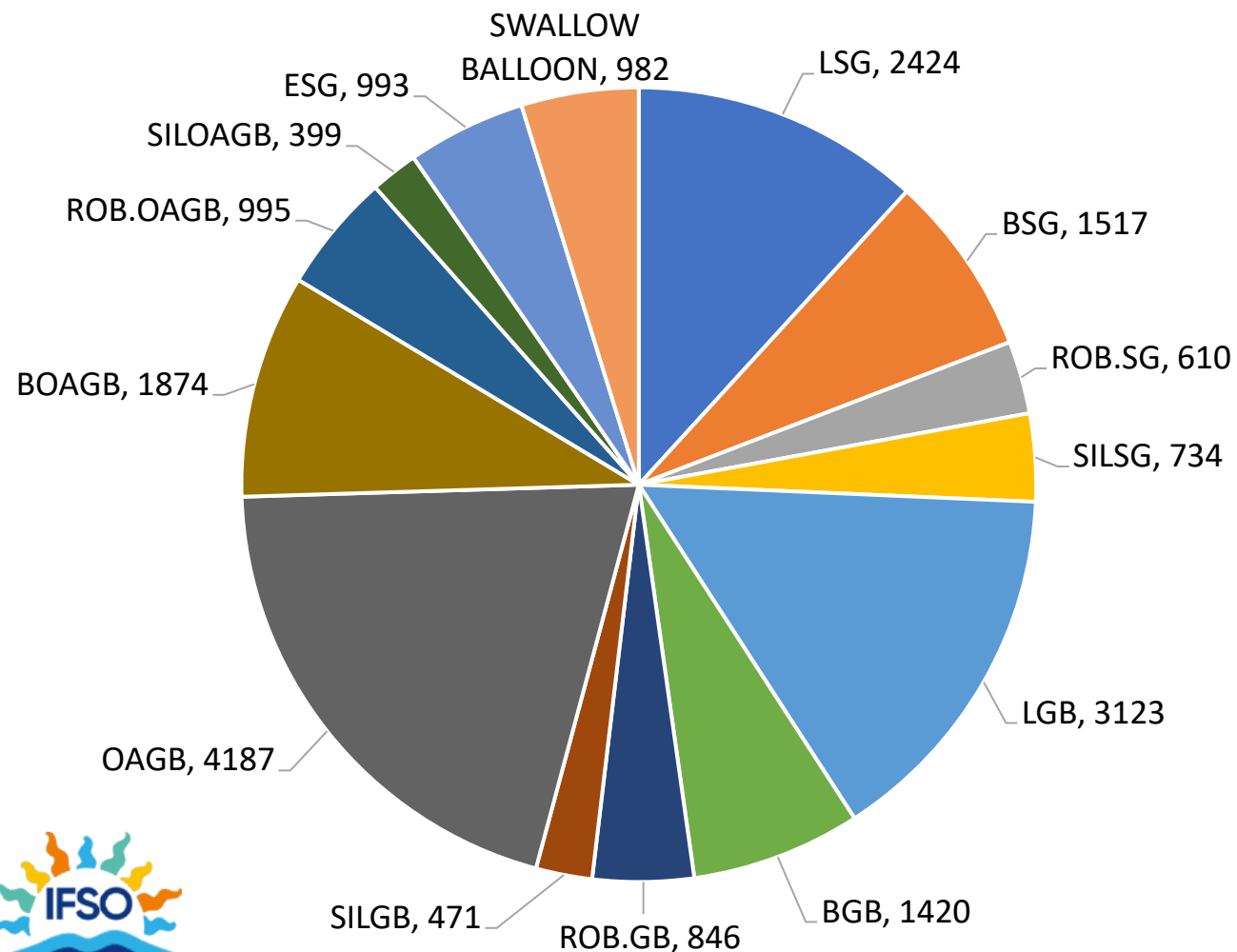
- Director Bariatric Endoscopy

BARIATRIC PROCEDURES MIX DISCLOSURES MBRSC

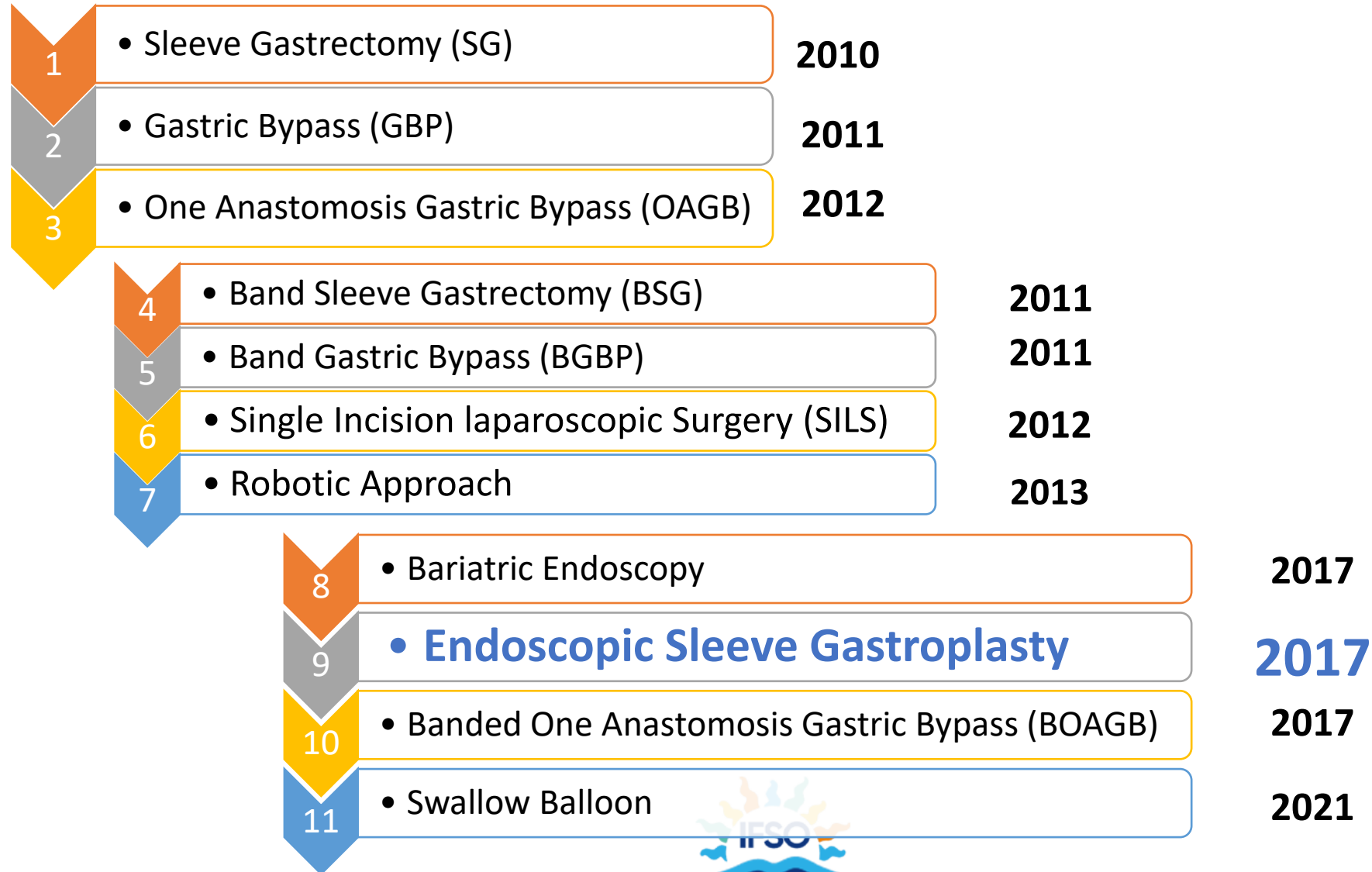
January 2010 – July 2023

CASE MIX
DISCLOSURE
2010- 2023

TOTAL	22080
LSG	5285
LGB	5860
OAGB	7455
ESG	993
SWALLOW BALLOON	982
Other	1505



Planned and Metered growth of the MOHAK program



Dr Manoel Galvao Neto

Clinical Director- Dept Bariatric Endoscopy
Mohak Bariatric and Robotic Surgery Center
Indore- Mumbai- Hyderabad- Bangaluru





Obesity: Conquered Together!



Dr. Mohit Bhandari



Dr. Arya Sharma

Dr. Mohit Bhandari (India) and Dr. Arya Sharma (Germany), renowned medical experts, have combined their expertise to offer a comprehensive and personalized approach to treat obesity. With cutting-edge treatments, nutritional guidance, and unwavering support, they will help you achieve your weight loss goals and lead a healthier, happier life.

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The number of patients seeking bariatric surgery has remained low despite its effectiveness.



A survey conducted in 2018 by the Asia–Pacific Metabolic and Bariatric Surgery Society involving 18 Asia–Pacific countries showed a low frequency of bariatric surgery (overall, 0.057%) even with a large population of eligible obese patients.



The main reason for the reduced acceptance includes concerns regarding safety and risk with the procedure, side effects, cost, and irreversibility.

Endoscopic sleeve gastropasty (ESG) is an alternative nonsurgical treatment option for obesity

ESG is a safe and effective option for weight loss in a multi-ethnic Asian population

Background and Aim

Endoscopic sleeve gastroplasty (ESG) is an alternative nonsurgical treatment option for obesity. However, most studies on the utility and efficacy of ESG are derived from the Western population. It is unknown if ESG elicits similar results in Asians with different fat distribution, sociocultural customs, and dietary practices. Our study aims to assess the safety and efficacy of ESG among a multi-ethnic Asian population.

