

# Laparoscopic One-Anastomosis Gastric Bypass; Examine the Effectiveness and Outcomes in Patients with Morbid Obesity

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## ABSTRACT

**Aim:** To examine the effectiveness and outcomes of laparoscopic one-anastomosis gastric bypass surgery in patients presented with morbid obesity.

**Study Design:** Prospective/Observational

**Place & Duration:** Hayatwali Medical Center Asghar Mall Road, Rawalpindi, during from 1<sup>st</sup> June 2019 to 31<sup>st</sup> May 2020.

**Materials and Methods:** Total 60 patients of both genders presented with morbid obesity with ages 20 to 65 years were enrolled in this study. Patients detailed demographics/medical history and co-morbidities were recorded after taking written consent. All patients received laparoscopic one-anastomosis gastric bypass (mini gastric bypass). Outcomes in term of weight loss, reduce in BMI and complications were examined. Patients satisfaction was also examined. Follow-up was taken at 6 months and at 1 year post-operatively. Data was analyzed by SPSS 24.0.

**Results:** Out of 60 patients 25 (41.67%) were male while 58.33% were females with mean age 42.26±12.56 years. Diabetes mellitus was the most frequent comorbidity found in 30 (50%) patients. Mean surgery duration was 101.42±10.45 minutes. Mean hospital stay was 2.02±0.65 days. No postoperative complication was found. Mean BMI decrease 42.46±5.85 kg/m<sup>2</sup> to 25.8±4.67 kg/m<sup>2</sup> at 1 year. A significant decrease in weight loss was observed at 6 months postoperatively (preoperatively mean weight 148.45±25.4 kg vs postoperatively 75.43±8.64 kg) p-value <0.001 and at 1 year mean weight was 66.36±10.84 kg (p=<0.0001). Maximum decrease in weight and BMI was observed at 1 year. %EWL at postoperative 6 month was 64.72±14.24% and at 1 year it was 71.52±10.45%.

**Conclusion:** It is concluded that laparoscopic one-anastomosis gastric bypass is very effective procedure for reducing weight in patients with morbid obesity with no major complications and higher patients' satisfaction.

**Keywords:** Laparoscopic, one-anastomosis Gastric Bypass, Morbid Obesity, Weight Loss, %EWL

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## INTRODUCTION

Obesity is among the newest health matters that human beings are struggling with today. This condition is increasingly developing in both developed and developing countries. Urbanization, sedentary lifestyle, and dietary changes are factors that have led to a growing rate of obesity [1].

Obesity has a variety of complications causing lower life expectancy including metabolic syndrome, hypertension, insulin resistance, type-2 diabetes mellitus, cardiovascular diseases, osteoarthritis, low back pain, and increased risk of malignancy. In addition, obese people are struggling with decreased self-esteem as they are not satisfied of their appearance leading to depression and reluctance of participation in social activities [2–5].

Bariatric surgery is the most effective treatment for severe obesity. This surgical procedure causes persistent weight loss, modulates complications of obesity, and increases quality of life and eventually patients' life expectancy [6].

Variety of bariatric surgeries are being performed now. Perhaps, the most popular one is Roux-en-Y gastric bypass (RYGB). Recently, it has been confirmed that the laparoscopic mini-gastric bypass/one anastomosis gastric

bypass (MGB/OAGB) as an easier technique of gastric bypass is even more effective than the classic technique, RYGB [7, 8]. The RYGB has two limbs: alimentary and Roux limb and biliopancreatic limb. The MGB/OAGB has only one gastrojejunal anastomosis, which is called the biliopancreatic limb as well.

Previous studies in the RYGB field have presented that increased length of the biliopancreatic arm instead of the alimentary limb can lead to more weight reduction [9]. On the contrary, studies have shown that the total small intestine length is different in patients and biliopancreatic limb length is important to avoid complications such as malabsorption or malnutrition and to achieve more weight loss postoperatively [8–10]. In this term, different studies have assessed various lengths of the biliopancreatic arm based on small intestine length or patients' body mass index (BMI). Although studies have presented valuable results, their presentations are controversial and researchers have not declared unanimous results [11–12]. We conducted present study aimed to examine the effectiveness and short term outcomes of laparoscopic one-anastomosis gastric bypass surgery/mini gastric bypass in patients with morbid obesity.

