

Metabolic Surgery in Asia

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Type 2 diabetes mellitus (T2DM) is now a global health priority. It was estimated that more than 240 million people in the world are affected with T2DM and that number is expected to 360 million by the year 2025. More than 60% of the world's population with diabetes comes from Asia and the incidence of T2DM in Asia is increasing more rapid than the rest of the world. In Taiwan, the T2DM incidence of adult male increased more than double from 4.6% to 9.3% in the past decade. Unlike in the west, where older population is most affected, the burden of diabetes in Asian countries is disproportionately high in young to middle-age adults. For those early onset T2DM patients, the incidence rate of diabetic nephropathy is alarmingly high, especially in those not well controlled patients. In Asia, 55% of newly diagnosed end staged renal disease patients are due to T2DM. How to control this chronic and debilitating disease will be a very important health issue in Asia.

There are strong evidences that bariatric surgery can cure most of the associated T2DM morbid obese patients ($BMI > 35 \text{ Kg/m}^2$). However, the mechanism for diabetes remission after gastric bypass remained speculative. Optimal outcomes for diabetes remission after metabolic surgery will occur if the mechanism is understood and patients best suited to the surgery are selected and those who will predictably have a poor result are excluded. To be able to make such decisions, we need a collaborative study from Asia for the Asian. This information is helpful for applying gastric bypass surgery as metabolic surgery for type 2 diabetes treatments in the future.

"Asian particularity on Obesity and Metabolic disorder"

The personality of the patients with morbid obesity

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Bariatric surgery might become indispensable for the therapy of morbid obesity. Metabolic disorders could be well improved by bariatric surgery. In some cases, weight reduction relief the insulin therapy in obese type 2 diabetes mellitus. But, following up term after operation is very important, because actual body weight reduction can be obtained in this term. The trouble in this term seems to be not so few. One is psychological unstableness. We had already experienced them during semi-starvation therapy. For example, depression, refusal diet, trial of suicide, solitary and so on.

To understand the causes for that unstableness, personalities of the patients were analyzed using Rorschach test by applying Ender' s methods. In many cases, depression and organic psychological diseases were concealed. One of conspicuous features was high lambda style, in which, passive attitude, superficial understanding, apparent obedience were observed. Those people were controlled well in the hospital, but, they easily show rebounds once outside of the hospital. The percentage of high lambda style is increasing as the degree of obesity.

Before operations of the patients, we had better understand the personality of the patient, beforehand. Moreover, psychotherapy such as enforcement will improve the benefit of surgery. And, how to understand the personality of the patients need further studies.

Bariatric surgery in Asia. A literature review.

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Like in Western countries, bariatric and metabolic surgery in Asia has been steadily gaining popularity although the pace of spread is gradual. The purpose of the present review is to evaluate the current evidence regarding weight loss, complication rates, postoperative mortality, and co-morbidity improvement after bariatric surgery for Asians. Pubmed was searched for citations.

Laparoscopic Roux-en-Y Gastric Bypass for Normal Weight Type II Diabetes Mellitus

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Background: Laparoscopic Roux-en-Y gastric bypass (LRYGB) can dramatically ameliorate type 2 diabetes mellitus (T2DM) in morbidly obese patients. However, little evidence supports the effectiveness of LRYGB in normal weight patients.

Methods: After getting E-Da IRB approval, twelve normal weight patients with T2DM underwent LRYGB. Data, including patient demographics; BMI; co-morbidities; and details of diabetes mellitus, including disease duration, family history, medication use, and remission were prospectively collected and analyzed.

Results: The mean age of 5 men and 7 women was 51 years (range, 35-65 years); mean BMI, 23.6 (range, 22.9-24.7 kg/m²); and mean duration of T2DM onset was 11 years (range, 3-20 years). Mean operation time was 89 min (range, 46-229). Mean hospitalization was 2 days (range, 1-4). There was no mortality. One patient received laparoscopic repair of Peterson's defect due to symptoms from internal hernia 6 months later after surgery. The result of diabetic remission would be reported.

Conclusions: In this preliminary report, LRYGB is safe in normal-BMI Diabetic patients; result of long-term follow up for diabetic remission is expectable.

Ileal Interposition for Control of Type-2 Diabetes

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Ileal Interposition is a specific surgery directed to control type -2 diabetes & can be performed for patients of any weight. We present 48 cases of Ileal Interposition surgeries for control of type-2 diabetes done since Feb.2008 under clinical protocol after Institutional Ethics Committee approval.

Selection of patients was done after checking C-Peptide levels and Insulin resistance with HOMA-IR and excluding any cases of LADA. All procedures were completed laparoscopically with 6 ports, performing 3 transections, 3 anastomosis, closure of all 3 mesenteric gaps and a variable sleeve gastrectomy depending on BMI levels. The ileal segment was 170 cms long with transections at 30 cms proximal to I-C junction and 20 cms distal to Lig of Trietz to perform the Standard procedure utilizing the hindgut hypothesis mainly. A Diverted option, using duodeno-jejunal bypass was added for the difficult diabetic situations to also include the foregut hypothesis.