Methods

We reviewed 35 patient records who underwent primary ESG for obesity at our unit. We followed a U-shaped suture pattern. Our primary outcome was to assess technical feasibility and safety. The secondary outcome was to determine the percentage total body weight loss (TBWL) at the last follow-up.

Results

The mean \pm SD age and body mass index were 43.6 ± 11.3 years and 34 ± 4.9 kg/m², respectively. The majority were female (57%) and of Chinese ethnicity (51%). The procedure was technically successful in all patients. We used an average of five sutures (range, 4–7), and the mean \pm SD procedure time was 65 ± 10 min. No major complications occurred, and the average length of stay was 1 day. Twenty-one patients completed 3 months of follow-up, and 10 patients 6 months. The mean \pm SD TBWL at 3 and 6 months were $14.5 \pm 4.8\%$ and $16.2 \pm 4.9\%$, respectively. We observed improvement in diabetes mellitus (87%), fatty liver (86%), and hypertension (58%) during the follow-up.

Conclusion

ESG is a safe and effective option for promoting weight loss in a multi-ethnic Asian population. ESG-induced weight loss may improve obesity-related comorbidities.

Safety and early efficacy of endoscopic sleeve gastroplasty (ESG) for obesity in a multi-ethnic Asian population in Singapore

Ravishankar Asokkumar ✉, Chin Hong Lim, Ai Shan Tan, Phong Ching Lee, Alvin Eng, Jeremy Tan, Gontrand Lopez-Nava, Sonali Ganguly, Jason Chang, Christopher Khor

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Published online 2020 Mar 21. doi: [10.3748/wjg.v26.i11.1107](https://doi.org/10.3748/wjg.v26.i11.1107)

Current status of endoscopic sleeve gastroplasty: An opinion review

[Jiunn-Wei Wang](#) and [Chih-Yen Chen](#)

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Abstract

Go to: ►

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

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.

