

Research Article

Comparative analysis of LSG versus LRYGBP bariatric surgery in management of morbid obesity and type 2 diabetes mellitus in terms of percentage weight loss and T2DM resolution

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ABSTRACT

Background: Obesity is a major health problem worldwide and in India also & is a major risk factor associated with significant morbidity and mortality due to comorbid conditions. Surgery is the only effective modality for significant and sustained weight loss & in resolution of associated diabetes, hypertension, sleep apnea and osteoarthritis. Laparoscopic Bariatric surgery is a unique field, this proven surgical approach provide marked improvement in quality of life with quick recovery.

Methods: Retrospective data analysis of 145 laparoscopic bariatrics surgery 123 LSG & 22 RYGBP done in patients of morbid obesity alone or with T2DM, HT was analyzed in the study Over a period of three years with mean follow up period of 1-2 years. Patients were evaluated in terms of resolution of percentage weight loss & T2DM.

Results: In Present study 145 cases of bariatric surgery (mainly SG & RYGB) were included. Significant weight control of around 40-60 kgs was observed. BMI reduction shift from 29-77 to 21.1-46.6kg/m² was recorded. In all diabetes pt, post op reduction in HbA1c <6 (<6 normal value) 40% pt & near normal range in 35 % proves significant resolution in status of T2DM. Finally LSG & RYGBP showed almost similar result in % weight reduction & glycemetic control.

Conclusions: Thus I conclude bariatric LSG / LRYGBP are a definite choice for patient of only morbid obesity & morbid Obesity with T2DM & give adequate resolution of problem & adds to quality of life of patient with cosmetic & therapeutic benefits

Keywords: Morbid, Obesity, T2DM, Bariatric surgery

INTRODUCTION

Obesity is a major health problem worldwide and has reached an epidemic in the Western society and in India also & is a major risk factor due to associated comorbidities with significant morbidity and mortality.. It has been shown in longitudinal studies that non-surgical treatment of morbid obesity does not lead to any meaningful weight loss. 90-95% of people who lose weight regain all or most of their lost weight thus; surgery is the only effective modality for significant and

sustained weight loss & also helps in resolution of associated comorbidities like diabetes, hypertension, sleep apnea and osteoarthritis. Laparoscopic bariatric surgery is a unique field, This proven surgical approach provide improvement in quality of life and the quick recovery Weight loss operations can be divided into restrictive procedures and malabsorptive procedures. Malabsorptive procedures reduce the absorption of calories, proteins and other nutrients. In contrast, restrictive operations decrease food intake and promote a feeling of early fullness (satiety) after meals. Some

operations are a combination of both: Staged Procedures v/s single procedure Staged Procedures. This approach involves performing a less invasive procedure that reduces weight to a safer level (which in itself is not effective enough on its own) and improves overall medical condition first; then a more complex, definitive procedure is performed once the operative risks of the patient decrease significantly due to the initial weight loss. These less invasive steps have included the laparoscopic “sleeve gastrectomy” the gastric balloon and the adjustable band as an interim step before. Laparoscopic RYGBP or DS or Biliopancreatic Diversion is performed in selected patients less invasive procedures adequately control problem.

Aim and objectives

Aim and objectives of the study was:

1. Comparative analysis of LSG v/s L RYGBP Bariatric surgery in management of morbid obesity & T2DM in terms of resolution of % weight loss & T2DM.
2. Age & Sex Incidence & pattern of obesity in our series.
3. Incidence of co morbid conditions & its relation with type of obesity.
4. Selection of operative procedure in obese patient/ in comorbid conditions.
5. Comparison of result in reference to comorbid condition and weight reduction.
6. Comparison of result of our study with standard statistic available.

METHODS

Retrospective data analysis of 145 patient of bariatric surgery 123 of LSG &, 22 LRYGBP performed for morbid obesity & associated comorbidities was done over a period of three years, the mean follow up period of 1-2 years. Patients were evaluated in terms of resolution of percentage weight loss & DM type 2 (T2DM).

