

## Original Research Article

## To Study the Effects of Metabolic Surgery on Erectile Function on Obese Men with Type 2 DM

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**Abstract**

**Background & Method:** The data were collected in Index Medical College and Hospital & Research Centre, Indore. A total of 36 sexually active male individuals with T2DM who were applied for metabolic surgery with a BMI between 30 and 35 kg/m<sup>2</sup> with glycated hemoglobin (HbA1c) level of >7.5% despite optimum anti-diabetic therapy, or a BMI greater than 35 kg/m<sup>2</sup> with a history of T2DM, and being obese for ≥ 5 years despite conservative weight loss therapy and life-style modifications were given two different questionnaire forms prior to and 6 months after the surgery. **Result:** In our study we found, significant association in EF domain & OS domain among Preoperative & Postoperative Scores. **Conclusion:** In conclusion, metabolic surgery could improve erectile function scores of obese patients with T2DM. Large-scale studies with similar age groups and longer follow-up would exhibit better scores during the time course on the variables that did not improve on the early postoperative period.

**Keywords:** Metabolic, Erectile Dysfunction, Diabetes Mellitus & Obese.

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**Introduction**

Obesity is a worldwide public health issue with serious psychological and social impacts. Erectile dysfunction is also a common clinical condition, and obesity is one of its main risk factors[1]. T2D is a metabolic disorder in which the body does not respond well to the hormone insulin and cannot create enough insulin to control blood sugar. T2D is often related to obesity. Additionally, other hormones can be poorly regulated in patients with T2D. In men, low testosterone, obesity, and T2D are interconnected[2].

Diabetes, dyslipidemia, obesity and hypertension are cardiovascular risk factors often encountered in clinical routine. Obesity and T2D can cause high blood pressure and poor heart health. Men with T2D are more likely to experience ED, which is related to cardiovascular health[3].

Weight loss surgery is an effective treatment for T2D and obesity which involves making an extra connection from the stomach to the small intestine[4]. All weight loss surgery has risks, but SG+LB may cause less vitamin deficiency than other kinds of weight loss surgery. It is not clear whether weight loss surgery can improve sexual functioning for men with T2D[5].

**Material & Method**

The data were collected in Index Medical College and Hospital & Research Centre, Indore from July 2019 to June 2020, written informed consent was obtained from each patient. A total of 36 sexually active male individuals with T2DM who were applied for metabolic surgery with a BMI between 30 and 35 kg/m<sup>2</sup> with glycated hemoglobin (HbA1c) level of >7.5% despite optimum anti-diabetic therapy, or a BMI greater than 35 kg/m<sup>2</sup> with a history of

T2DM, and being obese for ≥ 5 years despite conservative weight loss therapy and life-style modifications were given two different questionnaire forms prior to and 6 months after the surgery.

All patients were subjected to a thorough preoperative medical examination by a multidisciplinary team including a metabolic surgeon, endocrinologist, cardiologist, anesthesiologist, psychiatrist, ophthalmologist, urologist, and dietitian. An intensive workup of blood and urine tests including tumor markers, lipid profile, and vitamin status, along with conventional preoperative workup, abdominal USG, chest X-ray, pulmonary examination and function testing, endoscopy of the upper GI tract, echocardiography, ECG, Doppler USG of the carotid and vertebral arteries, and ophthalmological and neurological examination along with psychiatric evaluation was performed for all of the patients prior to surgery.

**Exclusion Criteria**

The patients with hypertension, hyperprolactinemia, benign prostate hyperplasia, and any other neurologic, psycho-genic, or cardiovascular condition that might affect erectile status have been excluded. The patients with a history of drug use or under treatment for ED and PE were also excluded.

**Inclusion Criteria**

The BMI, fasting plasma glucose (FPG), and glycated hemoglobin (HbA1c) concentrations were also measured prior to the surgery and on follow-up points of postoperative first, third, and sixth months.

**Statistical Analysis**

Statistical analysis was performed using SPSS 20. The comparison studies between severe/moderate EF groups. Data were presented as median ± standard error of the mean (SEM), and minimum-maximum values per group. Statistical significance was defined as  $p < 0.05$ .