International remote collaboration enabled inaugural endoscopic sleeve gastroplasty in Japan

Akira Dobashi, Kohei Uno, Hiroaki Matsui, Hiroto Furuhashi, Toshiki Futakuchi, Shunsuke Kamba, Shingo Ono, Naoto Tamai, Atsushi Watanabe, Christopher J. Gostout, Kazuki Sumiyama 

First published: 25 August 2021 | <https://doi.org/10.1002/deo2.31>

Abstract

Obesity causes multiple conditions such as type 2 diabetes, cardiovascular disease, and so on, and an intervention is needed for controlling weight and improving metabolic syndrome. However, the effectiveness of lifestyle interventions and pharmacotherapy are restrictive for losing weight. Endoscopic sleeve gastroplasty (ESG) was developed as a new therapy, picking the best of both medication and surgery, less invasive and more effective. Recently, ESG is gradually spreading in Western countries, but there is Case report doesn't need conclusion/result for Japanese patients. We herein reported the first clinical case of ESG in Japan.



Given the situation of the pandemic of COVID-19, we could not invite a proctor from Western countries and receive the instruction of the device setting and maneuver face to face. Thus, we conducted the training for device setting, maneuver, and operation under a web-based international remote collaboration. Eventually, we completed ESG without an adverse event. We could prove this web-based proctor system was useful through the introduction of ESG in Japan. The international remote collaboration could become a new normal even in the endoscopy field post-COVID-19 era.

ESG into Japan recruiting a web-based international collaboration to overcome the limitations of in-person traditional training and proctoring for a new procedure along with the absence of prior clinical suturing experience.



Systematic reviews and meta-analyses

Efficacy and Safety of Endoscopic Sleeve Gastroplasty: A Systematic Review and Meta-Analysis

Abdellah Hedjoudje^{*}, Barham K. Abu Dayyeh[‡], Lawrence J. Cheskin[§], Atif Adam^{||}, Manoel Galvão Neto^{¶ #}, Dilhana Badurdeen^{*}, Javier Graus Morales^{**}, Adrian Sartoretto^{††}, Gontrand Lopez Nava^{§§}, Eric Vargas^{*}, Zhixian Sui^{‡‡ |||}, Lea Fayad^{*}, Jad Farha^{*}, Mouen A. Khashab^{*}, Anthony N. Kalloo^{*}, Aayed R. Alqahtani^{¶¶ ###}, Christopher C. Thompson^{***}, Vivek Kumbhari^{*}  

ESG to produce clinically significant weight loss that was reproducible among independent centers and to have a low rate of severe adverse events. ESG appears to be an effective intervention for patients with obesity.

Background & Aims

Bariatric surgery is the most successful treatment for obesity. However, many patients avoid surgery due to its perceived invasive nature and fear of complications. Endoscopic sleeve gastroplasty (ESG) is a seemingly less invasive option for patients with obesity. We performed a systematic review and meta-analysis to evaluate the efficacy and safety of ESG in adults.

Methods

We searched MEDLINE, Embase, Web of Science, and Cochrane Library through July 2019. Investigated outcomes included the percent total body weight loss (TBWL), body mass index reduction, percent excess weight loss (EWL), and adverse events.

Results

We extracted data from 8 original studies, published from 2016 through 2019, which included a total of 1772 patients. At 6 months, mean TBWL was 15.1% (95% CI, 14.3–16.0), mean decrease in body mass index was 5.65 kg/m² (95% CI, 5.07–6.22), and mean excess weight loss was 57.7% (95% CI, 52.0–63.4). Weight loss was sustained at 12 months and 18–24 months with a TBWL of 16.5% (95% CI, 15.2–17.8) and 17.2% (95% CI, 14.6–19.7), respectively. The pooled post-ESG rate of severe adverse events was 2.2% (95% CI, 1.6–3.1%), including pain or nausea requiring hospitalization (n= 18, 1.08%), upper gastrointestinal bleeding (n=9, 0.56%), and peri-gastric leak or fluid collection (n= 8, 0.48%).

Endoscopic Sleeve Gastroplasty for Obesity – First Indian Experience: Case Series and Review of Literature

Nitin Jagtap, Rakesh Kalapala, Abhishek Katakwar¹, Santosh Darishetty², D Nageshwar Reddy

Departments of Medical Gastroenterology and ¹Metabolic and Bariatric Surgery and ²Anesthesiology, Asian Institute of Gastroenterology, Hyderabad, Telangana, India

ABSTRACT

Introduction: In India, obesity affects >135 million and leads to nearly 5.8 million deaths per year. Some of the unmet need in the management of obesity can be fulfilled by endoscopic therapies such as endoscopic sleeve gastroplasty (ESG). **Methods:** In this case series, we report our preliminary experience of ESG in three obese patients. We recorded baseline demographic data, total procedural time, adverse events, and percentage total body weight loss (%TBWL) up to 20 weeks. **Results:** All three patients were male with a median age of 29 years (range 26–39) with a median body mass index of 34.28 kg/m² (range 32.60–37.13). A total of four full-thickness and additional three submucosal sutures were applied in each patient. There were no adverse events. The median total procedural time was 105 min (range 90–150). All patients were discharged within 48 h. The median percentage total body weight loss (%TBWL) at 12 weeks was 12.02 (range 10.85–13.33) and at 16 weeks was 14.23 (range 13.84–14.62). The maximum follow-up so far is 20 weeks (one patient) with %TBWL of 16.38. **Conclusion:** In our preliminary experience, we conclude that ESG is safe, effective and requires shorter hospital stay. In short-term follow-up, there is adequate weight loss without major adverse events.

