# Which is the Most Effective Surgery after Failed Sleeve Gastrectomy


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# MOHAK BARIATRIC AND ROBOTIC SURGERY CENTER INDORE, INDIA (MBRSC)

MOHAK BARIATRICS ROBOTICS WEIGHT LOSS & DIABETES SURGERY CENTRE

IFSO NAPOLI 2023

# DISCLOSURE

**Mahak Bhandari**

- No conflicts of interest

**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

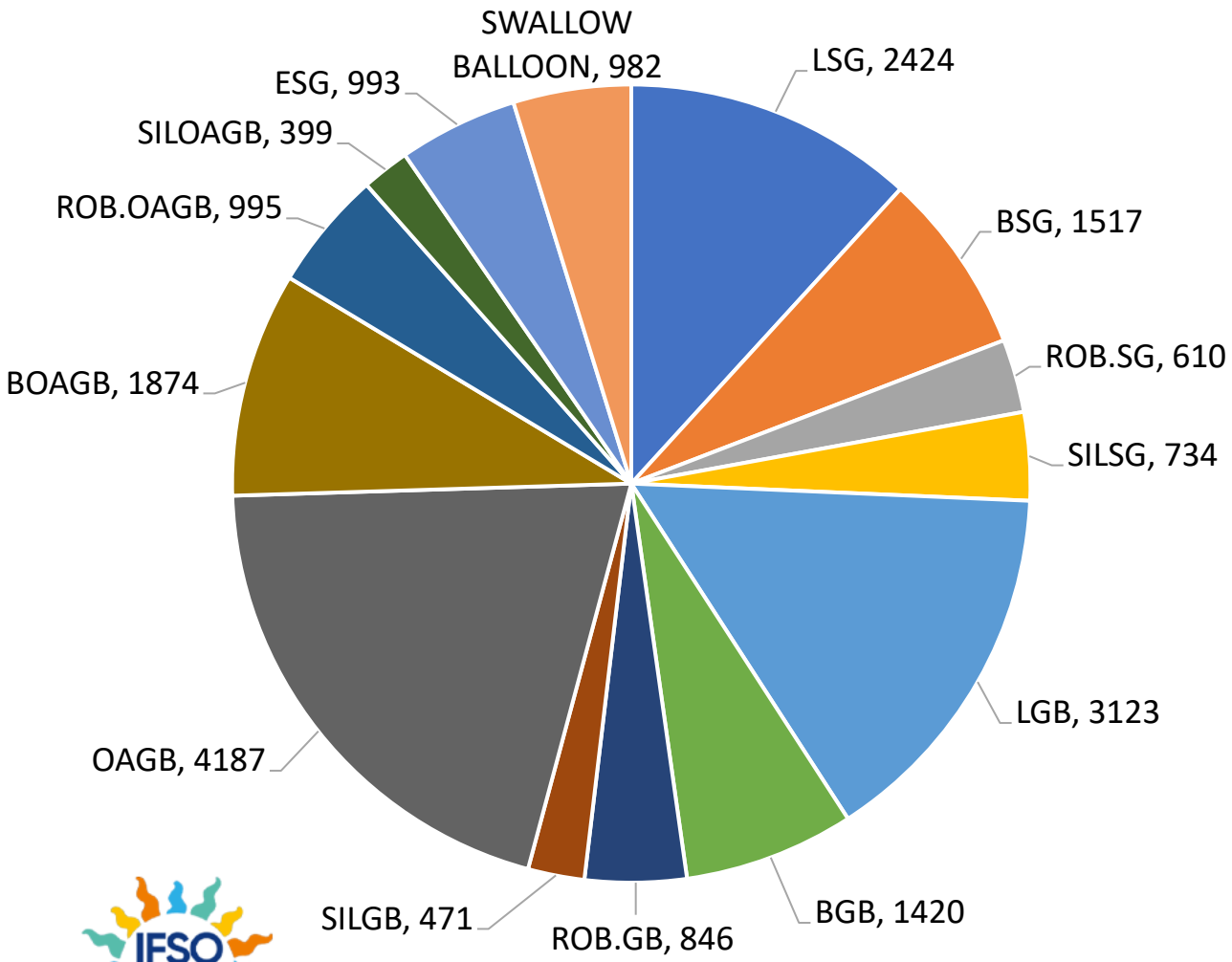
**Manoel Galvao Neto**

- 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 |

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# INTRODUCTION

## Revisional bariatric procedures are becoming increasingly common

*Inevitably, 5–8% of primary bariatric procedures will fail requiring a revisional operation.*

**The main reasons for revisional bariatric surgery are**

- Primary inadequate weight loss *( less than 25% excess body weight loss)*
- Weight recidivism
- Inherit specific complications related to the procedure itself *(GERD, Oesopagitis etc)*

# INTRODUCTION

## Weight regain is a multifactorial condition that affects many patients following bariatric surgery

- The multidisciplinary approach with periodic monitoring is of fundamental importance to prevent or treat weight regain.
- Several therapeutic options are ranging from nutritional to surgical options, which should be tailored according to patients' anatomy, lifestyle behavior, and compliance.

Specialized multidisciplinary care is the key to achieve optimal long-term weight loss and maintenance goals following bariatric surgery

# Etiology of Weight Regain after any Bariatric Surgery

| Patient-Specific Factors | Surgery-Specific Factors |
|---|---|
| Amount of physical activity | Dilation of gastrojejunal stoma |
| Mental health issues | Gastro-gastric fistula |
| Nutritional compliance | Gastric pouch length |
| Follow-Up | Greater residual gastric volume |
| Preoperative variables | Dilation of gastric sleeve |
| Hormonal imbalance | Retained fundus |
| Support group attendance | |
| Control of food urges/ emotional eating | |

*Weber C., Chand B. (2018) Weight Regain Following Bariatric Surgery and Revisional Surgery. In: Camacho D., Zundel N. (eds) Complications in Bariatric Surgery. Springer, Cham. https://doi.org/10.1007/978-3-319-75841-1_12*

# INTRODUCTION

- The **Sleeve Gastrectomy** is the commonest & has gained increased acceptance as a **Primary Weight Loss Operation**.
- There are **many options** to revise patients who have had **inadequate weight-loss** or significant **weight-regain** after an initial surgery.

