



Case Series

The pedigree of bariatric surgery: A case series of revisional surgery post laparoscopic sleeve gastrectomy in 3 sisters

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ABSTRACT

INTRODUCTION: Obesity is a complex disease involving multiple factors that play a role in its development, including genetics. Given the high prevalence of obesity in Kuwait, this is of particular interest.

CASE: This is a case of 3 sisters that presented to a single surgeon for morbid obesity with starting body mass indexes (BMI) of 46.9 kg/m², 56 kg/m², and 51.3 kg/m². All three elected to undergo a laparoscopic sleeve gastrectomy as an initial procedure. They presented to their surgeon 5.5 years later with weight regain. The first patient elected to undergo a Laparoscopic Re-Sleeve Gastrectomy, the second Roux-en-Y Gastric Bypass, and the third Single-Anastomosis Gastric Bypass. The patients were followed up for 2-years post-revisional, for which the % EWL was 35.5%, 48.4% and 25.2%, respectively.

CONCLUSION: Our study was also able demonstrate how effective revisional surgery is, when genetics are accounted for, with our results showing RYGB as a revisional procedure being superior to the other options.

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1. Introduction

Obesity is a complex disease that affects a multitude of people worldwide. According to the World Health Organization, in 2008, 35% of adults aged 20 and above were classified as overweight, with the worldwide prevalence of obesity doubling between the years 1980 and 2008 [1]. This burden has quite prominently affected countries in the gulf, with data showing Kuwait having the highest number of bariatric surgeries performed as a percentage of the national population, leading with 0.1642% [2].

Multiple factors have been found to play a role in the development of obesity including environmental influence, psychological states and most importantly, genetics. With the high incidence of obesity seen in Kuwait, the effect that genetics has to play in this disease is of particular interest.

Here we present a case study of 3 sisters that underwent bariatric surgery at a hospital in Kuwait due to obesity. All three underwent laparoscopic sleeve gastrectomy (LSG) as an initial mode of treatment, but after a period from undergoing their initial LSG, presented again with weight regain. Each patient was then

treated with a different revisional bariatric procedure and followed. All procedures were performed by the same surgeon

2. Case presentation and management

The initial LSG was performed using a 38-French bougie

2.1. Patient 1

The first sibling was a 41-year-old female at the time of her initial LSG. She presented with a weight of 117kg, corresponding to a body mass index (BMI) of 46.9kg/m². She had also suffered from hypertension. Her maximum weight loss post initial LSG was seen to be 30kg, corresponding to an %excess weight loss (%EWL) of 55%.

The patient then presented 5 years after initial surgery with weight regain, corresponding to a weight of 99kg's and BMI of 39.7kg/m². Options were discussed with her after which she underwent a laparoscopic re-sleeve gastrectomy (LRSG) as a revisional procedure using a 38-French bougie.

The patient then displayed the maximum weight loss at 1-year post-revisional surgery, with 49.2% EWL, but her hypertension had not resolved after both surgeries (Table 1, Fig. 1).