KEYWORDS: Endoscopic sleeve gastroplasty, endoscopic therapy, metabolic syndrome, obesity, weight loss

INTRODUCTION

Obesity epidemic in India is associated with nearly 5.8 million deaths per year.^[1] This is majorly contributed by the change in the dietary habits and lifestyle accompanied by increased abdominal, liver, and pancreatic fat, along with higher body fat and lower lean mass in ethnic Indians compared to the Western population.^[1] Noncommunicable diseases are estimated to be responsible for 40% of all hospital admissions and 35% of all outpatient visits in 2004 in India.^[1,2] Among these, half of diabetes and one-fourth of cardiovascular disease patients are overweight or obese.^[1,3]

The currently accepted intervention to reduce obesity includes dietary and lifestyle changes or laparoscopic bariatric surgery. The former is effective in small subset of patients that too in the short term, while bariatric surgery though effective is associated with its inherent problems such as patient's reluctance, cost, adverse

events, nutritional issues, and difficult reversibility. It is estimated that only <1% of population who qualifies for bariatric surgery will undergo the surgical procedures.^[3,4] This unmet need could be fulfilled by minimally invasive endoscopic therapies, which are safe, effective, and easily reversible.

Endoscopic metabolic and bariatric interventions are usually divided into gastric interventions and small bowel interventions.^[5] Gastric interventions include intragastric balloons, aspiration therapy, and endoscopic gastroplasty. Small bowel interventions include gastrointestinal bypass

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	DOI: 10.4103/jde.JDE_51_18

Asia pacific has 47 countries in total of which a handful of countries like INDIA,CHINA, SINGAPORE,AUSTRALIA ,NZ, JAPAN,MALAYSIA,INDONESIA,SOUTH KOREA,PHILIPPINES,THAILAND perform ESG



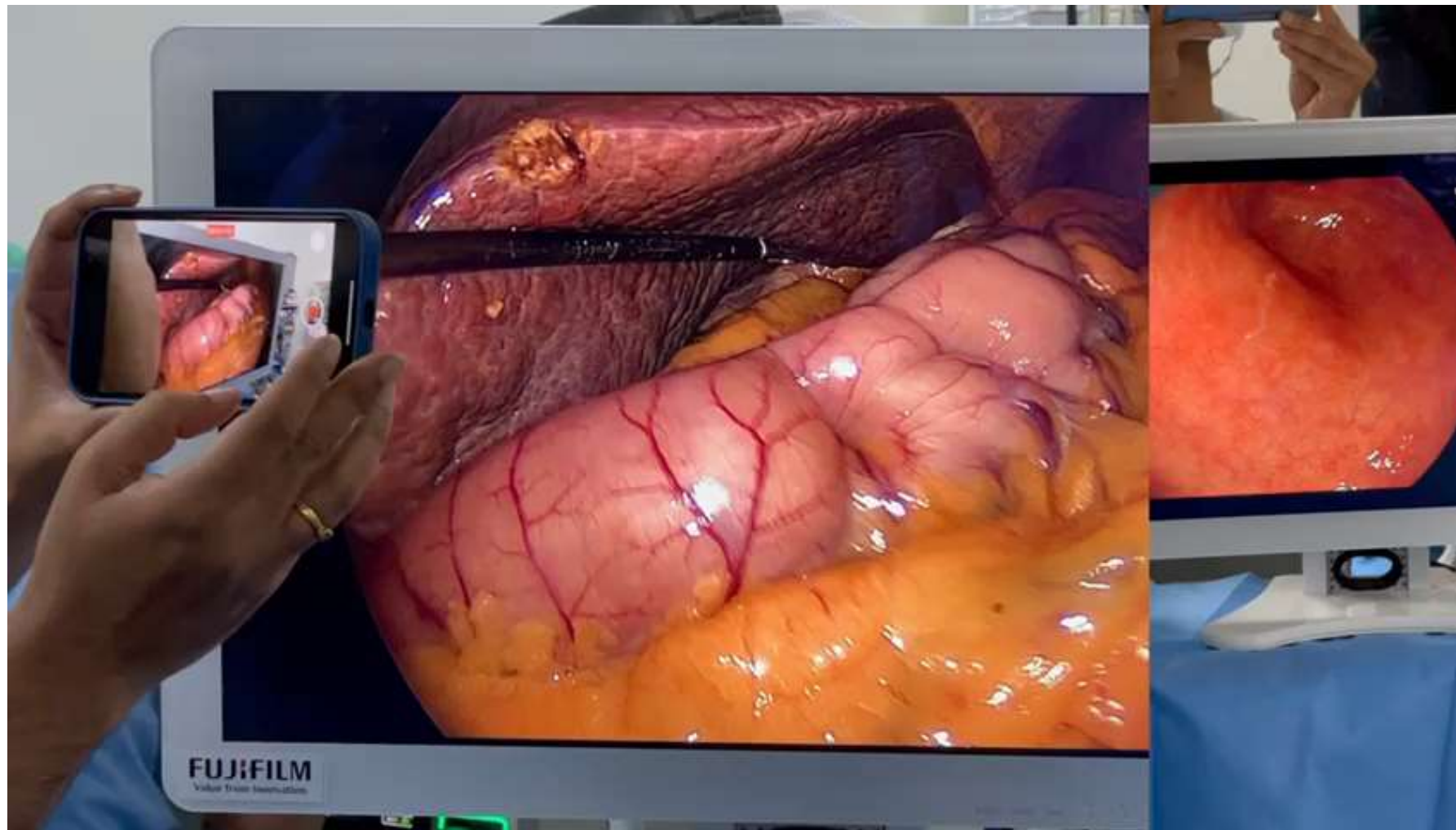
ESG NUMBERS IN APC IN

2019-5000

2020-7500

Growth of ESG in the APC is expected to rise in coming years as the prevalence of obesity continues to rise and as the availability and affordability of the procedure improves.