Inclusion criteria

1. Morbid obese with BMI:- 28-80
2. Morbid obesity with T2DM

Exclusion criteria

1. Type 1 Diabetes mellitus
2. BMI < 28 kg/m²
3. Bleeding disorder
4. Multiple previous abdominal surgeries
5. Hiatus hernia
6. Gastric ulcer/lesion
7. Stroke with active anticoagulant treatment
8. Age >75years

Operative procedure

During the sleeve gastrectomy, about 75 percent of the stomach is removed leaving a narrow gastric tube or “sleeve”. No intestines are removed or bypassed during the sleeve gastrectomy. 75 percent of patients will have significant improvement or resolution of major obesity-related co-morbidities such as diabetes, hypertension, sleep apnea and hyperlipidaemia following sleeve gastrectomy. However, as these procedures are potentially much safer than other operations, they may have a significant role in the future.

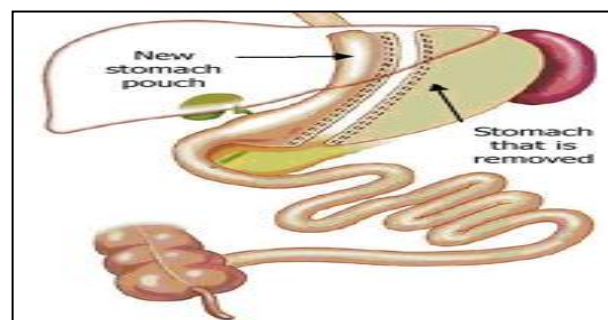


Figure 1: Sleeve gastrectomy.

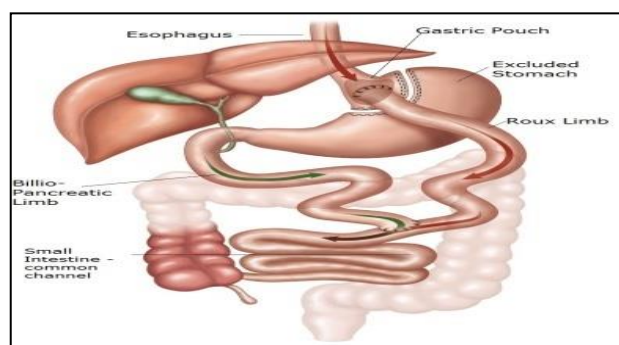


Figure 2: Roux-En-Y gastric bypass (RYGBP).

Gastric bypass

Dr. Mason and Ito initially developed this procedure in the 1960s. Over several decades, the gastric bypass has been modified into its current form, using a Roux-en-Y limb of intestine (RYGBP). The RYGBP is the most commonly performed operation for weight loss initially the operation was performed as a loop bypass with a much larger stomach. Because of bile reflux that occurred with the loop configuration, the operation is now performed as a “Roux-en-Y” with a limb of intestine connected to a very small stomach pouch which prevents the bile from entering the upper part of the stomach and esophagus. The remaining stomach and first segment of small intestine are bypassed. The RYGBP has been proven in numerous studies to result in durable weight loss and an improvement in weight-related medical illnesses. Half of the weight loss often occurs during the first six months after surgery; weight loss usually peaks

at 18-24 months. The obesity-related comorbidities that may be improved or cured with the RYGBP include diabetes mellitus of the adult onset type (so-called insulin resistant), hypertension, high cholesterol, arthritis.. RYGBP has resulted in marked improvements in quality of life.

RESULTS

In our study we took 145 pt of obesity operated during may 2011- april 2012 followed them for a period of 1-2 year. Following results noted.

Age variation & Sex ratio

Age variation & sex ratio of pt. was from 17-69 years with maximum number between 41-60(table no.1) & male were 69 (48%) and female were 76 (52%) (Figure 2).

Table 1: Age variation & sex ratio of patients.

Group	Age	Number	%
1	<20	5	3
2	21-30	25	17
3	31-40	27	19
4	41-50	43	30
5	51-60	35	24
6	61-70	10	7
Total		145	100

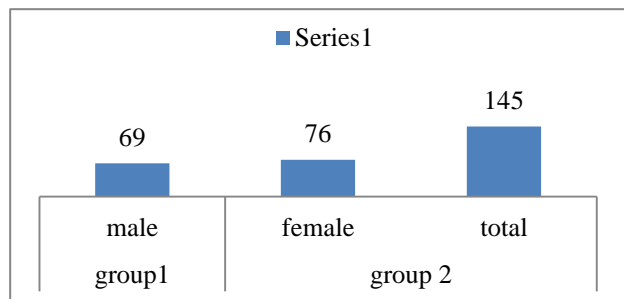


Figure 2: Male female ratio.