# Manage weight regain after a Failed Sleeve

**Some of the potential options to revise**

- Redo Sleeve (Redo-SG)
- Banded Sleeve (BSG)
- Banded Gastric Bypass (BGBP)
- Mini Gastric Bypass (MGB)
- Single Anastomosis Duodenal-Ileal bypass (SADI)
- Endoscopic revision

The choice of the most effective surgery after a failed Sleeve Gastrectomy depends on individual patient factors, medical history, and preferences.

Comparative Study > Obes Surg. 2017 Nov;27(11):2855-2860. doi: 10.1007/s11695-017-2712-8.

# Revisional Surgery After Failed Laparoscopic Sleeve Gastrectomy: Retrospective Analysis of Causes, Results, and Technical Considerations

Huseyin Yilmaz [1], Ilhan Ece [2], Mustafa Sahin [1]

Affiliations + expand

PMID: 28493043 DOI: 10.1007/s11695-017-2712-8

**Conclusions:** Re-SG and RYGB seem to be safe and effective treatment options after a failed LSG. On analysis technically pouch dilatation, retained fundus & antrum, Hiatus Hernia were the main reasons for revision surgery.

## Abstract

**Background:** A failed laparoscopic sleeve gastrectomy (LSG) presents a challenging problem for bariatric surgeons. The aim of this study was to evaluate the indications, treatment strategies, and surgical outcomes of patients who underwent a revisional surgery after a failed LSG.

**Methods:** This retrospective study included the outcomes of 32 patients who required a revisional surgery from a series of 500 primary LSGs. The patients' demographic data, indications for revisional surgery, perioperative complications, and postoperative outcomes were recorded.

**Results:** A total of 500 patients underwent primary LSGs during the study period, and 32 of these patients were subjected to revisional bariatric surgery after a failed LSG. Weight regain, poor weight loss, and gastroesophageal reflux disease (GERD) were the most common causes of revision. A revisional LSG (r-LSG) was performed in 23 patients, while 9 patients received a revisional laparoscopic Roux-en-Y gastric bypass (r-LRYGB). There were complete sleeve pouch dilations in 10 patients. A residual fundus and antrum dilation was detected in 5 and 8 patients, respectively. The r-LRYGB procedure was performed for GERD-related symptoms in 6 patients and 3 other patients underwent r-LRYGB due to the intake of high-caloric foods. The mean operative time, length of hospital stay, and complication rates of revisional surgeries were significantly higher than the total cohort.

Original Contributions | Open Access | Published: 31 July 2018

# Failed Sleeve Gastrectomy: Single Anastomosis Duodenoileal Bypass or Roux-en-Y Gastric Bypass? A Multicenter Cohort Study

Phillip J. Dijkhorst, Abel B. Boerboom, Ignace M. C. Janssen, Dingeman J. Swank, René M. J. Wiezer, Eric J. Hazebroek, Frits J. Berends & Edo O. Aarts

*Obesity Surgery* **28**, 3834–3842 (2018) | Cite this article


## Objective

To investigate the effectiveness of the single anastomosis duodenoileal (SADI) bypass versus the Roux-en-Y gastric bypass (RYGB) on health outcomes in morbid obese patients who had undergone SG previously, with up to 2 years of follow-up.

## Methods

From 2007 to 2017, 140 patients received revisional laparoscopic surgery after SG in four specialized Dutch bariatric hospitals. Data was analyzed retrospectively and included comparisons for indication of surgery, vitamin/mineral deficiencies, and complications; divided into short-, medium-term. To compare weight loss, linear regression and linear mixed models were used.

## Results

Conversion of a SG to SADI was performed in 66 patients and to RYGB in 74 patients. For patients in which additional weight loss was the main indication for surgery, SADI achieved 8.7%, 12.4%, and 19.4% more total body weight loss at 6, 12, and 24 months compared to RYGB (all $p < .001$). When a RYGB was indicated in case of gastroesophageal reflux or dysphagia, it greatly reduced complaints almost directly after surgery. Furthermore, a similar amount of complications and nutritional deficiencies was observed for both groups. There was no intra- or post-operative mortality.


**Conclusions:** Conversion into a SADI resulted in significantly more weight loss while complications rates and nutritional deficiencies were similar and therefore SADI may be considered the recommended operation for patients in which only additional weight loss is required.

Article | Open Access | Published: 18 June 2022

# Five-year outcomes of one anastomosis gastric bypass as conversional surgery following sleeve gastrectomy for weight loss failure

Mohammad Kermansaravi, Reza Karami, Rohollah Valizadeh, Samaneh Rokhgireh, Ali Kabir, Mohammadali Pakaneh, Radwan Kassir & Abdolreza Pazouki

*Scientific Reports* **12**, Article number: 10304 (2022) | Cite this article

The most accepted procedures as conversion for poor weight changes after sleeve gastrectomy (SG), are malabsorptive surgeries. This study was designed to evaluate the 5-year outcomes of One Anastomosis Gastric Bypass (OAGB) following SG due to weight loss failure and weight regain. From September 2014 to January 2017, totally 23 patients with a history of SG conversion to OAGB in terms of weight loss failure or weight regain who had completed their 5-year follow-ups were studied. Some obesity related co-morbidities containing type-2 diabetes (DM), hypertension (HTN), dyslipidemia, obstructive sleep apnea (OSA) and gastroesophageal reflux disease (GERD) were also investigated at 1, 2, 3 and 5 years after conversional surgery. All cases had remission/improvement in DM, DLP, HTN and OSA 1 year after conversional OAGB. Analysis showed statistically significant ($P < 0.001$) change in trend of BMI. Mean BMI before conversional surgery, at 1, 2, 3and 5 years were 46.3 ± 10.4, 34.5 ± 8.5, 34.1 ± 8.6, 35.7 ± 8.7 and 37.5 ± 11.6, respectively. Mean percent excess weight loss (%EWL) at 1, 2, 3 and 5 years was 51.6 ± 11.0, 52.9 ± 13.1, 45.5 ± 16.4 and 41.0 ± 18.0, respectively. Mean percent total weight loss (%TWL) at 1, 2, 3 and 5 years was 26.6 ± 5.9, 27.4 ± 7.2, 23.9 ± 9.2 and 20.9 ± 9.3, respectively. OAGB is an effective conversional procedure for insufficient weight loss and weight regain following failed SG and lead to satisfactory changes in obesity associated medical problems. The optimal weight loss results are obtained at 2-year follow-ups and these effects are then reduced.

