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Research Article

**BARIATRIC SURGERY VERSUS INTENSIVE MEDICAL
THERAPY IN OBESE PATIENTS WITH DIABETES.****¹Dr Hiba Mazhar,²Dr Asfand Yar Waheed Randhawa,³Dr Sana Saleem Khan Niazi.**¹MBBS, Allama Iqbal Medical College, Lahore.^{2,3}MBBS, Central Park Medical College, Lahore.**Article Received:** May 2020**Accepted:** June 2020**Published:** July 2020**Abstract:**

The aim of the current medical treatment is to cease disease progression by minimizing high glucose level, high blood pressure and other complications. Somehow there is moderate to severe glycemic control over type 2 diabetes in almost 50% of patients from pharmacotherapy management. Some studies have suggested that in severely obese patients who are suffering from type 2 diabetes could have rapidly improvement in their glycemic control and cardiovascular risk factors bariatric surgery or metabolic surgery. Some randomized studies have done the comparison between bariatric surgery and intensive medical therapy among those who are suffering from type 2 diabetes. But still there are many aspects under debate regarding the efficacy of bariatric surgery in patients having uncontrolled diabetes. The aim of the study is to compare intensive medical therapy with surgical treatment as a means of improving glycemic control in obese patients with type 2 diabetes.

Theoretically, such improvements have the potential to reduce cardiovascular morbidity and mortality, as shown in nonrandomized studies, although such benefits will need to be balanced with surg obese patients with poorly controlled diabetes who underwent risk and safety as shown in larger, multicenter clinical-outcome trials.

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INTRODUCTION:

One of the most challenging and contemporary threats to public health with drastically growing prevalence is obesity and type 2 diabetes. Poor control over diabetes would lead to multiple complications from macrovascular to microvascular which contains stroke, myocardia infarction, blindness, neuropathy and renal failure in many patients. The aim of the current medical treatment is to cease disease progression by minimizing high glucose level, high blood pressure and other complications. Somehow there is moderate to severe glycemic control over type 2 diabetes in almost 50% of patients from pharmacotherapy management. Some studies have suggested that in severely obese patients who are suffering from type 2 diabetes could have rapidly improvement in their glycemic control and cardiovascular risk factors bariatric surgery or metabolic surgery. Some randomized studies have done the comparison between bariatric surgery and intensive medical therapy among those who are suffering from type 2 diabetes. But still there are many aspects under debate regarding the efficacy of bariatric surgery in patients having uncontrolled diabetes. The aim of the study is to compare intensive medical therapy with surgical treatment as a means of improving glycemic control in obese patients with type 2 diabetes.

METHODS STUDY DESIGN:

It was a randomized controlled trial study. Two groups were made in group (A) participants had to undergo intensive medical therapy whereas in other group participants had intensive medical therapy with either roux-en-Y gastric bypass or sleeve gastrectomy. Patients who met the inclusion criteria were recruited in the study. The eligibility criteria were participants age over 25 and below 60, BMI ranges from 25 to 40 and having diagnosed type 2 diabetes. The exclusion criteria were if they had undergone previous bariatric surgery or other complex abdominal surgery or had poorly controlled medical or psychiatric disorders. As defined by American Diabetes Association (ADA) guidelines including lifestyle counseling, weight management, frequent home glucose monitoring, and the use of newer drug therapies approved by the Food and Drug Administration all participants received intensive medical therapy.

Patients counselling was programmed to educate them and evaluation was done for bariatric surgery after psychological counselling. Modified medical management of diabetic medication was done until the patient reaches to 6.0% of HBA1C level or became intolerant. The patient management was done according to ADA guidelines and the main focus was to control the blood pressure and to lower the lipid level. Participants who had to

undergo bariatric surgery were evaluated by surgical, nutrition, and psychology services as necessary.

Vitamin and nutrient supplementation after gastric bypass included a multivitamin, iron, vitamin B12, and calcium citrate with vitamin D; after sleeve gastrectomy, such supplementation included a multivitamin and vitamin B12.

Patients were observed post operatively for any nutritional deficiencies after 12 months.

Data Collection and Assessment

A demographic data was obtained and body weight, waist and hip circumference, blood pressure, and levels of glycated hemoglobin and fasting plasma glucose at baseline and at months 3, 6, 9, and 12 were observed. Continuous variables were presented in the form of means \pm SD whereas non normal distributions were indicated as medians and interquartile ranges. Categorical variables were presented as frequency. Chi square test was used to analyze measurements and to compare study groups.

