

An Assessment of Surgical Weight Management Compared to Pharmacological Therapies for Treatment of Type 2 Diabetes

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Abstract

Diabetes is one of the highest leading causes of death in the United States with type 2 diabetes mellitus (DM2) being the most prevalent type. Despite many methods available for treatment, none have proven to be a curative option for patients diagnosed with diabetes mellitus. Recently, the use of surgical weight management has piqued interest with its ability to cause remission in DM2. This literature review compared the effects of Roux-en-Y gastric bypass (RYGB), laparoscopic gastric bypass, and pharmacotherapies alone. These methods showed improved outcomes of the following: hemoglobin A1c, weight loss, low density lipoprotein (LDL) cholesterol, blood pressure, and ultimately remission of DM2. Moreover, surgical weight management has potential to become an adequate alternative for management and remission of DM2.

Introduction

Diabetes is rated 7th in highest leading causes of death in the United States with over 37 million individuals affected with the disease. Out of the large population affected, 90% - 95% of these diagnoses are of type 2 diabetes mellitus (DM2).¹ Incidence rates for DM2 are continuing to increase in the United States and are anticipated to climb nearly 70% by 2060, with the largest increase in diagnoses of individuals under the age of 20.² Timely treatment is warranted for individuals diagnosed with DM2 to prevent additional health decline from secondary complications such as hypertension, hyperlipidemia, cardiovascular disease, retinopathy, and neuropathy. Current management of DM2 involves a combination of lifestyle modifications and pharmacological therapies. Surgical weight management has become an appealing alternative to current diabetic regimens, as it has the possibility to produce long-term outcomes in patients diagnosed with DM2. RYGB is the most common surgical weight loss procedure in the United States. The procedure can be performed laparoscopically by connecting a small pouch from the stomach to the small intestine.³ This research aims to determine if surgical weight management can produce improved outcomes compared to pharmacological therapies for weight reduction in DM2.

Methods

A literature review was conducted utilizing databases to collect data from peer-reviewed research articles. The focus of the research was regarding the effects of surgical weight management compared to current diabetic treatment guidelines.

Discussion/Results

Gastric bypass is a coming of the age treatment for patients with DM2 when pharmaceutical intervention has failed. Research studied factors of pre- and post-surgical intervention including BMI, body weight, visceral fat, triglycerides, pulmonary function, urine albumin, glomerular filtration rate, and creatinine levels. A study conducted by RV Cohen et al. indicated that 88% of the 66 patients that underwent gastric bypass experienced full remission. Another study conducted by W Feng et al. used a triple endpoint consisting of HbA1c < 7%, low-density lipoprotein (LDL) < 2.6 mmol/L, and systolic blood pressure <130 mmHg. The results showed that 35% of patients who underwent RYGB met these goals and only 8% of those using conventional methods met the triple endpoint. Ikramuddin S et al. conducted a study that used target goals including hemoglobin <7.0%, LDL <100 mg/dL and systolic blood pressure <130 mm Hg. After 5 years, 31 patients who underwent gastric bypass achieved these goals and only 8 participants in the lifestyle and medical management cohort did. Gastric bypass also showed improvements in energy, fatigue, obesity, and mental health of the patients. One limitation of gastric bypass is that it requires a healthy lifestyle to maintain the positive effects long-term, which can be mitigated by pre and postoperative counseling. Overall, all research conducted showed that gastric bypass resulted in remission of DM2 or improved diabetic markers.

Conclusion

Surgical weight management is becoming a popular treatment for individuals diagnosed with DM2. The purpose of this systematic review was to determine if bariatric surgery produces better outcomes for those with DM2 over lifelong pharmaceutical therapy. Based on our findings, gastric bypass showed significant reductions in weight, triglycerides, blood pressure, HbA1c, and even remission of diabetes⁴. As the use of surgical weight management increases, we believe that this intervention has great potential to be used as an effective treatment method for those grappling with DM2.

Future Directions

Although the use of surgical weight management is making advancements in the field of DM2, there are still several topics to consider. Gastric bypass has limitations in certain populations, such as those who do not meet the BMI parameters (30-34.9 with comorbidities or >35 without). Additionally, those with untreated depression, eating disorders, severe cardiovascular disease, or those who will not comply with the lifelong dietary changes associated with the procedure would be ineligible. Regardless, we have found evidence that shows gastric bypass as an effective treatment strategy for DM2. Future studies on long term effects of gastric bypass on macro and micro vascular complications should be done.

Sources

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