**MATERIALS AND METHODS**

This prospective/observational study was conducted at Hayatwali Medical Center Asghar Mall Road, Rawalpindi, during from 1<sup>st</sup> June 2019 to 31<sup>st</sup> May 2020. A total 60 patients of both genders presented with morbid obesity with ages 20 to 65 years were enrolled in this study. Patients detailed demographics including age, sex, body mass index (BMI), weight, medical history and co-morbidities were recorded after taking written consent from all the patients. Patients with acute renal failure, patients with cardiovascular disease, patients with liver cancer and those with no consent were excluded from this study.

All the patients were underwent laparoscopic one-anastomosis gastric bypass (OAGB). Surgical procedure was done by the consultant surgeon under general anaesthesia. Immediate postoperative outcomes such as hospital stay and complications were examined. Duration of surgery was recorded. Main outcomes in term of weight loss, reduce in BMI and %EWL were examined. Follow-up was taken at 6 months and at 1 year postoperatively. Patients satisfaction was also examined at final follow-up. All the data was analyzed by SPSS 24.0. Mean±SD was done. Frequency and percentages were recorded in tabulation form. Chi-square test was done to compare the mean weight loss, BMI pre and postoperatively. P-value <0.05 was taken as statistically significant.

**RESULTS**

Out of 60 patients 25 (41.67%) were male while 58.33% were females with mean age 42.26±12.56 years. Mean BMI at admission was 55.46±5.85 kg/m<sup>2</sup>. Mean biliopancreatic length was 150.14±10.24 cm. Diabetes mellitus was the most frequent co-morbidity found in 30 (50%) patients followed by hypertension in 18 (30%) patients and Obstructive sleep Apnea in 15 (25%) patients respectively. (Table 1)

Regarding patients satisfaction, we found at final follow-up that 53 (88.33%) patients were very satisfied, 5 (8.33%) patients were satisfied, and 2 (3.33%) were not satisfied. These 2 not satisfied patients had dietary

complications and they were managed accordingly. (Table 4)

| Characteristics                  | Frequency No. | %age  |
|----------------------------------|---------------|-------|
| Mean age (yrs)                   | 42.26±12.56   | -     |
| Gender                           |               |       |
| Male                             | 25            | 41.67 |
| Female                           | 35            | 58.33 |
| Mean BMI (Kg/m)                  | 55.46±5.85    | -     |
| Mean biliopancreatic Length (cm) | 150.14±10.24  | -     |
| Co-morbidities                   |               |       |
| Diabetes Mellitus                | 30            | 50    |
| Hypertension                     | 18            | 30    |
| Obstructive sleep Apnea          | 15            | 25    |

Mean surgery duration was 101.42±10.45 minutes. Mean hospital stay was 2.02±0.65 days. No postoperative complication was found. (Table 2)

Table No 2: Immediate postoperative outcomes

| Characteristics            | Frequency No. | %age |
|----------------------------|---------------|------|
| Mean Surgery Duration      | 101.42±10.45  | -    |
| Mean Hospital Stay         | 2.02±0.65     | -    |
| Immediate Po Complications | 0             | 0    |

A significant decrease regarding BMI and weight were observed at postoperative 6 months and at 1 year with p-value <0.0001. Preoperatively mean BMI was 55.46±5.85 kg/m<sup>2</sup> and at post-operative 6 months it was 27.4±3.56 kg/m<sup>2</sup> and at 1 year it was 25.8±4.67 kg/m<sup>2</sup>. Regarding weight loss, we found that preoperatively mean weight was 148.45±25.4 kg and at 6 months postoperatively it reduced to 75.43±8.64 kg with p-value <0.001 and at 1 year mean weight was 66.36±10.84 kg (p=<0.0001). %EWL at postoperative 6 month was 64.72±14.24% and at 1 year it was 71.52±10.45%. Maximum decrease in weight and BMI was observed at 1 year. We also found that patients with diabetes mellitus had significant improvement at 6 months and at 1 years (preoperatively mean HbA1c was 8.42±3.4% at 6 months it was 6.72±3.4% and at 1 year it was 5.03±1.9%) with p-value <0.001.