Physiology of ESG



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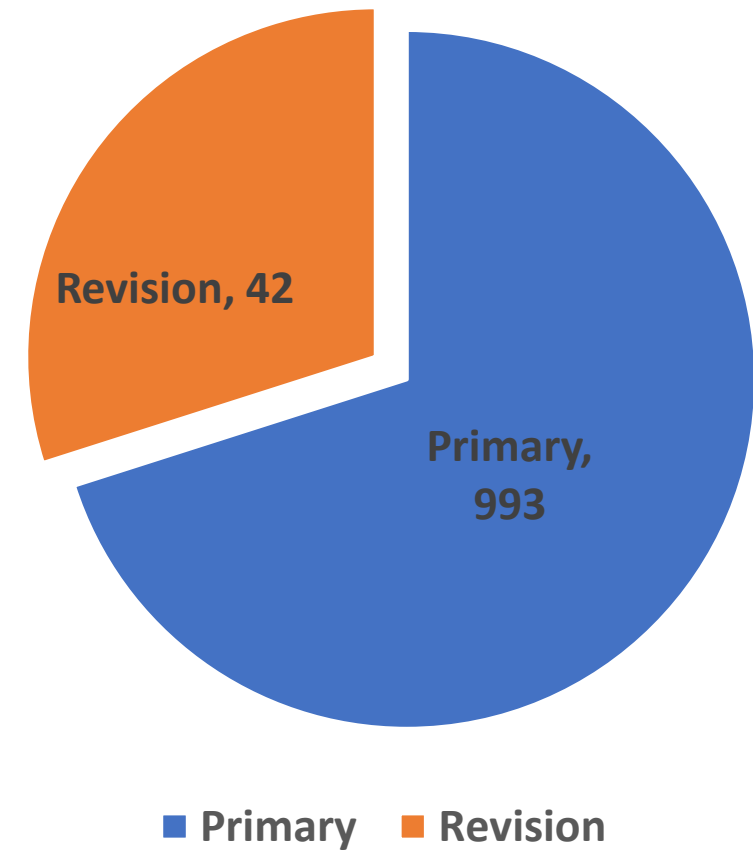
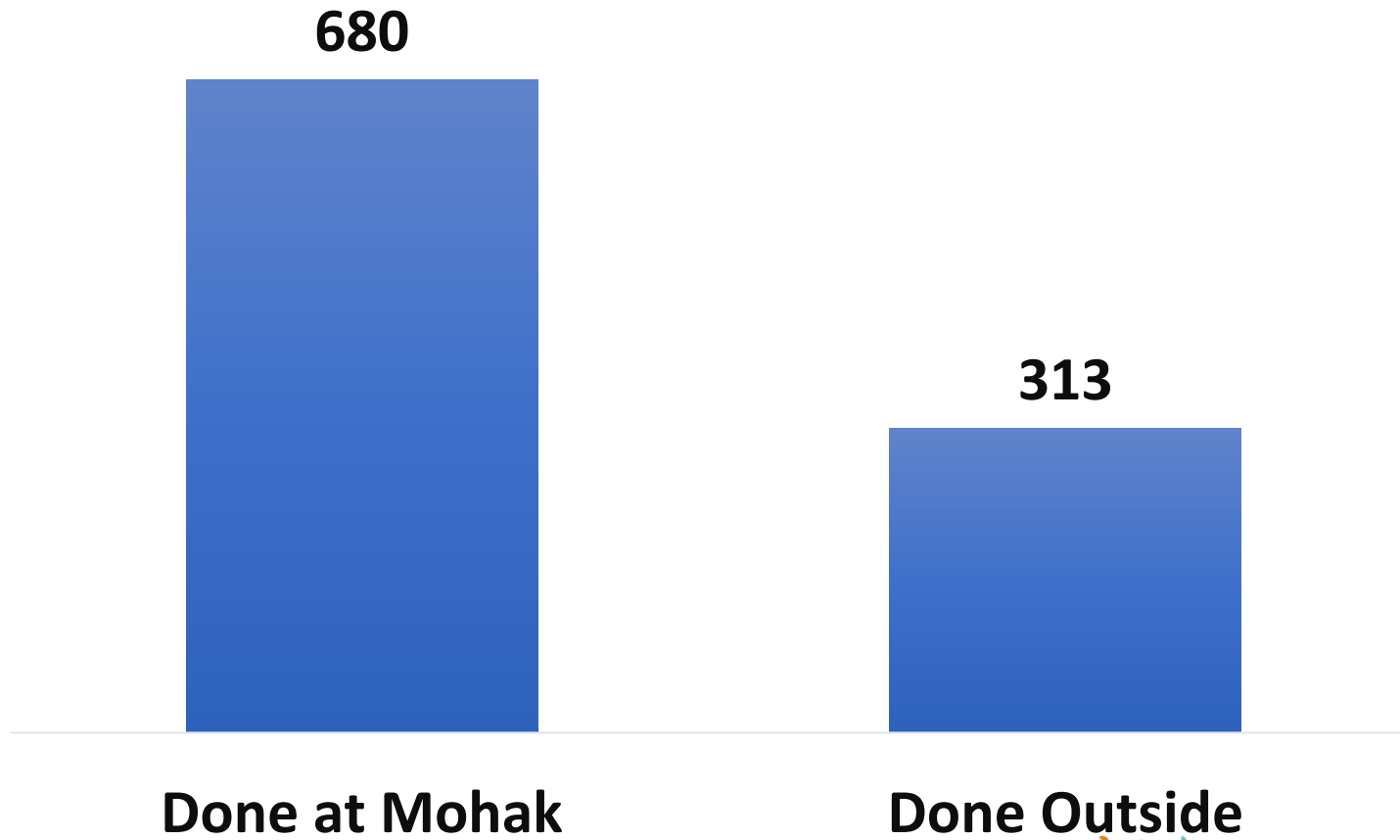
Courtesy of Prof Abu Dayyeh

Physiology of ESG - Delayed Gastric Emptying



Endoscopic Sleeve *Data: Mohak*

TOTAL = 993 (ESG)