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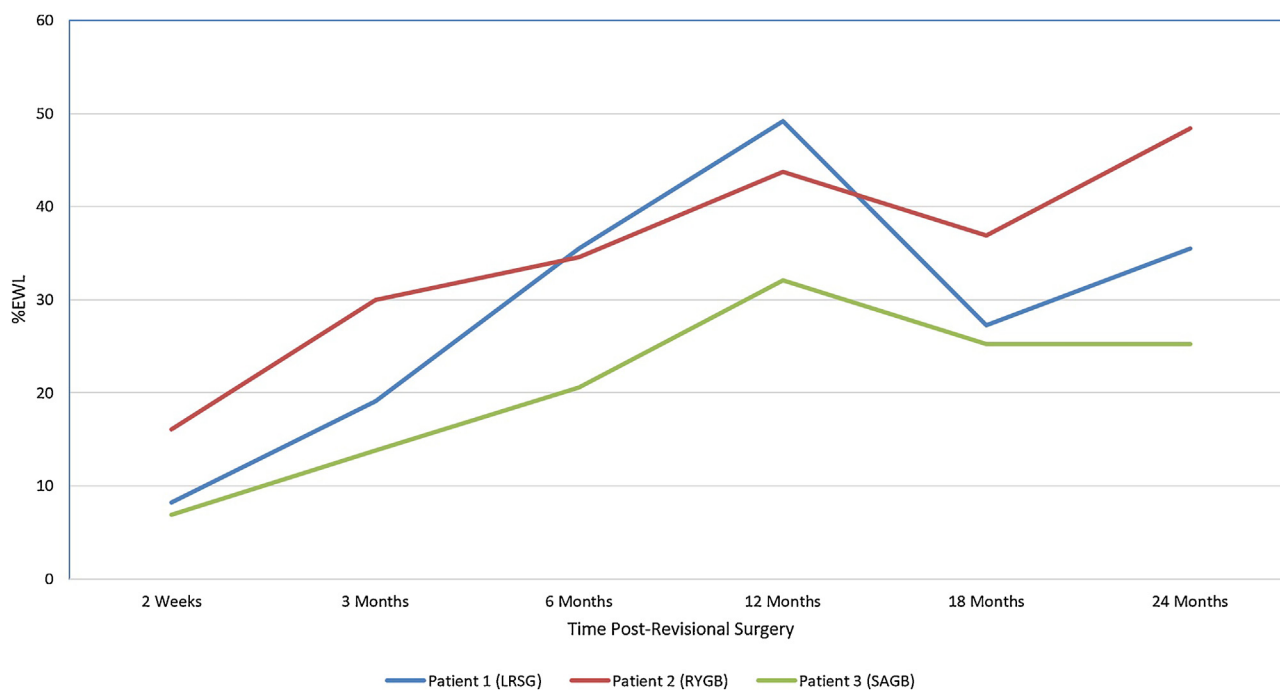


Fig. 1. % Excess Weight Loss post-revisional bariatric surgery with time.

Table 1

Demographics and Follow-up of the three siblings.

	Patient 1	Patient 2	Patient 3
Data at primary surgery (LSG)			
Age	41	40	39
Weight (kg)	117	138	128
BMI (kg/m ²)	46.9	56.0	51.3
Comorbidities	1	0	0
HTN DL	0	0	0
DM2	0	0	0
Weight Loss post LSG (kg)	30	51	50
%EWL	55.0	66.8	76.2
Data at Revision Surgery			
Revision surgery	LRS	RYGB	SAGB
Time until revision (Yrs)	5	5	6.6
Weight Pre-Revision	99	105	106
BMI Pre-Revision	39.7	42.6	42.5
%EWL			
2 weeks	8.2	16.1	6.9
3 months	19.1	29.9	13.8
6 months	35.5	34.6	20.6
1 year	49.2	43.8	32.1
1.5 years	27.3	36.9	25.2
2 years	35.5	48.4	

BMI = body mass index; EWL = Excess weight loss.

2.2. Patient 2

The second sibling was 40 years old when she underwent her initial LSG. She was 138kg's, corresponding to a BMI of 56kg/m². She managed to demonstrate a maximum weight loss of 51kg's, corresponding to a %EWL of 66.8% post-LSG. She also presented back to her bariatric surgeon 5 years post initial LSG with weight regain, (weight = 105kg, BMI = 42.6kg/m²) for which a Roux-en-Y gastric bypass (RYGB) was recommended and performed. A 100 m biliary limb and 150 cm alimentary limb was utilized for this procedure. She demonstrated the highest EWL at 2 years post-revisional surgery, with 48.4% (Table 1, Fig. 1).

2.3. Patient 3

The third sibling presented at the age of 39 with a weight of 128kg and BMI of 51.3kg/m². She managed to lose a maximum weight of 50kg's after her primary LSG corresponding to an EWL of 76.2%. She presented with weight regain (weight = 106kg, BMI = 42.5kg/m²) 6.6 years later and opted to undergo a single anastomosis gastric bypass (SAGB) as a revisional surgery after all options were discussed with her. A 2-m biliary limb was utilized for this procedure, without performing a re-sleeve gastrectomy. She managed to reach a maximum EWL of 32.1% at 1-year post revisional, after which she began to demonstrate weight regain (Table 1, Fig. 1).

The research work has been reported in line with the PROCESS criteria [13].