**Conclusions: The most accepted procedure for revision after Sleeve are MALABSORBPTIVE SURGERIES.** OAGB is an effective conversional procedure for insufficient weight loss and weight regain following failed SG. The optimal weight loss results are obtained at 2-year follow-ups and these effects are then reduced.

Original Contributions | Open Access | Published: 13 September 2022

# Revisional Roux-en-Y Gastric Bypass Versus Revisional One-Anastomosis Gastric Bypass After Failed Sleeve Gastrectomy: a Randomized Controlled Trial

Mohamed Hany, Ahmed Zidan, Ehab Elmongui & Bart Torensma

*Obesity Surgery* **32**, 3491–3503 (2022) | Cite this article

**Conclusions:** Both revisional RYGB and OAGB have comparable significant weight loss effects when performed for WR after LSG. After a 2-year follow-up, both procedures were safe, with no significant differences in the occurrence of complications and nutritional deficits

## Methods

A single-blinded randomized controlled trial was conducted. One hundred seventy-six patients were enrolled and randomized. After loss to follow-up, 80 patients for RYGB and 80 patients for OAGB were analyzed, with a 2-year follow-up. Patients with grade B or higher gastroesophageal reflux disease (GERD) were excluded. Early and late postoperative complications were recorded. Body mass index (BMI), percentage of excess BMI loss (%EBMIL), nutritional laboratory test results, and the resolution of associated medical problems were assessed after revision surgery.

## Results

After 2 years, both groups achieved significantly lower BMI than their post-LSG nadir BMI ($p < 0.001$). The %EBMIL changes showed significantly faster weight loss in the OAGB group than in the RYGB at the 6-month follow-up (mean difference: 8.5%, 95% confidence interval [CI]: 0.2 to 16.9%). However, at 1-year and 2-year follow-ups, the differences were statistically insignificant ($p > 0.05$). Early and late complications were similar between two groups. Both groups showed improvement or resolution of associated medical problems, with no statistically significant differences after 2 years ($p = 1.00$).

# Re-Do Surgery after Sleeve Gastrectomy: A Single Center Comparison between Roux-en-Y Gastric Bypass and One Anastomosis Gastric Bypass

by Pasquale Auricchio [1,2,*], Emre Tanay [2], Christopher Kieninger [2], Jörg Köninger [2] and Tobias Meile [2]

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Introduction: According to the high rate of patients requiring a Re-Do surgery after a primary Sleeve Gastrectomy, due to failure on weight loss, this study proposes a comparison between RYGB and OAGB as a secondary intervention for morbidly obese patients.

Methods: A retrospective review of patients who underwent revisional surgery to convert SG to RYGB or OAGB at our institution from November 2011 to November 2019 was performed.

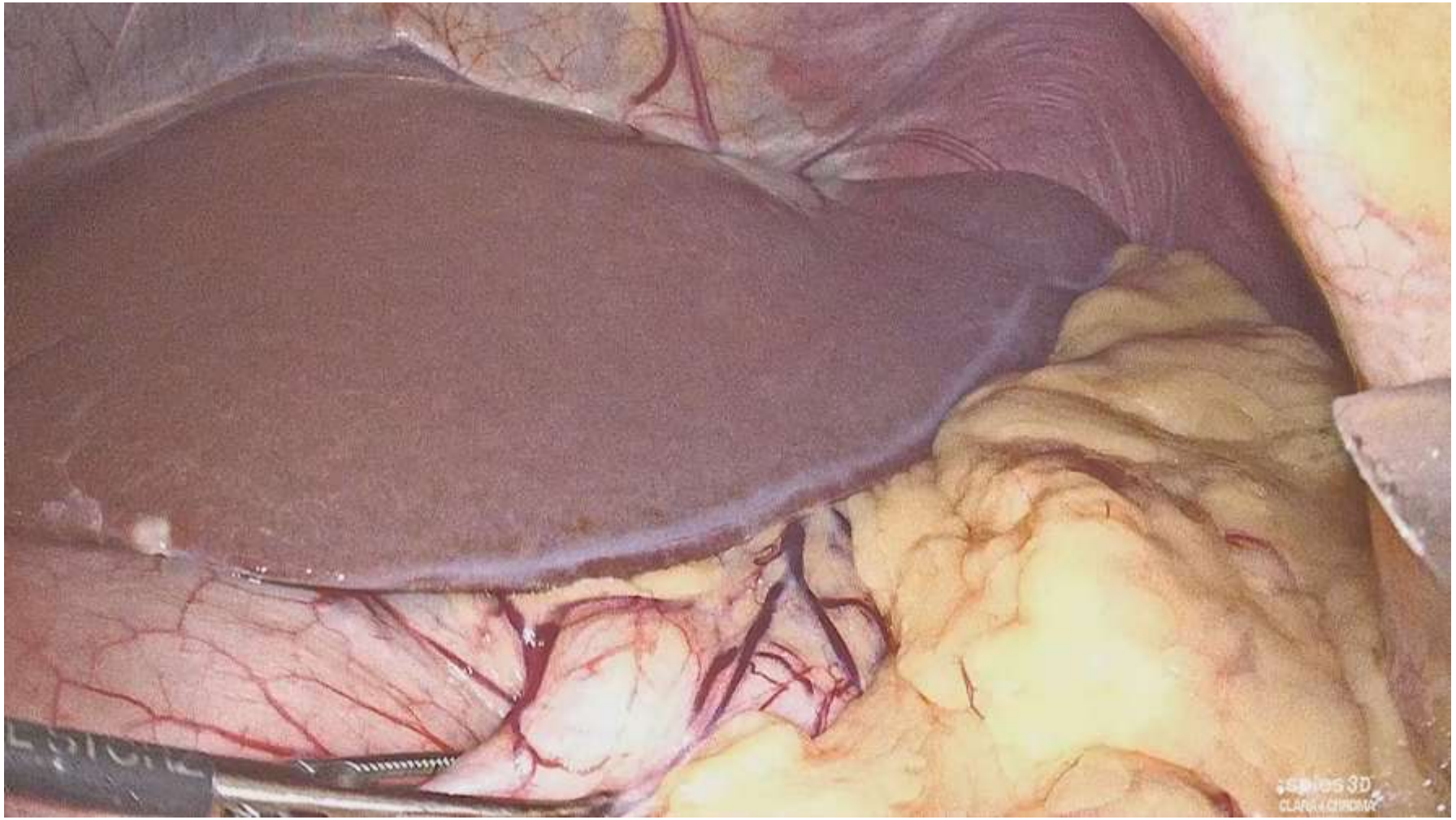
Results: A subset of sixty-three patients with previous SG underwent revisional surgery due to failure of the primary intervention. The OAGB group (n = 17) had a mean BMI at the time of the sleeve of 62 kg/m$^2$ and a mean BMI of 50.7 kg/m$^2$, the length of the Omega was 139.35 cm. The RYGB (n = 46) group showed a mean BMI of 47 kg/m$^2$ at the time of the sleeve and a BMI of 34.8 kg/m$^2$ at the time of the revision. The RYGB was performed according to the 70/120 cm standard for all the patients. One patient also had a revision from secondary OAGB to RYGB due to persistent biliary reflux, in this case the biliary branch was settled at 150 cm and the alimentary at 50 cm.