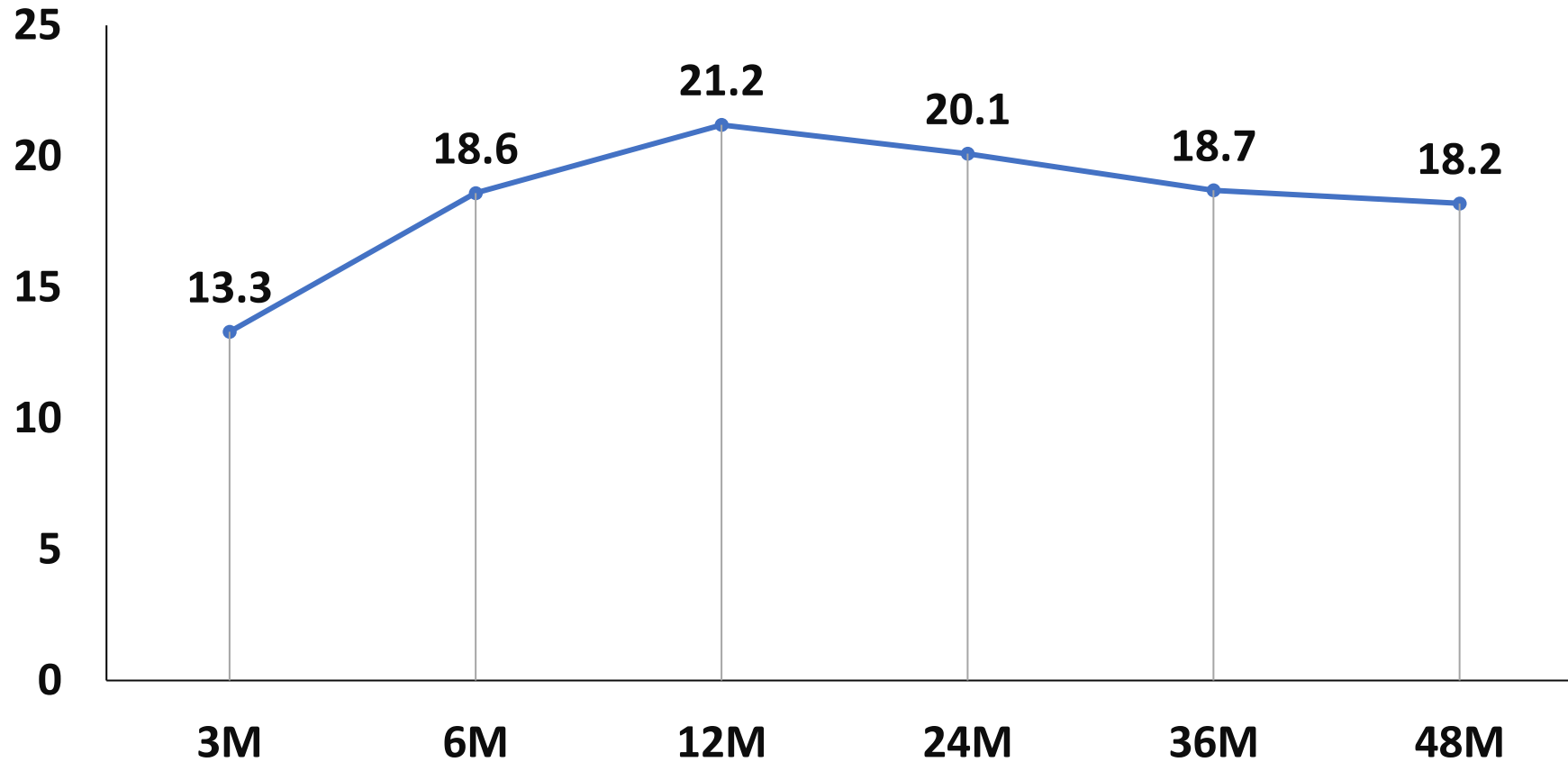


**Endoscopic Sleeve Data:
Mohak**

	ESG (n=993)
Mean age, y (SD)	41.02(12.8)
Mean HT, (SD)	1.61(8.43)
Male/female, n (%)	435/558 (43.8 %/56.2%)
Mean WT, Kgs (SD)	90.44(16.3)
Mean BMI, kg/m2 (SD)	34.42(4.86)