**Results**

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**Table 1: Comparison of pre- and postoperative EF scores**

Variables	Preoperative	Postoperative	P value
<b>EF domain</b>	20 $\pm$ 2.4 (5–29)	22 $\pm$ 3.7(5–29)	0.037
<b>OF domain</b>	8 $\pm$ 0.38 (4–10)	9 $\pm$ 0.4(4–10)	0.58
<b>SD domain</b>	9 $\pm$ 1.83 (6–10)	9 $\pm$ 2.61(6–10)	0.27
<b>IS domain</b>	9 $\pm$ 0.17 (0–12)	9.2 $\pm$ 0.36(0–12)	0.092
<b>OS domain</b>	8 $\pm$ 0.91(3–10)	9 $\pm$ 1.59(3–10)	0.048
<b>preop dk</b>	6 $\pm$ 2.81 (1–20)	8 $\pm$ 3.33(1–20)	0.22

In our study we found, significant association in EF domain & OS domain among Preoperative & Postoperative Scores.

**Table 2: Characteristics of severe and moderate EF groups**

Variables	Severe and moderate EF	P value
<b>Age</b>	57.3 $\pm$ 1.73 (52–62)	0.027
<b>BMI</b>	33.8 $\pm$ 2.23 (28.7–40.35)	0.62
<b>HbA1c</b>	8.91 $\pm$ 1.29 (8.7–10.2)	0.49
<b>Insulin</b>	21.62 $\pm$ 3.68 (12.17–26.6)	0.28
<b>C peptide</b>	3.85 $\pm$ 0.48 (1.92–3.27)	0.66
<b>HOMA-IR</b>	8.13 $\pm$ 4.64 (5.5–13.45)	0.29
<b>Operative time (min)</b>	162.0 $\pm$ 18.94 (135–190)	0.42
<b>HbA1c (postoperative 1st month)</b>	8.18 $\pm$ 1.49 (6.9–8.4)	0.53
<b>Weight loss % (postoperative 1st month)</b>	13.7 $\pm$ 3.37 (10–16.8)	0.18
<b>HbA1c (postoperative 3rd month)</b>	6.81 $\pm$ 1.47 (5.7–7.28)	0.24
<b>Weight loss % (postoperative 3rd month)</b>	18.44 $\pm$ 6.28 (8.00–24.3)	0.39
<b>HbA1c (postoperative 6th month)</b>	8.39 $\pm$ 1.86 (5.4–7.7)	0.47
<b>Weight loss % (postoperative 6th month)</b>	11.52 $\pm$ 3.29 (7.05–20.0)	0.038

## Discussion

Obesity has been a worldwide health problem and can adversely affect sexual functioning. In the Massachuster Male Aging Study[6], the average prevalence of erectile dysfunction in men who were not overweight was 13% while the altered prevalence in those who were overweight at baseline was 22%. Nowadays, the bariatric surgery has become the predominant treatment for morbid obesity and is reported to be the most effective option for weight loss in the severely obese people who have excessive fat accumulation[7]. The previous studies have documented favorable clinical outcomes after bariatric surgery which can lose weight effectively and bring significant reduction in the disease-specific risk of death[8]. However, relevant researches, investigating the correlation between the bariatric surgery and male's sexual function, are insufficient. Meanwhile, the definitive causal link between bariatric surgery and male's sexual function has not been widely studied. Moreover, some relevant studies which investigated the effect of bariatric surgery on male's sexual function of morbidly obese patients were somewhat limited by lacking of sample sizes, indefinite results, and are of low credibility. Thus, we performed the meta-analysis to make a comprehensive analysis of those studies in order to investigate whether bariatric surgery contributes to improvements on male's erectile function.

## Conclusion

In conclusion, metabolic surgery could improve erectile function scores of obese patients with T2DM. Large-scale studies with similar age groups and longer follow-up would exhibit better scores during the time course on the variables that did not improve on the early postoperative period.

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