

Preliminary Case Report on the Change in Metabolic Profile in Non-Obese Type 2 Diabetic Patients treated with Surgery in the Philippines

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Background: The metabolic effects of bariatric surgery, particularly the remarkable resolution of Type II DM are well established. Several mechanisms of action have been proposed in addition to weight loss as the major factor causing such improvement in co-morbidities. The aims of this presentation are as follows: 1. To describe a novel procedure, the Laparoscopic Sleeve Gastrectomy with Loop Duodeno-Jejunal Bypass; and 2. To present the observed changes in metabolic panel in 3 patients before and after Metabolic Surgery.

Methods: From January 1, 2008 to December 31, 2010, three (62 and 56 y/o females, and a 43 y/o male) non-obese patients with medically uncontrolled Type 2 Diabetes Mellitus underwent Laparoscopic Sleeve Gastrectomy with Loop Duodeno-Jejunal Bypass. Preoperative profile was taken and compared to 1, 3, 6, 12 and 24 months.

Results: All 3 patients had 3 months follow-up data, 2 had 6 and 12 months follow-up data and 1 had 2 years follow-up data. Decrease in BMI ranged from 1-3 kg/m<sup>2</sup>. Improvement of FBS, HbA1c was noted as immediate as 1 month postoperatively with discontinued Oral Hypoglycemic medication and Insulin as early as 3 months after surgery. No surgical morbidities were noted.

Conclusion: Laparoscopic Sleeve Gastrectomy with Loop Duodeno-Jejunal Bypass can be performed safely. There are multiple mechanisms for its euglycemic effect, a subject for further investigation.

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## Metabolic outcomes of bariatric surgery: a result from Thai Subjects

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**Background:** Obesity and its co-morbidities become to be one of the most important health care problems. Weight loss surgery has been proved as the most effective and sustainable method to obtain long term weight control and to achieve improvement of metabolic disorders. There are limited results contributing from Asian subjects. We reviewed our metabolic outcomes of surgical treatment for morbidly obese patients in our institute.

**Methods:** Data from all patients who underwent bariatric surgery in Chulalongkorn University were collected and metabolic outcomes were reviewed.

**Results:** From Jan 2003 to December 2010. Fifty-five consecutive Thai patients underwent bariatric surgery by the Chula Minimally Invasive Surgery Center. The mean age was 35.2 years (18-57 years). Twenty four (56.4%) were men. The pre-op BMI was 49.2 kg/m.<sup>2</sup> Roux en Y Gastric bypass was the most common procedure (78%). In RYGB group showed mean EWL of 64.2% at 2 years. 20 of 55 (36.3%) were type II diabetic, all of them were getting improvement post operatively; of which, 81.8% were completely resolved and 18.2% were able to decrease dosage of hypoglycemic drugs. 28 of 55 (50.9%) were hypertensive, 46.7% of them were able to discontinue antihypertensive drugs and 46.7% were decreasing dosage. 19 of 55 (34.5%) were dyslipidemia; 60% were resolved and 40% were improved.

**Conclusion:** Metabolic results in Thai patients undergoing bariatric surgery are excellent. This initial data from Thai subject reflects a comparable result worldwide.

## Comparison Between the Effects of Laparoscopic Sleeve Gastrectomy and Laparoscopic Roux-en-Y Gastric Bypass on Type 2 Diabetes Mellitus in Morbidly Obese Japanese Patients: A Retrospective 1 Year Study