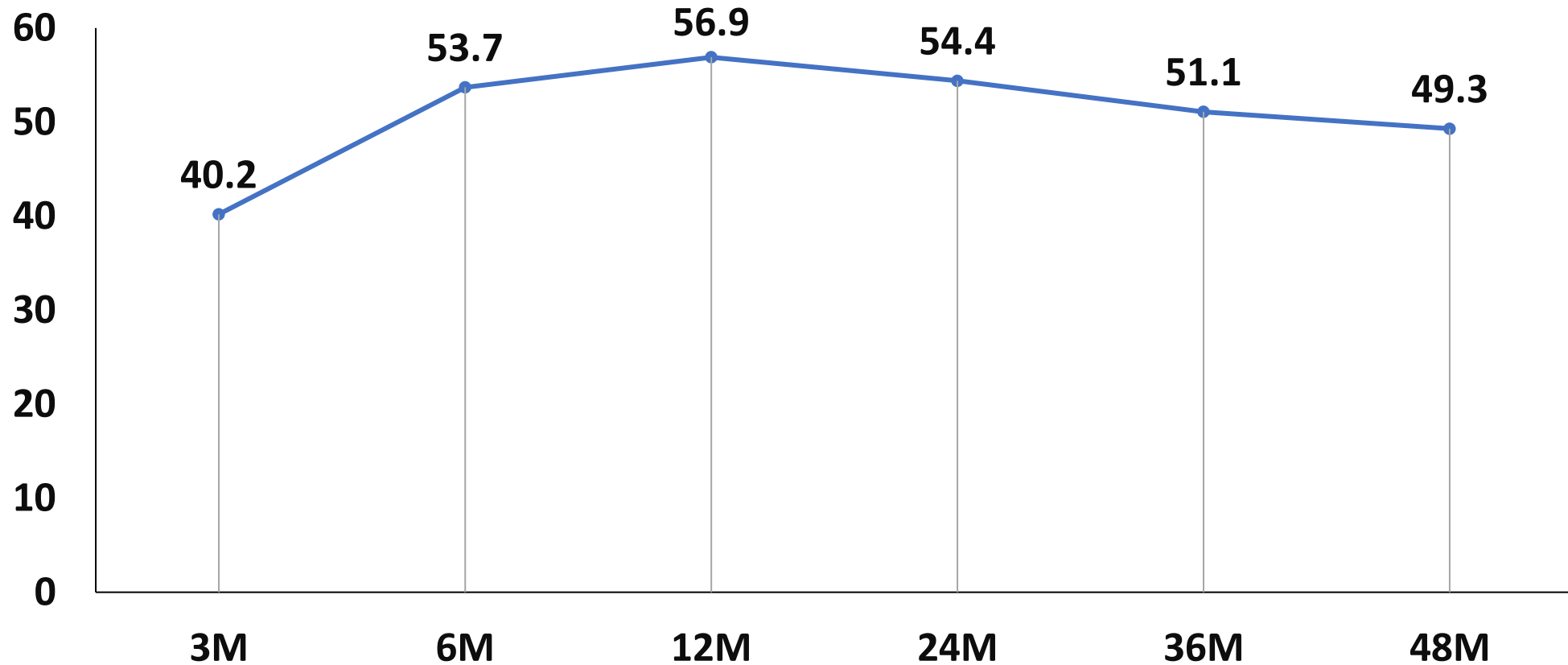
Endoscopic Sleeve *Data: Mohak*

%TWL (Primary = 993)



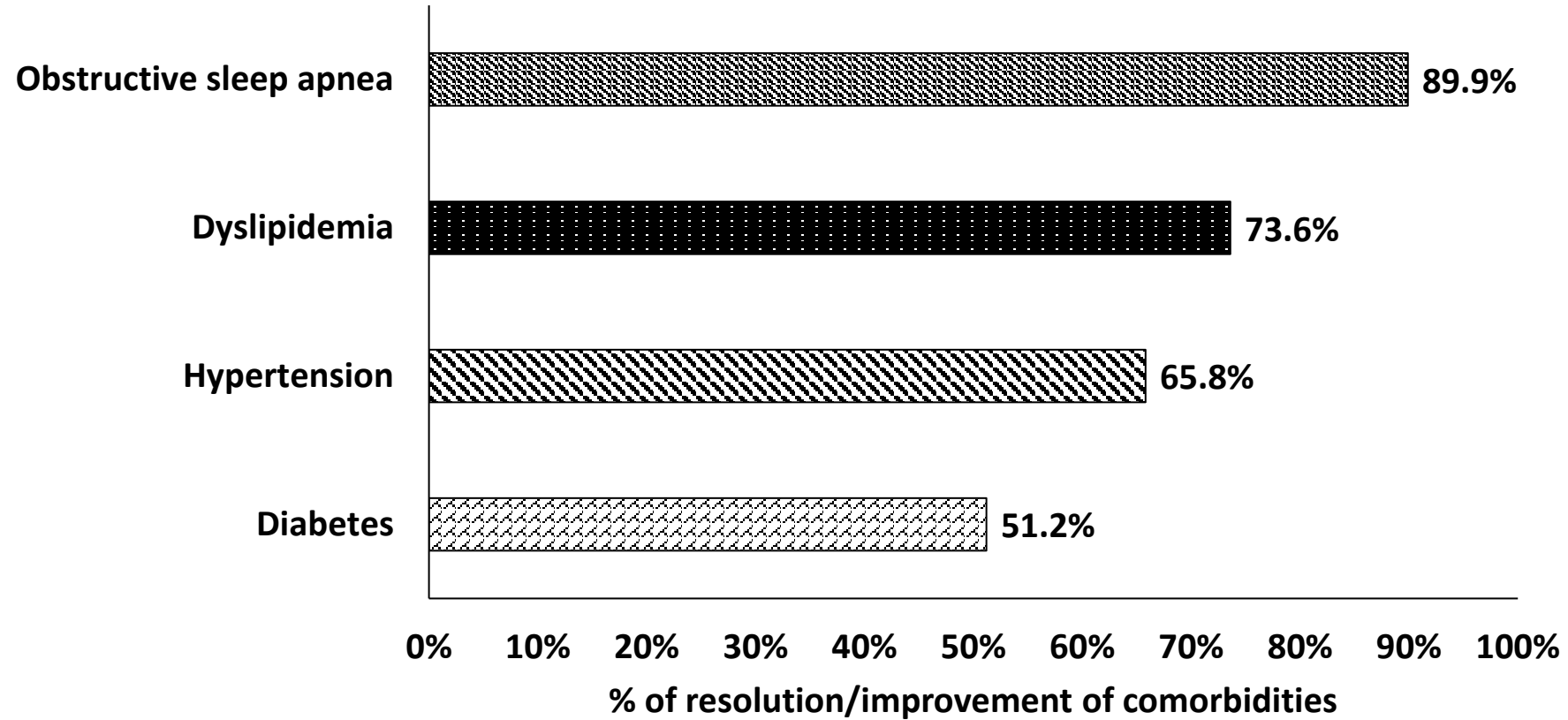
Endoscopic Sleeve *Data: Mohak*

%EWL (Primary = 993)



Endoscopic Sleeve *Data: Mohak*

Resolution/improvement of comorbidities



Dig_Endosc. 2019 Aug 8. doi: 10.1111/den.13508. [Epub ahead of print]

Endoscopic Sleeve Gastroplasty is an effective and safe minimally invasive approach for treatment of obesity: First Indian experience.

Bhandari M¹, Jain S¹, Mathur W¹, Kosta S¹, Neto MG¹, Brunaldi VO¹, Fobi M¹.