Percentage distribution of obesity

MO-38% 2 >MO & DM-33%, 3 >MO & HTN-15% >MO & other co morbidities-14% (Figure 3).

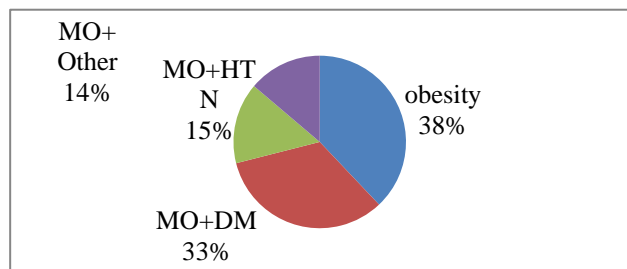


Figure 3: Percentage distribution of obesity.

Weight reduction

Weight reduction shift from range 92-210 kg to 55-140 kg. Average weight reduction in majority was approx. 45 kg. maximum weight range was in between 61-80 Almost equal result in both type of surgeries.

Weight distribution curve with maximum number of patients ranges between 100-140 kg.

Post-operative weight reduction with maximum range in between 61-80 kg.

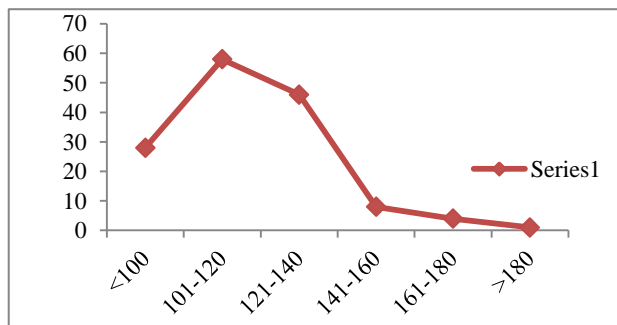


Figure 4: Pre-operative weight reduction.

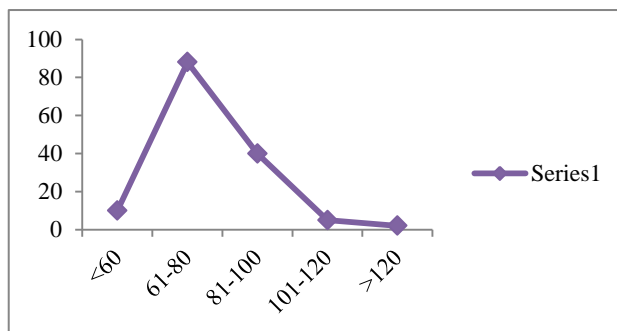


Figure 5: Post-operative weight reduction.

BMI reduction shift

BMI reduction shift from 29-77 to 21.1-46.6 kg/m2. BMI maximum range was reduced to 26-35.

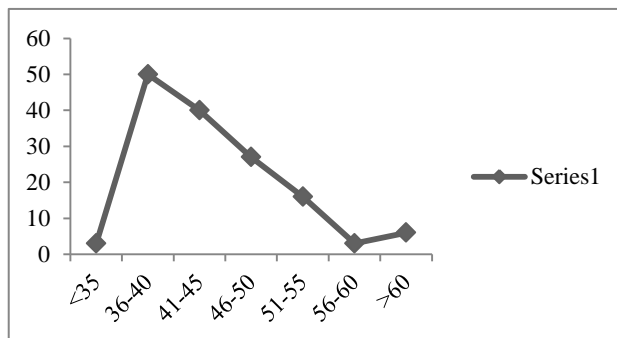


Figure 6: Pre-operative BMI.

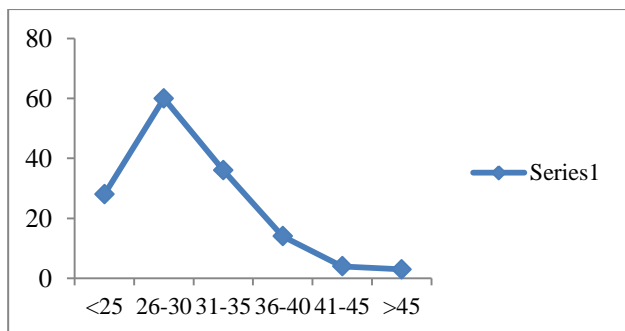


Figure 7: Post-operative BMI.

In diabetic patients, post-operative reduction in hba1c (<6 normal value). 40% were <6 & 35% patients were near normal range (6.1-6.5).