In a follow up of 18 months we have found significant improvement in blood glucose, HbA1c, triglycerides & microalbuminuria. Results were statistically significant for Blood glucose, HbA1c, triglycerides & microalbumin at all times upto 24 months. Malabsorption as measured Vit B12, Ca²⁺, Iron-- was not observed.

We conclude that Ileal Interposition can be done with safety & is effective in controlling type -2 diabetes in patients with any BMI, without any malabsorption.

Title: Laparoscopic Sleeve Gastrectomy with Duodenojejunal Bypass for Type 2 diabetes with BMI under 35 kg/m²

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Abstract:

Background

We introduced laparoscopic sleeve gastrectomy with duodenojejunal bypass (LSGB) for Japanese obese patients with a risk of gastric cancer in 2007. Forty-three patients underwent LSGB from April 2007 to December 2010. Regarding anti-diabetic effect, the remission rate of Type 2 diabetes (T2DM) was 93%. This result showed that LSGB could achieve comparable or better remission of T2DM, compared with other bariatric procedures. The metabolic surgery for patients with BMI lower than 35 kg/m² is still controversial. We evaluated the effect of LSGB on T2DM with BMI under 35.

Methods

Seven patients with T2DM underwent LSGB. The preoperative mean BMI and weight were 33.4 ±1.5 kg/m² and 97.4 ±11.0kg, respectively. There were six patients with T2DM and one patient with IGT. The data on T2DM, lipid profile and blood pressure of the subjects were studied before and 12 months after surgery.

Results

The mean excess weight loss at 12-month follow up point was 82.7%. The mean fasting plasma glucose and HbA1c before and 12 months after surgery were 154.7 mg/dl, 8.1% and 128.5 mg/dl, 6.1%. The remission rate of T2DM was 83%. The mean systolic blood pressure and LDL before and 12 months after surgery were 147.5 mmHg, 158.4 mg/dl and 131.0 mmHg and 140.0 mg/dl. There was one patient who could not achieve the remission of T2DM with 20-year history and preoperative insulin required status (more than 100 U/day). The other CVD risk factors related to T2DM were improved clinically.

Conclusion

This result showed that LSGB for low BMI patients with T2DM could achieve the considerable remission rate of T2DM and reduce the other CVD risk factors.

Metabolic surgery in Korea : Remission of hyperglycemia with modified mini-gastric bypass for the patients with BMI less than 30 kg/m²

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Background: Type 2 Diabetes mellitus (T2DM) has become an epidemic health problem. Compared to western countries, Asian T2DM occurs in patients with lower body mass index (BMI) due to central obesity and decreased pancreatic β -cell function. The efficacy of laparoscopic mini-gastric bypass (LMGB) in obese patients with T2DM is proven by numerous studies. Treatment outcomes of LMGB for non-obese T2DM patients are also estimated to be excellent. The aim of our pilot study was to evaluate the efficacy and safety of LMGB in non-obese T2DM patients (BMI < 30 kg/m²).

Methods: Eighty-eight patients underwent LMGB at Soonchunhyang University Hospital from August 2009 to November 2010. Preoperative data including glycosylated hemoglobin (HbA1c), fasting plasma glucose (FPG), and 2-hour post prandial glucose (2-hr PPG) were compared with data collected at 1, 3, 6 and 12 months postoperatively.

Results: All procedures were completed laparoscopically. Mean age was 47.1 years, mean BMI was 25.3 kg/m², mean operative time was 96.2 minutes, and mean postoperative hospital stay was 4.6 days. Neither mortality nor major complications occurred. Mean preoperative HbA1c, FPG, 2-hr PPG, and C-peptide level were 9.7%, 222 mg/dl, 343 mg/dl, and 2.78 ng/ml, respectively. 12months follow-up was possible in 13 patients. HbA1c, FPG, 2-hr PPG, and C-peptide level at 12th post-operative month were 6.3%, 124 mg/dl, 194 mg/dl, and 2.18 ng/ml, respectively.

Conclusion: The present preliminary study demonstrated resolution of hyperglycemia in non-obese T2DM patients (BMI < 30 kg/m²). Although long-term follow-up data are required, early operative outcomes were satisfactory in terms of glycemic control and safety of the procedure.