**Conclusions:** The outcomes in the OAGB group showed a 29%WL and a 47%EWL (out of a 17%WL and 28%EWL at the time of the sleeve), on the other side the RYGB group reached a 33%WL and 72%EWL (out of a 25%WL and a 54%EWL at the time of the sleeve). According to our data we assume that RYGB is more effective in terms of weight loss as a revisional surgery after sleeve

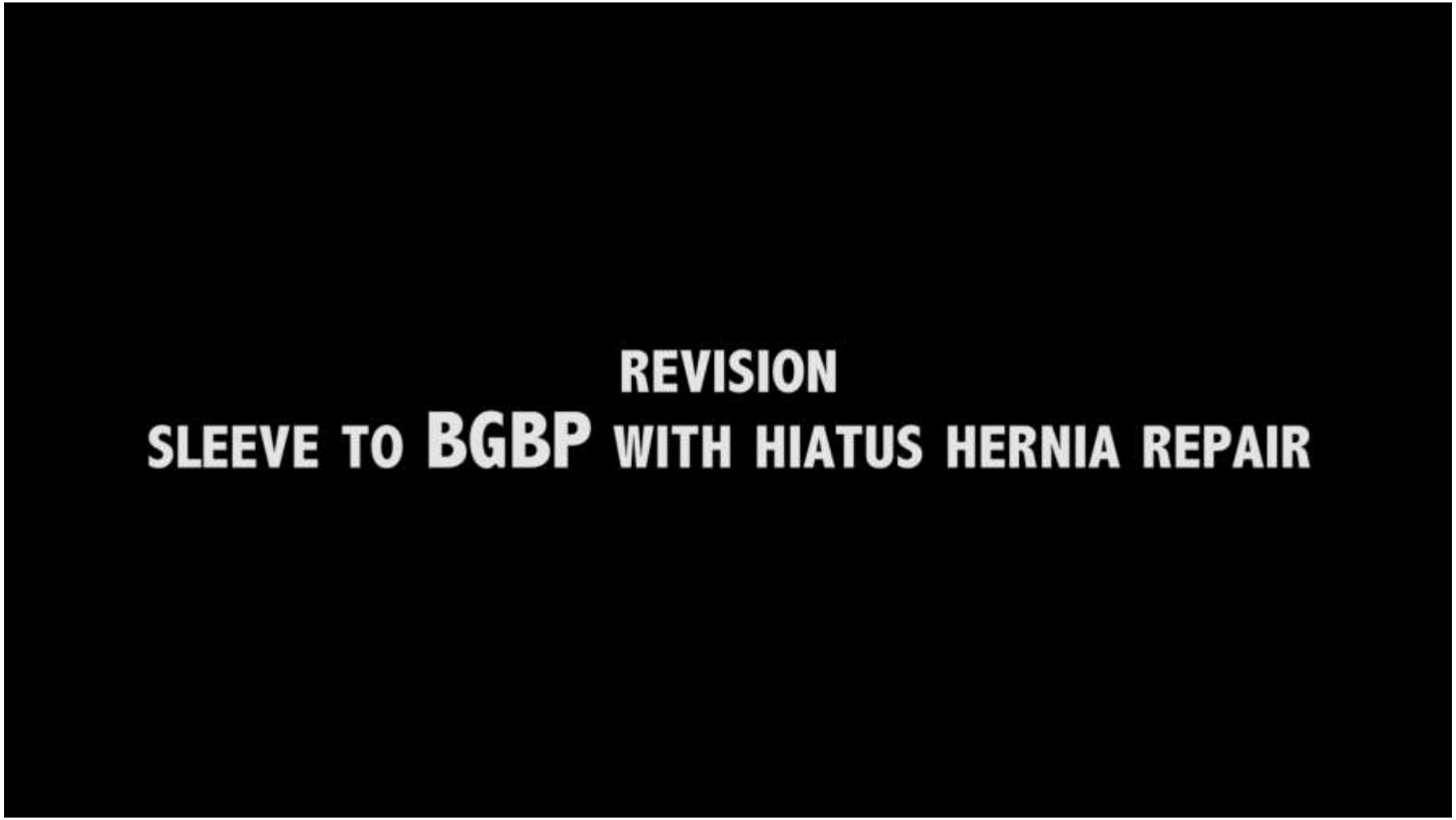
# Manage weight regain after a Failed Sleeve