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<Background>Laparoscopic Roux-en-Y gastric bypass (LRYGB) provides sustained weight loss and leads to well-documented remission of Type 2 diabetes (T2DM), whereas data on the effectiveness of laparoscopic sleeve gastrectomy (LSG) on T2DM are scarce<Methods>We conducted a retrospective study on the therapeutic effect on type 2 diabetes and biochemical characteristics in 16 morbidly obese T2DM subjects undergoing LSG and 24 subjects undergoing LRYGB before and at 1, 3, 6, 12 months after surgery, matched for age, gender, BMI, fasting plasma glucose, HbA1c, insulin, C-peptide, HOMA-IR, DM duration<Results>The preoperative median BMI was 40.8 kg/m<sup>2</sup> in the LSG group and 44.9 kg/m<sup>2</sup> in the LRYGB group and as for T2DM, most subjects were not severe type from their history and biochemical markers. The percentage of excess weight loss at the 1, 3, 6, 12-month follow up points after LSG and LRYGB were 28.8 and 27.8, 46.2 and 47.0, 64.2 and 63.9, 74.2 and 71.8%, respectively. The remission rate of T2DM at the same follow up points after LSG and LRYGB were 38 and 35, 75 and 73, 87 and 93, 93 and 100%, respectively.<Conclusion>For not severe T2DM in Japanese morbidly obese Japanese patients, the therapeutic effect of LSG and LRYGB on T2DM was comparable at 1-year interval.

Laparoscopic Duodenojejunal bypass with Sleeve gastrectomy- A novel procedure for resolution of Metabolic Syndrome in patients with BMI <32.5:

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Background: Type II DM resolution in morbidly obese patients following Metabolic Surgery suggests these might benefit even non-morbidly obese patients with Metabolic Syndrome. Available literature favours Combined Restrictive/Malabsorptive procedures over the others in control of Diabetes and other co-morbidities. Laparoscopic Duodenojejunal bypass with Sleeve gastrectomy is one such procedure performed in our series. Methods: Patients with < 32.5 BMI, confirmed to be Type II DM with HbA1C >7.5 were included in the study. Patients with Sliding Hiatus Hernia and C-peptide levels < 1 were excluded. Laparoscopic Duodenojejunal bypass was done in a retro colic fashion, anastomosis being done end-end, single layer suturing with a 60 F Sleeve. Results: A total of 14 patients (8 women, 6 men) included in the study were prospectively evaluated. The mean age was 36.5 yrs. The mean pre-operative BMI, (Fasting Blood Glucose) FBG and HbA1C was 29.9, 196.4 mg/dl and 8.2%. The postoperative BMI, FBG and HbA1C at the end of 6 mts and 1 year was 25.4, 110.2, 6.3% and 24.2, 106.4, 6.1% respectively. 12 out of 14 patients had complete remission and 2 had reduced medication use. 4 out of six patients who had Hypertension had complete remission, 2 had no improvement. Conclusion: Laparoscopic Duodenojejunal bypass with Sleeve, which combines the principles of Sleeve Gastrectomy and Foregut hypothesis, is an effective procedure for resolution of Diabetes and other co-morbidities even in lower BMI population. The stomach remnant is amenable to endoscopic surveillance for Carcinoma Stomach. Also with the possibility of altering the size of the Sleeve, the procedure can be made less restrictive which is best suited for a country like India with a low calorie-higher quantity food intake pattern, hence preserving the quality of eating.

## SLEEVE GASTRECTOMY : METABOLIC AND BARIATRIC SURGERY : A BLESSING FOR THE ASIANS

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### OBESITY---GLOBAL EPIDEMIC (WHO)

- Pro-atherogenic disease with Dysmetabolic state

South Asians around the globe have highest rate of Coronary Arterial Disease (CAD) .

- There would be around 62 million pts of CAD in India by 2015 and out of these 23 million would be pts lesser than 40 yrs of age.

### DM BURDEN IN INDIA

- Approx. 43 million adults are Diabetics
- Estimated to increase to 57.2 million by 2025.

### Asian Consensus

- Consensus Statement for Diagnosis of Obesity, Abdominal Obesity and the Metabolic Syndrome for Asian Indians and Recommendations for Physical Activity, Medical and Surgical Management:-

Normal BMI: 18.0-22.9 kg/m<sup>2</sup>,

Overweight: 23.0-24.9 kg/m<sup>2</sup>,

Obesity: > 25 kg/m<sup>2</sup>

JAPI

2009.

