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Case Report

A novel approach for weight reduction after Roux-en-Y gastric bypass

Birbal Kumar*, Dipankar S. Mitra

Department of Minimal Invasive Surgery, HPB and General Surgery, Haryana, India

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***Correspondence:**
Dr. Birbal Kumar,
E-mail: birbalkumar90@icloud.com

ABSTRACT

Diabesity constitutes coexistence of both diabetes and obesity has become a modern epidemic now. It can be linked with insulin resistance and hyperinsulinaemia by various pathophysiological mechanism. Bariatric and metabolic surgery is a safe and effective treatment option for those affected by severe obesity and with its comorbidities like hypertension, diabetes mellitus, sleep apnoea, knee problems etc. These same procedures have also been recognized for their impact on metabolic or hormonal changes that play a major role in hunger (the desire to start eating) and satiety (the desire to stop eating) as well as improvement and/or resolution of conditions like diabetes mellitus, hyperlipidaemia which is associated with severe obesity. Bariatric surgery is a recognized and accepted approach for both weight-loss and many of the conditions that occur as a result of severe obesity.

Keywords: Diabesity, Type II diabetes mellitus, Obesity, Syndrome X, Gastric bypass, Bariatric surgery

INTRODUCTION

Obese men and women are at extremely higher risk of developing type 2 diabetes mellitus (T2DM). The term "metabolic syndrome" (MS) or "syndrome X" are generally used to indicate multiple clinical life-threatening entities of central obesity, insulin resistance (IR), hypertension, and hyperlipidaemia.[1] Metabolic syndrome results in a greater risk of developing T2DM and cardiovascular disease, two of the principal causes of death worldwide. This article corroborates the knowledge of evidence of a critical role of the gut in glucose and energy homeostasis and supports consideration of the gastrointestinal (GI) tract as a rational biological target for interventions aimed at treating obesity, diabetes, and metabolic disorders. Recent randomized clinical trials show that bariatric surgery results in better control of T2DM and greater reduction of cardiovascular risk factors compared with a variety of lifestyle interventions and medical therapies.[2] Based on such mounting mechanistic and clinical evidence, conventional bariatric procedures are now increasingly being proposed not only as mere surgical management of obesity but also as a valuable approach to intentionally treat T2DM-a new concept and practice referred to as "metabolic surgery".

CASE REPORT

A 4 years old housewife came to us with severe sleep apnoea, uncontrolled type II diabetes mellitus and inability to walk more than ten steps in one go. Her height was 171 cm, weight was 147 kgs and BMI was 58.1 kg/m^2. She had symptoms of gastro oesophageal reflux disease and dyslipidaemia also. Her Hb A1C was 7.5 which indicated poor control of blood sugar in recent time. She was counselled for bariatric surgery in view of her co morbidity and obesity. All relevant investigations were done. Nocturnal polysomnography was advised by pulmonologist which diagnosed severe obstructive sleep apnoea. She was started on continuous positive airway pressure ventilation on regular basis at home every night.

She reviewed back after two weeks and was planned for roux en Y gastric bypass. Intraoperative endoscopy confirmed the 30 ml small gastric pouch and a wide, healthy gastrojejunostomy. She tolerated the procedure well. Contrast CT scan of upper abdomen showed free

flow of dye to the alimentary limb without any leak. She was discharged on POD4 with an advice of low-calorie high protein liquid diet. On follow up visit after 10 days she was maintaining her normal blood sugar level without any insulin support. She was started on puree diet after 10 days. She started on regular light exercise after two weeks.

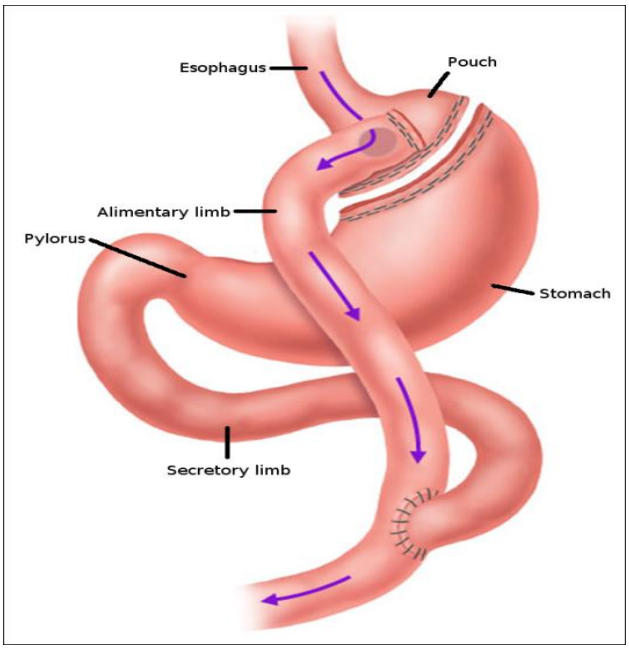

Figure 1: Roux-en-Y gastric bypass (RYGB), showing both alimentary and secretory limb with gastric pouch (source-book written by Raymond et al).