| Years of Redo. Surgery | Operated Redo Surgery (Total – 208) | | | | | |
|---|---|---|---|---|---|---|
| | Redo-SG | BSG | BGBP | MGB | SADI | ESG |
| 2013 | 1 | 0 | 2 | 2 | 0 | 0 |
| 2014 | 1 | 9 | 4 | 9 | 0 | 0 |
| 2015 | 3 | 16 | 20 | 11 | 1 | 0 |
| 2016 | 1 | 11 | 11 | 10 | 2 | 0 |
| 2017 | 1 | 9 | 10 | 2 | 0 | 0 |
| 2018 | 0 | 3 | 5 | 1 | 1 | 4 |
| 2019 | 0 | 4 | 6 | 0 | 0 | 8 |
| 2020 | 0 | 5 | 7 | 0 | 0 | 5 |
| 2021 | 0 | 4 | 5 | 0 | 0 | 7 |
| **TOTAL** | **7** | **61** | **70** | **35** | **4** | **24** |

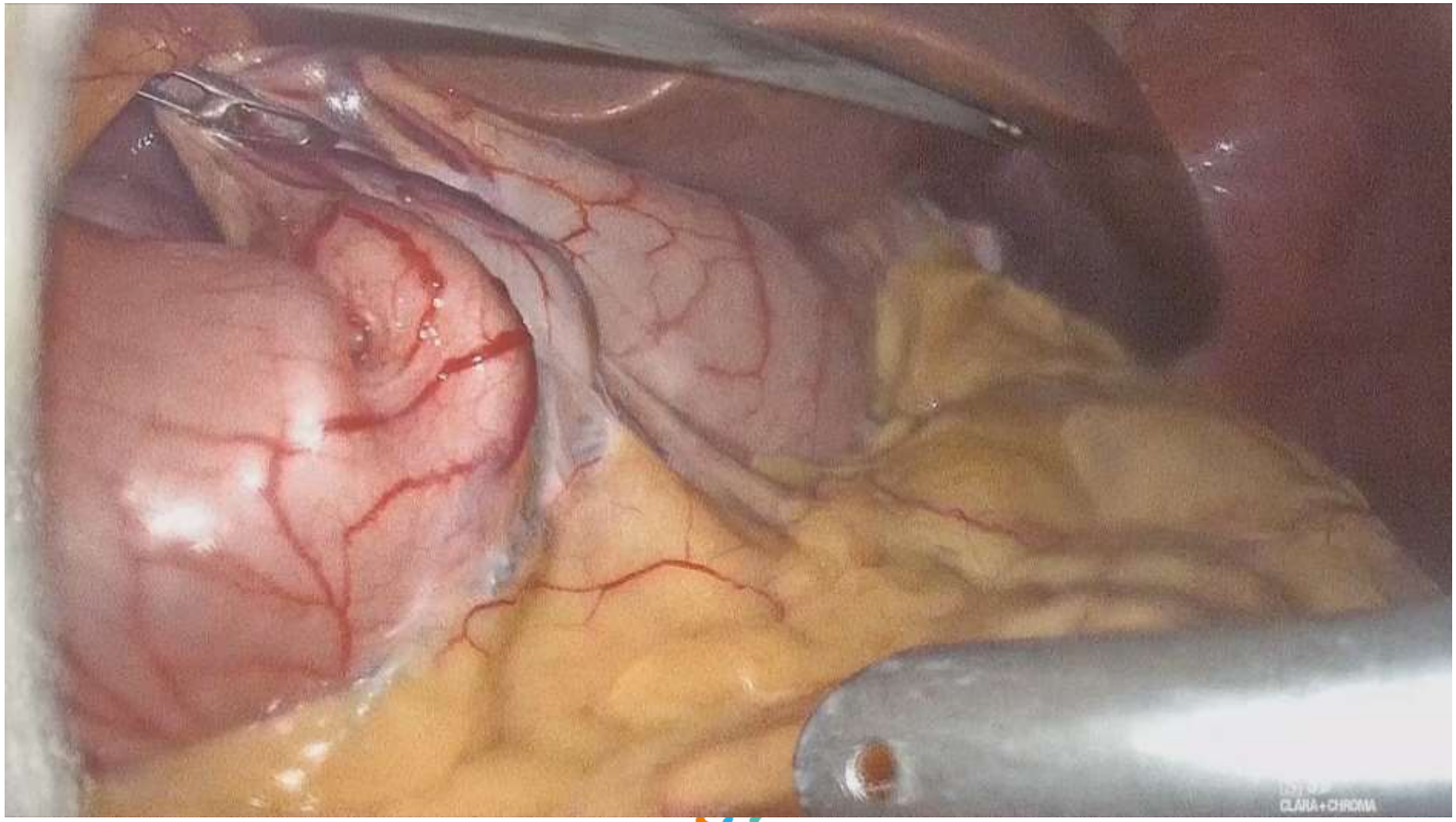
# SG to re-SG



# SG to BGBP

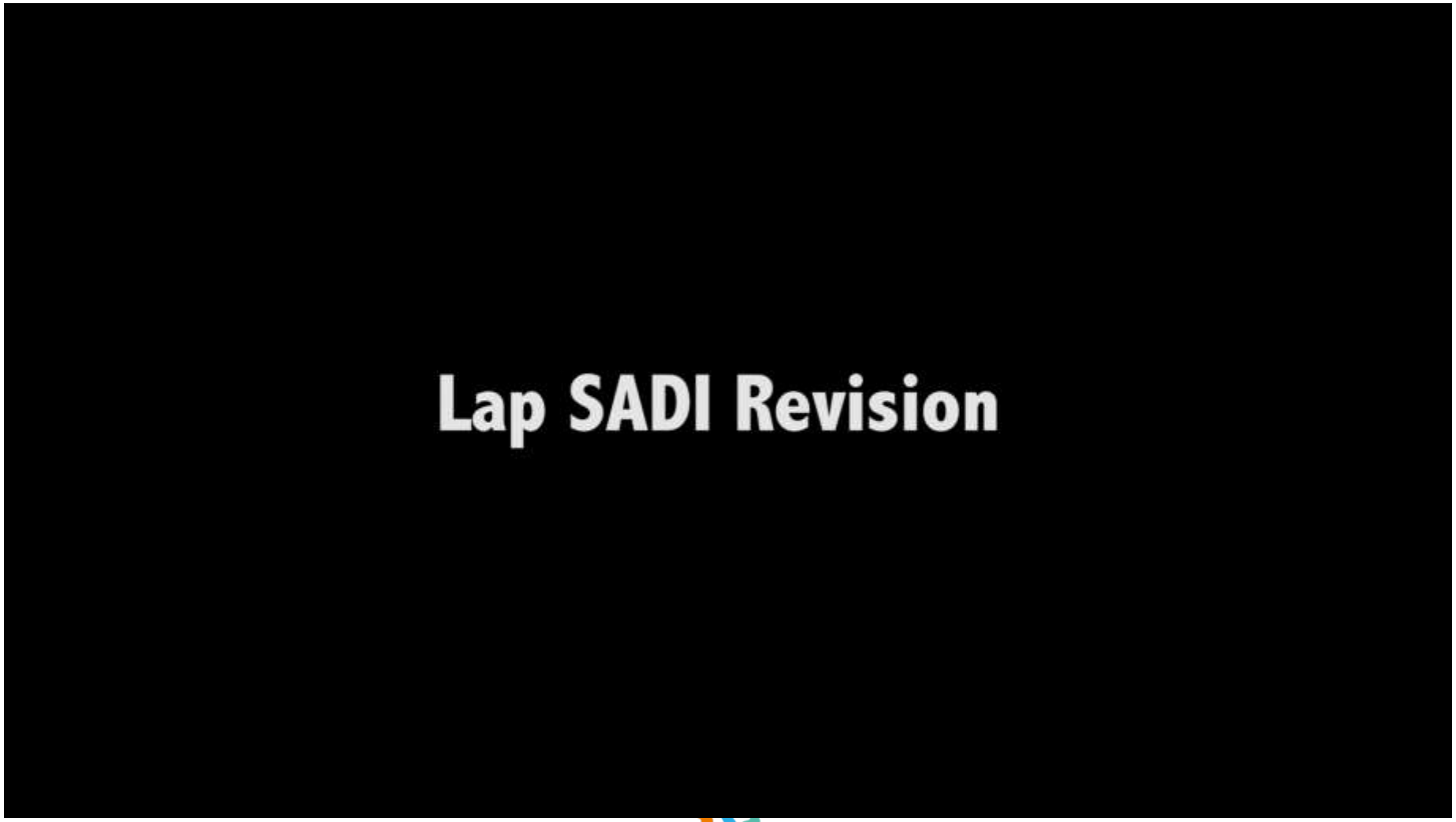


# SG to BSG



# SG to MGB

# SG to SADI



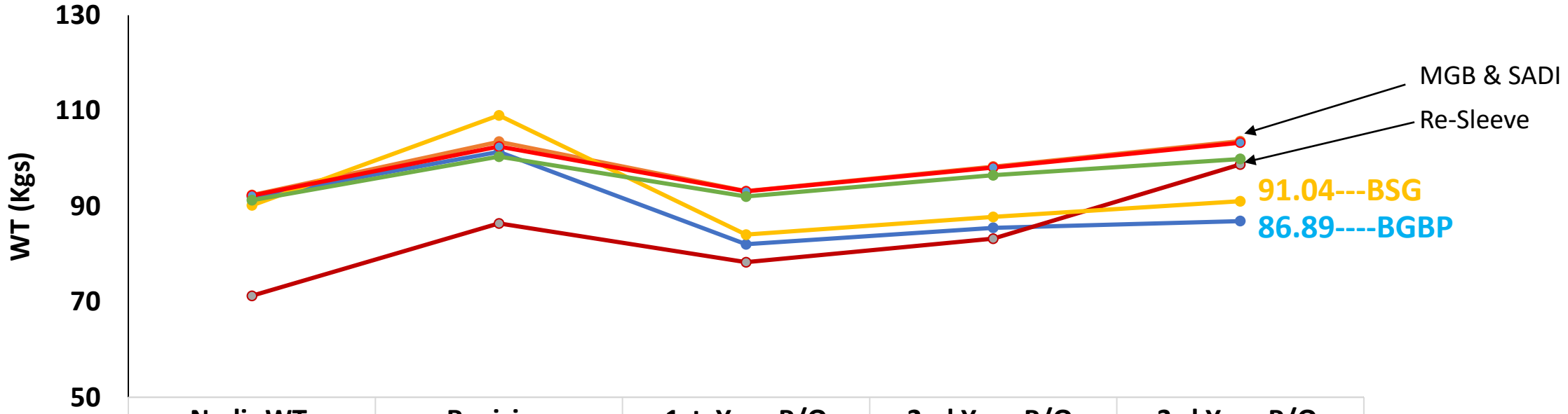
# SG to ESG


Case summary
68 years / F
Sleeve Gastrectomy- 2012
Initial weight -99 kg
Nadir weight - 65 kg
Present weight (Nov.2018)- 75 kg

# PRE-OP: PATIENT PROFILE

| | Redo-SG | BSG | BGBP | MGB | SADI | ESG |
|---|---|---|---|---|---|---|
| Age (yr) | 46.60±9.78 | 43.60±9.28 | 45.45±12.89 | 42.59±10.95 | 46.10±5.78 | 48.20±5.18 |
| Height (cm) | 1.66±0.06 | 1.66±0.04 | 1.66±0.10 | 1.64±0.09 | 1.63±0.07 | 1.63±0.07 |
| Body Weight (kg) | 98.83±13.01 | 116.31±11.06 | 116.11±21.06 | 118.44±22.42 | 117.14±22.12 | 118.34±16.12 |
| BMI ($kg/m^2$) | 38.54±7.10 | 43.05±6.21 | 42.25±8.51 | 44.49±8.6 | 43.29±6.6 | 44.19±4.6 |
| T2DM (%) | 22% | 25% | 27% | 24% | 23% | 22% |
| HTN (%) | 35% | 36% | 38% | 39% | 40% | 37% |