Table No 3: Postoperative outcomes at 6 months and at 1 year follow-up

| Variables        | Preoperatively | Po 6 months | Po 1 year   | P-value |
|------------------|----------------|-------------|-------------|---------|
| Mean BMI (kg/m)  | 42.46±5.85     | 27.4±3.56   | 25.8±4.67   | <0.0001 |
| Mean Weight (kg) | 148.45±16.5    | 75.43±8.64  | 66.36±10.84 | <0.0001 |
| %EWL             |                | 64.72±14.24 | 71.52±10.45 | <0.001  |
| Mean HbA1C%      | 8.42±3.4       | 6.72±3.4    | 5.03±1.9    | <0.0001 |

Table No 4: Patients satisfaction at final follow-up

| Variables      | Frequency No. | %age  |
|----------------|---------------|-------|
| Very Satisfied | 53            | 88.33 |
| Satisfied      | 5             | 8.33  |
| Not Satisfied  | 2             | 3.33  |

**DISCUSSION**

One-anastomosis gastric bypass (OAGB)/mini gastric bypass is considering one of the effective treatment modality for patients with morbid obesity and performing as procedure of choice for bariatric surgery. Many of previous studies demonstrated that OAGB is safe and effective due to fewer rate of complications [13-14]. The present study was conducted aimed to examine the outcomes of

laparoscopic OAGB/mini gastric bypass in patients presented with morbid obesity. In this regard 60 patients were included. Majority 58.33% patients were females while male patients were 41.67% with mean age 42.26±12.56 years. These results showed similarity to many of previous studies in which female patients population was high 60% to 80% as compared to males and the average age of patients was 45 years [15-16].

In present study mean biliopancreatic length was 150.14±10.24 cm. Diabetes mellitus was the most frequent co-morbidity found in 30 (50%) patients followed by hypertension in 18 (30%) patients and smoking in 15 (25%) patients respectively. A study conducted by Jamal W et al [17] regarding initial outcomes of OAGB and in their study

diabetes mellitus was most frequent co-morbidity found in 35.7% patients followed by hypertension. Mean surgery duration was 101.42±10.45 minutes. Mean hospital stay was 2.02±0.65 days. No postoperative complications such as anastomotic leak, wound infection or bleeding and mortality were found. These results were comparable to some previous studies in which average surgery duration was 100 minutes and average hospital stay was 2 days [18-19].

In our study A significant decrease regarding BMI and weight were observed at postoperative 6 months and at 1 year with p-value <0.0001. Preoperatively mean BMI was 55.46±5.85 kg/m<sup>2</sup> and at post-operative 6 months it was 27.4±3.56 kg/m<sup>2</sup> and at 1 year it was 25.8±4.67 kg/m<sup>2</sup>. A study conducted by Carbajo, M.A et al [20] reported that pre-surgery BMI decreased significantly up to 24 months 42.61 ± 6.66 kg/m<sup>2</sup> vs. 25.33 ± 3.35 kg/m<sup>2</sup>.

We found that preoperatively mean weight was 148.45±16.5 kg and at 6 months postoperatively it reduced to 75.43±8.64 kg with p-value <0.001 and at 1 year mean weight was 66.36±10.84 kg (p=<0.0001). %EWL at postoperative 6 month was 64.72±14.24% and at 1 year it was 71.52±10.45%. Maximum decrease in weight and BMI was observed at 1 year. These results were comparable to the study by Carbajo M.A et al [20] and other previous studies in which a significant decrease was observed regarding weight loss and %EWL at 1 year postoperatively [21-22]. A study conducted by Mahmoudieh M et al [23] reported that weight loss and BMI reduction was significantly more in patients with higher BMI level (p-value <0.05), and excess weight loss was higher in patients with lower preoperative BMI level (p-value <0.05).

A study by Rutledge R et al [27] regarding outcomes of mini gastric bypass in morbid obesity patients, in which they reported that average weight loss at 1 year was 59 kg (80% of excess body weight). They also reported that MGB is safe and very effective for the treatment of morbid obesity with fewer rate of minor complications.

Myung Jin Kim et al [24] in their study reported that mean BMI decreased during the first year after the surgery but plateaued after that. The mean glycosylated hemoglobin level decreased continuously. The mean fasting and postglucose loading plasma glucose level also decreased. In our study we also found that patients with preoperative co-morbidities such as diabetes mellitus and hypertension had a significant improvement at postoperative 1 year. Previous studies demonstrated that laparoscopic one-anastomosis gastric bypass showed significant improvement to control blood glucose level [25-26].

In present study regarding patients satisfaction, we found at final follow-up that 53 (88.33%) patients were very satisfied, 5 (8.33%) patients were satisfied, and 2 (3.33%) were not satisfied. These 2 not satisfied patients had dietary complications and they were managed accordingly.

## CONCLUSION

We concluded that laparoscopic one-anastomosis gastric bypass is very effective procedure for reducing weight in patients with morbid obesity with no major complications and higher patients' satisfaction. Moreover, OABG showed

significant improvement regarding diabetes mellitus and hypertension.

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