3. Discussion

It has been well documented in the past that children with obese parents are at a greater risk for obesity, with a child being 2.2 times more likely of being obese if a parent is also obese. Multiple heritability studies have looked into this connection, and include reports fitting genetic models to the familial correlations [3], studies of twins, and studies comparing adoptees and the offspring of the adoptive parents [3–6]. Pachucki et al. [7] conducted a study to investigate this correlation. From their findings however, they were able to make a stronger correlation between sibling obesity than that of the parents, showing that if the elder child was classified as obese, it is more likely that the younger sibling will be obese, with parent obesity status becoming insignificant. Moreover, they were able to show that sibling obesity was more strongly patterned between siblings of the same gender than between different genders. These results have been further backed up by our findings, with all three sisters from our research suffering from un-resolving morbid obesity from a young age.

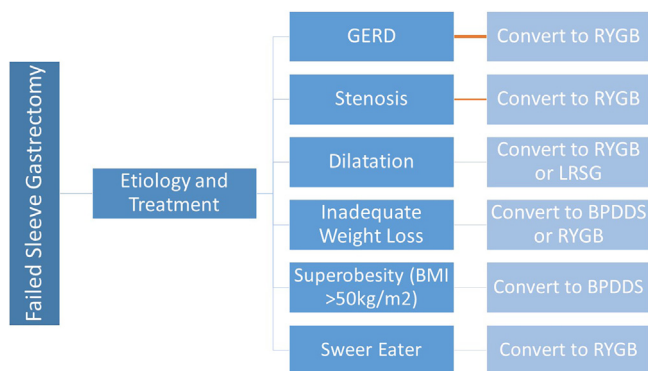


Fig. 2. Algorithm for Choosing a revisional bariatric procedure post initial-LSG.

The reason this relationship exists has been hypothesized to be due to the fact that siblings are claimed to have a greater influence on ‘informal behaviors’, whereas parents have a greater influence on ‘formal norms’. What this implies is that younger siblings undertake behavior modeling from older siblings, as well as the efforts that exist from older siblings to influence the attitudes and behavior of younger siblings, and by virtue of the greater amount of time siblings spend together relative to that with their parents. Another hypothesis is that, given that siblings tend to often eat and partake in physical activity together, this social influence could play a role on their weight status.

For patients suffering from morbid obesity, bariatric surgery has been proven to provide better results in terms of weight loss, as well as resolution of comorbidities that come along with it than conventional weight loss methods [8]. LSG’s have recently risen in popularity, becoming the most performed bariatric procedure as of 2014 [9]. Even though long-term results support the consideration of LSG’s as a stand-alone procedure, weight regain, especially that in the late follow-up period is not uncommon. Several factors may be responsible for this and include dietary factors, and specifically the changing of eating habits to high caloric meals. Another factor can include the long term anatomic dilatation that occurs to the sleeved stomach, that allow the patient to consume larger amounts of food, thus contributing to weight regain. Loss of patient follow-up and counseling has also been hypothesized to play an important role in this. [10]

Revisional surgeries from LSG’s have therefore correspondingly been on the rise, with numbers as high as 36% of patients requiring a revisional procedure within 10 years of their initial surgery [11]. There have been multiple debates on what the best choice for a revisional surgery is between LRSG, RYGB, SAGB and biliopancreatic diversion with duodenal switch (BPD/DS), with surgeons making their decision according to a combination of factors including pre-operative weight, presenting symptoms, reason for revision, and/or patient preference. A proposed algorithm for the approach to choosing the revisional procedure can be seen in Fig. 2 after reviewing the literature [12].

4. Conclusion

Our study was also able to give an illustration on how effective revisional surgery is, when genetics are accounted for. Even though this is an individual patient case, when we took out the factor of genetics, on the medium-term follow-up RYGB as a revisional procedure proved to be superior to the other options, proving better weight loss results at the 2-year mark.

Conflicts of interest

None.

Sources of funding

None.

Ethical approval

Ethical approval to conduct the study was obtained from the Ministry of Health and Kuwait Institute for Medical Specialization Ethical Approval Board.

Consent

Written informed consent was obtained from the patients for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Dr. Salman AlSabah: study concept and design, proof-reading.

Dr. Eliana Al Haddad: data collection, data analysis and interpretation, writing the paper.

Registration of research studies

researchregistry1814.

Guarantor

Dr. Salman Al Sabah.

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