# Weight-loss pattern




| | Nadir WT | Revision | 1st Year P/O | 2nd Year P/O | 3rd Year P/O |
|---|---|---|---|---|---|
| BGBP | 91.97 | 101.4 | 82.04 | 85.49 | 86.89 |
| MGB | 92.34 | 103.5 | 93.15 | 98.3 | 103.63 |
| SG | 71.23 | 86.4 | 78.28 | 83.2 | 98.75 |
| BSG | 90.17 | 109.02 | 84.05 | 87.77 | 91.04 |
| SADI | 92.24 | 102.5 | 93.11 | 98.12 | 103.33 |
| ESG | 91.27 | 100.4 | 92.04 | 96.49 | 99.89 |

BGBP MGB SG BSG SADI ESG

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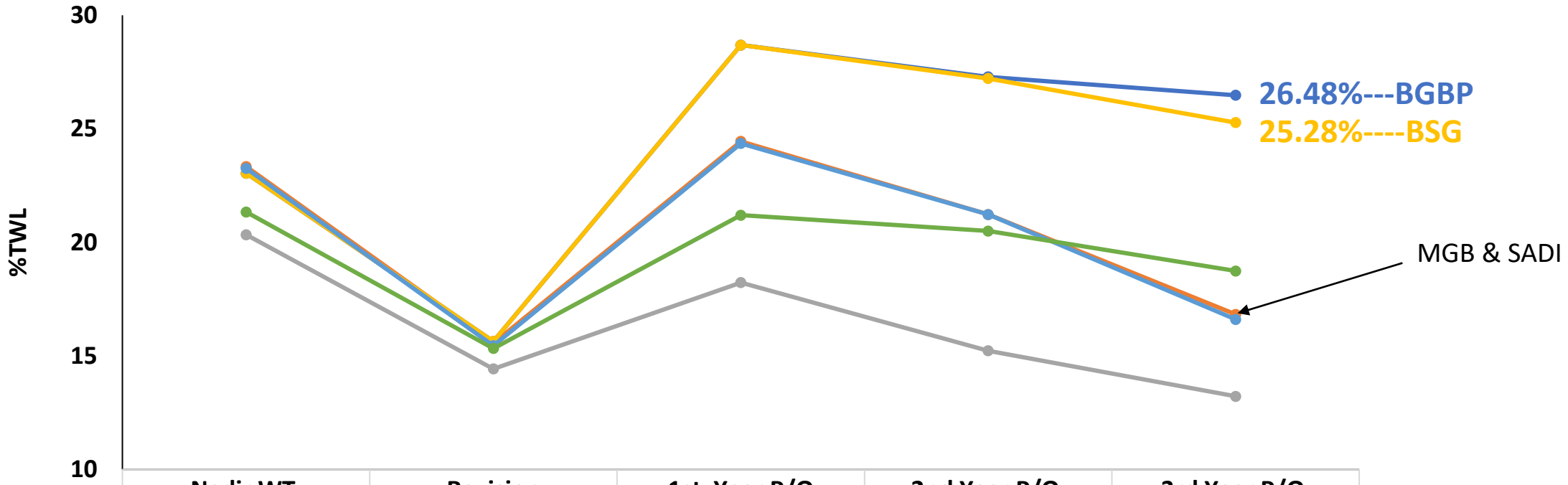
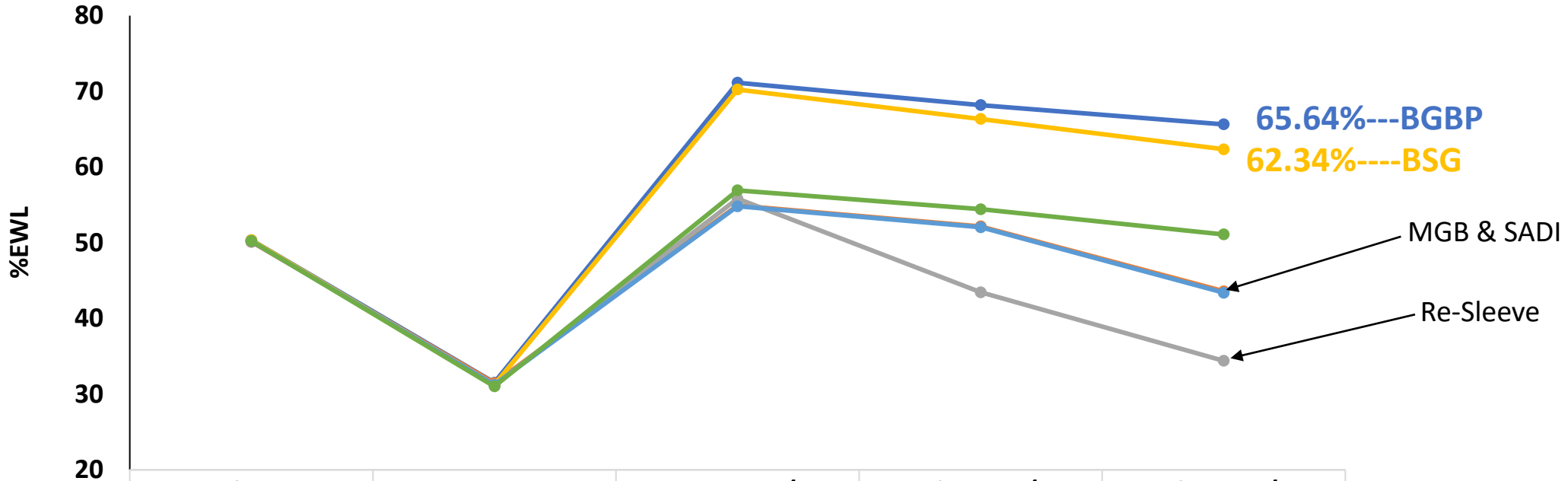
# Weight-loss pattern




| | Nadir WT | Revision | 1st Year P/O | 2nd Year P/O | 3rd Year P/O |
|---|---|---|---|---|---|
| BGBP | 23.05 | 15.64 | 28.69 | 27.29 | 26.48 |
| MGB | 23.34 | 15.56 | 24.45 | 21.23 | 16.83 |
| SG | 20.34 | 14.43 | 18.23 | 15.23 | 13.22 |
| BSG | 23.05 | 15.64 | 28.69 | 27.22 | 25.28 |
| SADI | 23.26 | 15.45 | 24.36 | 21.23 | 16.61 |
| ESG | 21.34 | 15.33 | 21.2 | 20.5 | 18.74 |