Metabolic Surgery in Hong Kong

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Asians have higher fat content and different indications for bariatric surgery as compared to western population. In response to DSS in Rome, Asia Consensus Meetings on Metabolic Surgery, endorsed by the Asia Pacific Bariatric and Metabolic Surgical Society were held at Trivandrum in India in 2008 and Taipei 2010 to discuss the situation in Asia. Most experts agreed that Asians are more prone to develop diabetes at lower BMI and early consensus for the use of metabolic surgery to treat Type II diabetes mellitus in Asia were laid and stated as the followings:

1. Bariatric/Gastrointestinal Metabolic surgery should be considered as a treatment option for obesity in people with Asian ethnicity with a BMI more than 35 kg/m² with or without co-morbidities.
2. Bariatric/Gastrointestinal Metabolic surgery should be considered as a treatment option for obesity in people with Asian ethnicity above a BMI of 30 if they have central obesity (waist circumference more than 80 cm in females and more than 90 cm in males) along with-at least two of the additional criteria for metabolic syndrome: raised triglycerides, reduced HDL cholesterol levels, high blood pressure and raised fasting plasma glucose levels or Type II diabetes mellitus patients who are inadequately controlled by life-style and medical therapy.
3. A surgical approach may also be appropriate as a non-primary procedure alternative to treat Type II diabetes mellitus patients with BMI >27 and central obesity (waist circumference more than 80 cm in females and more than 90 cm in males) who are inadequately controlled by life-style and medical therapy.

Most clinicians and patients in Hong Kong at present are not aware of the option of surgery for treating Type II diabetes. Increasing evidences demonstrate that gastrointestinal surgery including current bariatric surgery has a specific and independent effect on the disease. We have introduced metabolic surgery to treat Type II diabetes since 2008 in Hong Kong. At the moment, we limit our patients to BMI >27 with poorly controlled DM. Options would be sleeve gastrectomy vs. gastric bypass vs. sleeve gastrectomy with DJB.

Experience of diabetes surgery in India

Muffazal Lakdawala

Abstract

Diabetes is believed to be a quintessential medical disease. The notion that surgery is effective and can lead to a virtual cure is a revolutionary concept that evolved when long term results of bariatric surgery started coming in. This led to a major shift in the goal of treatment from improving life with diabetes towards curing it. These reports have far reaching implications for a country like India which is the diabetic capital of the world. It is postulated that by 2025 there will be 57 million Indians suffering from type 2 diabetes mellitus. Almost 70% of the diabetics are overweight.

It is a well known fact that Asians have a higher body fat percentage as compared to their western counterparts. Asians are metabolically obese and tend to develop comorbidities like type 2 diabetes at a much lower weight. Visceral fat as measured by the waist circumference holds a lot more importance in Asians. In the wake of these observations 1st Asian consensus meeting on metabolic surgery was organized to contend the existing NIH criteria for defining obesity in the Asian perspective.

Presently laparoscopic roux-en-y gastric bypass (RYGB) and laparoscopic sleeve gastrectomy (LSG) are the most commonly performed bariatric procedures in India. Indian studies have shown about 98% resolution of type 2 diabetes after RYGB in morbidly obese. Recent reports suggest comparable results after LSG albeit it takes longer than after RYGB. Presently these procedures are being recommended for patients with a BMI of 32 and above with type 2 diabetes mellitus. It has also been recommended for patients with a BMI of 30 and above in conjunction with waist circumference and presence of comorbidities.

The contention is whether the same results can be simulated in diabetics who are not obese. Whether metabolic procedures like ileal transposition and duodenojejunal bypass will stand the test of time is yet to be seen. Trials are going on in various parts of the world. India has the biggest diabetic load and stands to benefit the maximum from any positive outcomes. There is immense hope riding on this concept as any positive results would prove to be a boon to the millions of diabetics who can then hope of a pill or insulin free life.

Overview of Metabolic Surgery Worldwide

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An email survey was sent to the leadership of the 36 International Federation for the Surgery of Obesity and Metabolic Disorders nations or national groupings, as well as Denmark, Norway, and Sweden. Responses were tabulated; calculation of relative prevalence of specific procedures was done by weighted averages. Out of a potential 39, 36 nations or national groupings responded. In 2008, 344,221 bariatric surgery operations were performed by 4,680 bariatric surgeons; 220,000 of these operations were performed in USA/Canada by 1,625 surgeons. The most commonly performed procedures were laparoscopic adjustable gastric banding (AGB; 42.3%), laparoscopic standard Roux-Y gastric bypass (RYGB; 39.7%), and total sleeve gastrectomies 4.5%. Over 90% of procedures were performed laparoscopically. Comparing the 5-year trend from 2003 to 2008, all categories of procedures, with the exception of biliopancreatic diversion/duodenal switch, increased in absolute numbers performed. However, the relative percent of all RYGBs decreased from 65.1% to 49.0%; whereas, AGB increased from 24.4% to 42.3%. Markedly, different trends were found for Europe and USA/Canada: in Europe, AGB decreased from 63.7% to 43.2% and RYGB increased from 11.1% to 39.0%; whereas, in USA/Canada, AGB increased from 9.0% to 44.0% and RYGB decreased from 85.0% to 51.0%. The absolute growth rate of bariatric surgery decreased over the past 5 years (135% increase), in comparison to the preceding 5 years (266% increase). Bariatric surgery continues to grow worldwide, but less so than in the past. The types of procedures are in flux; trends in Europe vs USA/Canada are diametrically opposed.