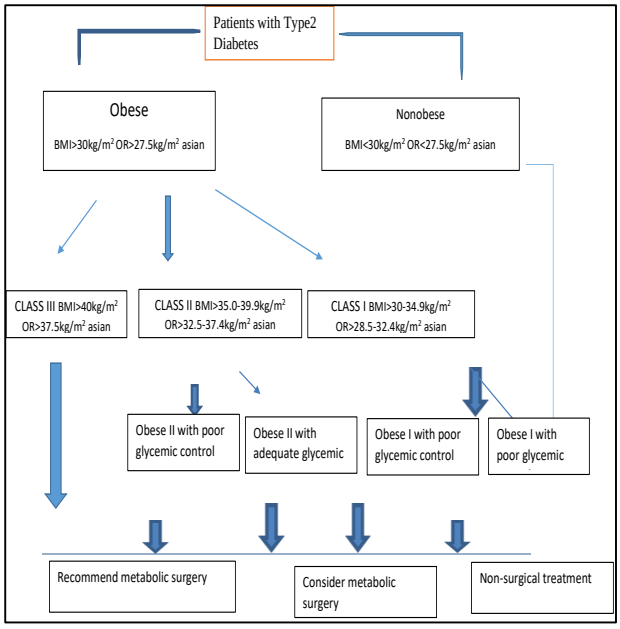

Figure 2: Algorithm for the treatment of T2D, as recommended by DSS-II voting delegates. The indication above are intended for patients who are appropriate candidates for elective surgery, meds, medications.

DISCUSSION

Laparoscopic Roux en Y Gastric Bypass (LRYGB) performed at specialty canters by trained bariatric surgeons has excellent outcomes. The 30-day mortality rate is 0.3% and major complication rate is 4.3%.[3] The LRYGB is highly effective with regards to excess weight loss when compared with other procedures like gastric sleeve resection and adjustable gastric banding. The average excess weight loss following LRYGB is 70% to 80% of excess weight at 5 years.[4] Morbid obesity increases the risk of premature death and the risk of morbid obesity outweighs the risks of bariatric surgery. Furthermore, several studies show improvement in life expectancy after bariatric surgery.[5] Several randomized control trials, met analyses have shown improvement or resolution in type 2 diabetes, hypertension, hyperlipidaemia, and OSA, as well as improved outcomes when compared with medical interventions. Bariatric surgery, including LRYGB, is also associated with improvement of obesity-related cardiac dysfunction, polycystic ovarian syndrome and resolution of associated infertility, gastroesophageal reflux disease, and osteoarthritis.[6,7]

Over the last decade, bariatric surgery as an intentional treatment of T2DM has become increasingly popular worldwide and also in India. This idea is based on consistent clinical observations of the dramatic improvement of hyperglycaemia in patients with T2DM and on the experimental evidence that rearrangements of GI anatomy similar to those in some bariatric procedures directly and weight-independently affect glucose homeostasis. Numerous recent randomized controlled trials (level 1 evidence) have shown superior glycaemic control after bariatric/metabolic surgery than with conventional medical and lifestyle approaches for the treatment of obese patients with T2DM. Further research on mechanisms of action of these procedures and the increasing recognition of the complex and crucial role of the gut in metabolism provide a biological rationale for the use of GI-based interventions to treat T2DM. Such conceptual evolution is reflected in most recent guidelines by professional organizations and government agencies that recognize the role of surgery as a treatment of T2DM and advocate the use of disease-based criteria beyond just BMI. These guidelines are contributing to transforming a weight loss intervention (bariatric surgery) into a surgical practice shaped around the goal to improve metabolism and reduce cardio metabolic risk. Such concept and practice is referred to as “metabolic surgery.”

A national institutes of health (NIH) Consensus conference in 1991 produced the first guidelines published in bariatric surgery. These BMI-based recommendations state that patients with BMI of 40 kg/m^2 or greater or BMI 35 kg/m^2 or greater with concomitant high-risk morbidities (e. g., T2DM, OSA, obesity-related cardiomyopathy) may be considered candidates for bariatric surgery. First diabetes surgery

summit (DSS-I), an international consensus conference, recommended expanding the use and study of GI surgery to treat diabetes, including among only mildly obese persons. Specifically, the DSS-I recommended that "diabetes surgery" should be considered in diabetic, obese patients with BMI 35 kg/m^2 or greater and also in carefully selected candidates with BMI 30 to 35 kg/m^2 and poorly controlled T2DM by lifestyle and medical interventions. Importantly, the DSS-I encouraged further studies on the role of surgery in diabetes care as an important research priority. The American diabetes association for the first time introduced bariatric surgery in its standards of care for the treatment of T2DM, to patients with BMI >35 kg/m^2, because of the lack of sufficient evidence in lower BMI patients. International diabetic federation suggested expanding the indications for bariatric/ metabolic surgery to include patients with inadequately controlled T2DM and a BMI as low as 30 kg/m^2, or down to 27.5 kg/m^2 for Asians. More recently, in the NIH and care excellence in the United Kingdom (NICE), amended its 2006 guidelines on obesity management, advising assessment for bariatric/metabolic surgery in patients with BMI as low as 30 kg/m^2 and recent onset of T2DM.

Recently published DSS II recommendations states that there is now sufficient clinical and mechanistic evidence to support inclusion of GI surgery among anti diabetes interventions for people with T2D and obesity. Algorithms for treating T2D should include specific scenarios in which metabolic surgery is considered to be a treatment option in addition to lifestyle, nutritional, and/or pharmacological approaches.

CONCLUSION

Given its role in metabolic regulation, the GI tract constitutes a meaningful target to manage T2D. Bariatric surgery can be offered to patient with T2DM as there is sufficient clinical evidence to support inclusion of metabolic surgery among anti diabetes interventions for people with T2D and obesity and uncontrolled diabetes with low BMI.

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