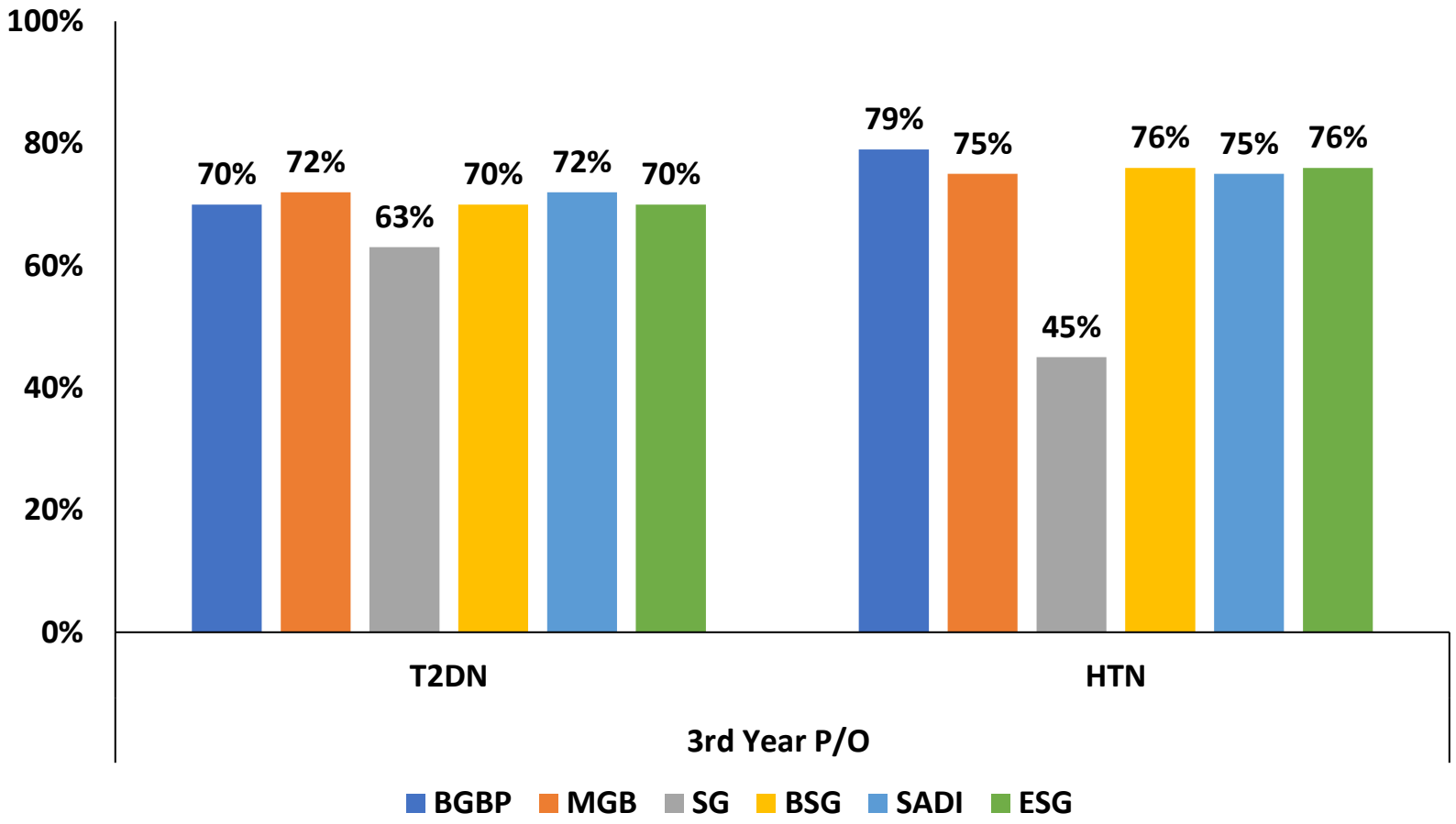
# Weight-loss pattern




| | Nadir WT | Revision | 1st Year P/O | 2nd Year P/O | 3rd Year P/O |
|---|---|---|---|---|---|
| BGBP | 50.34 | 31.52 | 71.13 | 68.17 | 65.64 |
| MGB | 50.12 | 31.45 | 54.91 | 52.15 | 43.59 |
| SG | 50.32 | 31.22 | 55.8 | 43.46 | 34.39 |
| BSG | 50.33 | 31.23 | 70.23 | 66.34 | 62.34 |
| SADI | 50.18 | 31.23 | 54.81 | 52.05 | 43.39 |
| ESG | 50.23 | 31.02 | 56.92 | 54.42 | 51.1 |

BGBP MGB SG BSG SADI ESG

# Resolution of co-morbid conditions



# CONCLUSIONS

- Revisional bariatric surgery is complex and technically demanding.
- The preoperative procedure of choice should depend on several factors, including patient history and intraoperative findings.
- Revision can be performed safely by well-trained and highly experienced bariatric surgeons in specialized bariatric centers.

- **Revisional Roux-en-Y Gastric Bypass is the most effective revisional procedure after failed SG.**
- **Adding a band significantly helps maintain weight loss & prevent excess weigh regain as compared to Non-Banded procedures.**
- **The favorable outcomes of B-GBP after B-SG, including satisfactory weight loss effect and less serious nutritional deficiencies.**

# MOHAK TEAM INDIA

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**

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