More CVD ,DM risk at lower BMI in Asian population are due to : 1- BODY COMPOSITION , 2- INSULIN DIS-SENSITIVITY , 3- CENTRAL DISTRIBUTION OF FAT.

### INDIAN EXPERIENCE OF SLEEVE GASTRECTOMY :

A . Effectiveness of laparoscopic sleeve gastrectomy on glycemic control in obese Indians with type 2 diabetes mellitus

B . Long-term effects of laparoscopic sleeve gastrectomy in morbidly obese subjects with type 2 diabetes mellitus

C . Impact of LSG on CVD risk reduction using Framingham score

## Improvement in Type 2 Diabetes Mellitus following Bariatric Surgery in morbidly obese individuals

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**BACKGROUND:** Weight loss has been shown to improve the control of type 2 diabetes mellitus (T2DM). **AIMS OF STUDY:** To evaluate the impact of bariatric surgery on T2DM in morbidly obese individuals. **METHODS:** From August 2008 to November 2010, 47 consecutive patients underwent bariatric surgery at the Singapore General Hospital. All patients documented to have T2DM prior to surgery were included in the study. **RESULTS:** There were 16 patients suffering from T2DM (9 males). The median age was 43 years (range 32 - 54). 8 patients underwent laparoscopic sleeve gastrectomy (LSG) and 8 underwent laparoscopic gastric bypass (LGB). Median length of stay was 4 days (3-14). The median pre-operative weight was 116kg (85 -171) and body mass index (BMI) 40 kg/m<sup>2</sup>(33 - 70). Median follow-up was 5 months (1 - 26). Patients who underwent LSG had a median pre-operative HbA1c of 7.2% (6.4-8.2). All these patients were taking oral hypoglycaemic agents (OHAs). Median post-operative HbA1c levels were 5.8% (5.5-6.1), and all OHAs were discontinued. Patients who underwent LGB had a median pre-operative HbA1c of 8.2% (6.6-9.3). 5 patients were on subcutaneous insulin injections, in addition to oral hypoglycaemic agents (OHAs). Median post-operative HbA1c levels were 6.1% (5.2-8.0), and although insulin was discontinued in all, 2 patients were still taking OHAs. **CONCLUSION:** Bariatric surgery provided rapid and effective control of T2DM, allowing all patients to reduce or eliminate diabetic medication completely. Bariatric surgery may be considered as an adjuvant therapy for T2DM in morbidly obese individuals.

## DUODENOJEJUNAL BYPASS IN DIABETIC GASTRIC CANCER PATIENTS

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(Objective) Metabolic surgery in non-obese diabetics has been tried by various methods. Effect of duodenojejunal bypass on diabetes could be studied by the modification of reconstruction after curative gastrectomy for diabetic gastric cancer patients.

(Method) From June 2007 to December 2009 we performed our modified RY gastrojejunostomy procedure of duodenojejunal bypass with bypassed proximal jejunum over 100cm after curative distal gastrectomy for 18 diabetic gastric cancer patients. The bypassed proximal jejunum were 100-190cm ( 134.3cm in average ) as the sum of Roux and Y limbs. The durations of diabetes were 6.4 years in average, and diabetes was managed by oral hypoglycemic agent in all of the patients.

(Result) Diabetes had been remitted in 7 patients among 18 patients ( 38.9% ) at the 1 year or more follow up, with HbA1c level of 7.0% or less without medication. The serum ferritin and VB12 levels were within normal limit in most of patients.

(Conclusion) Bypass of duodenum and lengthened proximal jejunum with distal gastrectomy is acceptable in nutrition. Some portion of diabetic gastric cancer patients could be in remission of diabetes with bypass of duodenum and long proximal small bowel in gastric cancer surgery. Randomized prospective clinical trial of metabolic surgery for diabetic gastric cancer patients is necessary to evaluate the metabolic effect of duodenojejunal bypass on non-obese diabetics.