Statistical analysis

In group 1 & group 2 the chi sq value (22.8) is highly sensitive (HS) as the calculated value is more than the tabulated value with control of diabetes in both groups.

Here also it is found that the chi sq value calculated is found to be more than the tabulated chi sq value at 1 DOF showing that there is highly significant association between the pre-operative & post-operative weight.

Here in all group the calculated chi sq value is found to be more than tabulated value. Showing that there is highly significant difference in the pre op & post op BMI after surgery.

DISCUSSION

In our study of 145 patients we found out that there is definitive weight loss with mean weight loss of around of 40-60 kg with weight reduction shift from range 92-210 kg to 55-140 kg & BMI reduction shift from 29-77 to 21.1 to 46.6. Other study done which also suggest weight loss & BMI reduction are as follows.³⁻¹⁸ In all diabetes pt, post-operative reduction in HbA1c (<6 normal value). In 40% patients were <6 & 35% patients were near normal range (6.1-6.5). There is good glycemic control after bariatric surgery. Other studies which also has glycemic control are as follows.^{1,2,4,6,8-10,12,14,16-19,21,22} Type of surgery in DM in 65% SG was done & in 35% RYGB was done with similar result in glycemic control in both surgeries. Other studies which also has similar results were as follows.^{16,17,20}

Type of surgery in DM in 65% SG was done & in 35% RYGB was done with almost similar result in glycemic control in both surgeries.

Table 2: Resolution of T2DM.

HbA1c	No	%
<6	19	40
6.1-6.5	17	35
6.6-7	10	21
>7	2	4
Total	48	100

Table 3: Type of surgery among non-diabetic & diabetics.

Group	Type of surgery	Non diabetics	Diabetics	P value	DOF (control of diabetes)	Chi sq value
Group 1	SG	92	31	0.000	1	22.8 (HS)
Group 2	GBP	5	17	0.000	1	22.8 (HS)

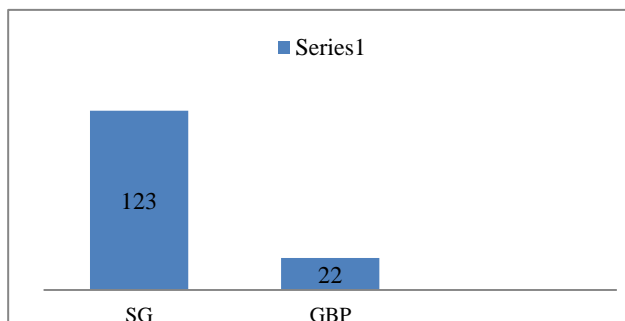


Figure 8: Type of surgery.

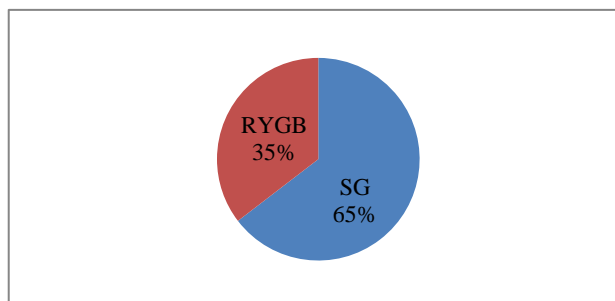


Figure 9: Type of surgery in DM.

Table 4: Weight reduction.

Weight in kg	Pre op weight	Post op weight	P value	DOF (weight control)	Chi sq value
<100	28	138	0.000	1	170
101-120	58	5	0.000	1	57
>120	59	2	0.000	1	67.5

Table 5: BMI reduction.

BMI	Pre op BMI	Post op BMI	P value	DOF (reduction in BMI)	Chi sq value
<35	3	124	0.000	1	205
36-40	50	14	0.000	1	26
41-45	40	4	0.000	1	34.7
>45	52	3	0.000	1	53.9

CONCLUSION

Thus I conclude bariatric surgery LSG/LRYGBP is a definite choice for patient of Morbid obesity in gaining significant & sustained weight reduction with positive shift noted in study equally by both the procedures & in morbid Obesity with T2DM. resolution of diabetes with normal or near normal glycemic control was observed in both group with slight edge of RYGBP as compared to SG overall both procedure gave adequate control of the disease & adds to quality of life of patient in a positive way giving cosmetic & therapeutic benefits.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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