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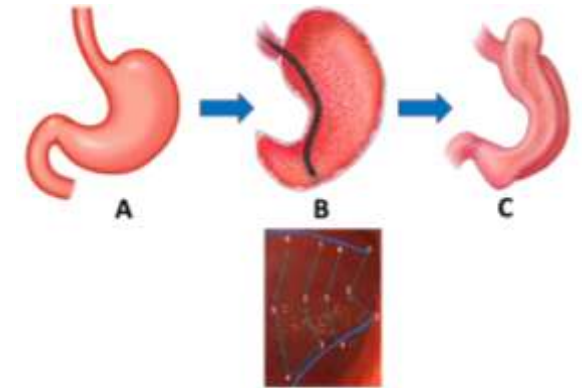
Abstract

OBJECTIVES: Endoscopic Sleeve Gastroplasty (ESG) is gaining acceptance as a non-surgical option for the treatment of obesity. However, its role is still not consolidated for all populations and the ideal indications are yet to be determined. We aimed to study the efficacy and safety of ESG in Indian patients.

METHODS: We conducted a single-center retrospective study of obese patients who underwent consecutive ESG at our tertiary care center. Data on weight loss and adverse events at 1, 3, 6, and 12 months were collected and analyzed.

RESULTS: Fifty-three patients underwent ESG from March 2017 to October 2018. Eighty one percent patients were female (43/53). The mean baseline age and BMI were 40.54 ± 13.79 years and 34.78 ± 5.20 kg/m², respectively. Mean duration of procedure was 68.96 ± 11.19 minutes. Immediate postoperative complications included mainly epigastric pain (45.2%) and nausea (22.6%) but there was no serious adverse event. The average %TWL was 8.26%, 11.96%, 14.25%, and 19.94% at 1, 3, 6, and 12 months, respectively. Eighty-eight percent of patients achieved >15%TWL at 12 months. Younger patients (<30 years old) and female patients had greater %TWL at 12 months ($p=0.01$ and $p=0.021$, respectively). Last 18 procedures were significantly faster than the first 35 cases ($p=0.01$).

CONCLUSIONS: ESG is effective and safe at promoting weight loss in Indian population. Young age and female gender are related to better outcomes. This article is protected by copyright. All rights reserved.





Four-year outcomes for endoscopic sleeve gastroplasty from a single centre in India

Bhandari M, Kosta S, Reddy M, Mathur W, Neto MG, Bhandari M. Four-year outcomes for endoscopic sleeve gastroplasty from a single centre in India. *J Min Access Surg* [cited 2022 Sep 8]

Bhandari et al. 2022

**Published
manuscript on:**

***Four-year outcomes for
Endoscopic Sleeve Gastroplasty from
a single center in India***

Abstract

Background: Bariatric endoscopy has emerged for non-surgical treatment of obesity, providing a treatment option for weight loss and associated comorbidities. Outcomes of endoscopic sleeve gastroplasty (ESG) of 12 months have been published by our team and there is a need for longer follow-up period understanding the effects of ESG techniques.

Aim: This report emphasises on weight loss pattern in follow-up time points and monitors the post-procedure improvement in comorbidities with minimum 4-year follow-up of patients undergoing ESG at a single academic centre in India.

Subjects and Methods: This was a prospective cohort study. All procedures were performed by the same surgeon. Patients with a body mass index of $>30 \text{ kg/m}^2$ (or >27 with comorbidities) underwent ESG for treatment of obesity. Patients were systematically followed yearly after their procedure. Data collected on the primary outcome and secondary outcomes were analysed and presented.

Results: 612 patients (69.3% female) with a mean age of 40.70 ± 12.66 years and mean body mass index of $34.30 \pm 5.05 \text{ kg/m}^2$ underwent ESG. Out of 612 patients, follow-up rates for a 1-2-3 and 4 years were 93.1%, 90.2%, 81.7% and 81.9%, respectively. The mean percentage total body weight loss was 18.19% (95% confidence interval [CI]: 17.72–18.57) and %EWL was 49.30% (95% CI: 48.91–49.68) with 90% of participants-maintaining a percentage of total weight loss of $\geq 5\%$ and 70% of patients maintaining an EWL of $\geq 25\%$ at 4 years, respectively. Resolution/improvement of comorbidities was 51.2% cases of T2DM, 65.8% cases of hypertension, 73.6% cases of dyslipidaemia and 89.9% remission were in obstructive sleep apnoea. No patient required an emergency intervention, and there was no mortality or significant morbidity.

Conclusions: This study shows acceptable results with ESG at 4 years in our unit. Regular monitoring by a multidisciplinary nurtures weight loss, resolution or improvement of comorbidities and improvement of quality of life with low perioperative complications. There is a need for more reports with this approach to determine the amount and duration of weight loss outcome and medical intervention.

As this procedure continues to develop there are several areas that can be addressed to improve outcomes, including device improvements, technique standardization, patient selection, personalized medicine, combination therapies, and training standardization.

Study of **Learning curve** and clinical outcome is an **essential concern** for standardization of **emerging procedures**

It is important to learn not only how to perform these procedures safely but also how to troubleshoot device failures and deal with complications that may arise during and after the procedures

- **Trainees should start by learning to assist prior to performing the procedure**

Subsequently, they may take on simpler steps with less risk involved prior to progressing to more technically challenging and invasive steps prior to becoming independent.

- **Learning curve and learning style for each trainee may vary**

Therefore, specific feedback from the mentor during and after each procedure especially during the initial phase of training is essential.

Conclusion

- ESG delivers acceptable early weight loss results with an excellent safety profile in this cohort of Asian pacific patients with obesity.
- The expectation of rapid recovery and the reversible and repeatable nature of the procedure may encourage patients to seek treatment, including those who decline or are not suitable for bariatric surgery.
- Future studies of durability, long-term efficacy, and cost effectiveness of ESG are required.



MOHAK TEAM

THANK YOU

We offer various treatment modalities for obesity. The operation is determined by the profile of the patient and guided by findings from analysis of the data from our prospectively maintained database