RESULTS:

Total 120 participants were recruited in the study. There was no remarkable difference in patient's characteristic and study group baseline. Mean BMI of 41 patients was 34% whereas remaining were having less than 32. The HbA1c at 12 months was at least or less than 6.0% in the medical therapy group while 25 of them in gastric bypass group and 16 in sleeve gastrectomy. In the two surgical groups and primary end there was no significant association. However, all patients in the gastric-bypass group who achieved the target glycated hemoglobin level did so without medications, whereas 5 of 18 patients (28%) in the sleeve-gastrectomy group required the use of one or more glucose-lowering drugs. The mean levels at 12 months of hba1c and fasting plasma glucose were remarkably less in the both two surgical groups than in the medical therapy group. Surgical group had more decrease in BMI as compared to medical therapy. Weight loss was observed more in gastric bypass and sleeve gastrectomy than medical therapy. The prevalence of metabolic syndrome was remarkably higher in both surgical groups than medical therapy groups. There was a significant decrease in triglycerides at 12 months after gastric bypass but it was not seen after sleeve gastrectomy as compared to medical therapy. However, there was significant increase in HDL cholesterol and decrease in CRP level in both surgical procedures as compared to medical therapy. After 12 months there was a reduction in number of medications of hyperlipidemia in both surgical groups. Levels of total cholesterol of low-density lipid was not

significantly differ among groups. At 12 months there was no significant difference observed in values of systolic and diastolic pressure among the groups but after two bariatric procedures there was marked reduction in the number of hypertension medications.

DISCUSSION:

The current study has indicated that obese participants with poorly controlled diabetes who had undergone bypass or sleeve gastrectomy with medical therapy had reported decrease in glycated hemoglobin level of 6.0% or less at 12 months. Many participants of surgical group mainly of bypass group had reported decrease in hba1c without medication. Many participants who had coexisting illness reported no more advancement in retinopathy and neuropathy. Many patients had come across with metabolic syndrome and increase in measure of systemic inflammation.

Over 60 percent participants had suffered moderate to severe fatty liver disease. There was almost 3 points decrease in total glycated hemoglobin level in participants with type 2 diabetes who had undergone bariatric surgery. However, in intensive medical therapy alone there was 1.5 percentage in hba1c level.

A study was conducted on comparing bariatric surgery with conventional treatment of obesity also showed higher diabetes remission rates for surgery after 2 and 10 years but with gradual recurrence over time. A single previous randomized, controlled trial compared medical therapy with gastric banding in patients with moderate-to-severe obesity (BMI, 30 to 40) but involved patients with early diabetes of mild severity. Good glycemic control and weight loss was more observed in gastric banding as compared to medical therapy. Opposite to that statement in current study with an average disease duration of more than 8 years and a mean baseline glycated hemoglobin level of 8.9 to 9.5% while undergoing treatment with an average of nearly three diabetes agents, including a relatively high use of insulin (44% of patients) or other injectable therapies (14%).

Most differences between the gastric-bypass group and the sleeve-gastrectomy group were not significant. Secondary end points, including BMI, body weight and waist circumference, also showed more favorable results in the surgical groups than in the medical-therapy group. Within 3 months maximal improvement were occurred after bariatric surgery and was maintained throughout the 12 months follow up period. Before achievement of maximal weight loss occurred, there was reductions in the use of diabetes medications it favors the idea of mechanisms of improvement in diabetes involve

physiologic effects in case of weight loss there must be some gut hormonal fluctuation.

Some adverse effects were observed in the study but were modest in severity of surgical treatment.

Self- reported symptoms of hypoglycemia occurred with a similar frequency in the surgical and medical groups. Whereas lipoprotein and blood-pressure levels were similar in all three study groups at 12 months, improvements in the surgical groups allowed reduction or elimination of concomitant medications in many patients. The main limitation of the current study relatively short duration of follow-up (12 months) and the single-center, open-label nature of the study. It concluded that for management of uncontrolled diabetes there is potential useful, since it has been shown to eliminate the need for diabetes medications in some patients and significant reduction in the use of drugs for treatment of choice. Moreover, among those participants who had undergone surgery cardiovascular risk factors improved, allowing reductions in lipid-lowering and antihypertensive therapies. Theoretically, such improvements have the potential to reduce cardiovascular morbidity and mortality, as shown in nonrandomized studies, although such benefits will need to be balanced with surg obese patients with poorly controlled diabetes who underwent risk and safety as shown in larger, multicenter clinical-outcome trials.

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