

Diabetes control and lessened cerebral cardiovascular risks after gastric bypass surgery in Asian Taiwanese with a body mass index <35 kg/m<sup>2</sup>

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Background: Morbid obese patients with type 2 diabetes mellitus (T2DM) and a body mass index (BMI) >35 kg/m<sup>2</sup> benefit greatly from Roux-en-Y gastric bypass surgery (RYGB). Whether the patients with T2DM and a body mass index (BMI) <35 kg/m<sup>2</sup> also profit from this surgical procedure is not known. In Asian Taiwanese, the risks associated with T2DM and cardiovascular diseases occur at a relatively lower BMI levels. We examined the safety and efficacy of RYGB in Asian Taiwanese patients with T2DM and a BMI of 22-35 kg/m<sup>2</sup> in a referral medical center. Methods: A total 62 consecutive patients with T2DM and a BMI of 22-35 kg/m<sup>2</sup> underwent RYGB between 2003 and 2009. The data were prospectively collected before surgery and at 3, 6 and 12 months after operation. Results: Of the 62 patients, 15 were men and 47 were women (age 40.1 ± 10.1 years). Their preoperative characteristics were BMI 30.2 ± 3.2 kg/m<sup>2</sup>, body weight 81.8 ± 11.8 kg, waist circumference 100.6 ± 10.4 cm, and duration of T2DM 5.9 ± 6.0 years. There was no mortality, major surgical morbidity, or excessive weight loss experienced. The BMI decreased postoperatively by 20%, from 30.2 ± 3.2 kg/m<sup>2</sup> to 24.0 ± 2.8 kg/m<sup>2</sup> (P < .001). The fasting blood glucose level decreased from 194.7 ± 70.4 mg/dL to 99.8 ± 28.4 mg/dL (P < .001), and the hemoglobin A1c decreased from 9.1% ± 1.7% to 6.0% ± 0.9% (P < .001). The 10-year cerebral and cardiovascular disease risk was estimated with UKPDS risk engine before and after RYGB. The risk for fatal and nonfatal stroke and coronary heart disease decreased essentially. Conclusion: RYGB safely and effectively remits T2DM in Asian Taiwanese with a BMI <35 kg/m<sup>2</sup>. It also lessens the 10-year cardiovascular cerebral disease risks. More larger, longer term, prospective and randomized studies are needed to confirm these effects.

Prevalence of nonalcoholic steatohepatitis (NASH) in morbidly obese Japanese patients who underwent bariatric surgery

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#### **Background:**

Non-alcoholic fatty liver disease (NAFLD) is increasingly being recognized to occur more commonly in the obese with a clinicopathologic entity that extends beyond uncomplicated steatosis to steatohepatitis (NASH), advanced fibrosis, liver failure and hepatocellular carcinoma. In our previous report, we showed that racial difference between Japanese and Western people in terms of NAFLD and related liver dysfunction. There are few reports investigating the prevalence of NASH in morbidly obese Japanese.

#### **Methods:**

Twenty-eight consecutive morbidly obese Japanese who underwent bariatric surgery in Yotsuya Medical Cube from October 2009 to July 2010 were enrolled. There were 16 females and 12 males (mean age:  $40.3 \pm 11.2$ ). Mean pre-operative weight was  $114.4 \pm 22.3$ kg and mean BMI was  $41.9 \pm 6.9$ kg/m<sup>2</sup>. A trucut liver biopsy was performed from left lobe of the liver at the time of surgery and analysed by a single pathologist. The liver biopsies were assessed by applying histopathological criteria that are accepted in the pathology literature.

#### **Results:**

Eighty-nine percent (25 in 28) of the patients undergoing bariatric surgery were found to have steatosis. And 71.4% (20 in 28) were found to have NASH. One patient was found to have established cirrhosis.

#### **Conclusion:**

Hepatic steatosis was very prevalent in our cohort of patients presenting for bariatric surgery. The prevalence of NASH was much higher in Japanese morbidly obese patients than the reported prevalence of NASH in Western individuals. These findings support that Asian are more prone to central obesity and, thus, have increased risk for obesity-related comorbidities.

## The Feasibility: SILS port Roux-en-Y Gastric Bypass for Low BMI Diabetes Mellitus

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**Background:** Single Incision Laparoscopic Surgery has been expanded to bariatric surgery. Laparoscopic Roux-en-Y gastric bypass is already accepted as one of the most effective procedure for the treatment of type 2 diabetes mellitus. Hereby, we described our experience using SILS Port to performed Roux-en-Y gastric bypass in nine patients with type 2 diabetes mellitus patients. **Methods:** After getting approval of E-Da Institutional Review Board, 9 cases with diagnosis of Type 2 Diabetes Mellitus patients with low body mass index (BMI less than 30) underwent Roux-en-Y gastric bypass using the SILS Port from August 2010 to November 2010. Standard Roux-en-Y gastric bypass was performed with 25ml of gastric pouch, 100cm of alimentary and biliopancreatic limb. **Results:** Four female and five male patients with mean BMI 27.15 and average of diabetes history of 10.2 years, underwent SILS Port Roux-en-Y gastric bypass. Novel liver suspension technique was performed in all patients. Mean operation time was 135 min. And two patients needed additional trocars intra-operatively, related to the difficulty in the dissection of gastric pouch and gastrojejunostomy suture. There was no surgical complication or mortality. At the first month postoperatively, mean AC sugar dropped from 198mg/dL to 116.1mg/dL, and mean HbA1c decreased from 9.71% to 8.18%. **Conclusion:** Laparoscopic Roux-en-Y Gastric Bypass with SILS Port is feasible and reproducible, but should be performed under strict indication and by an experienced surgeon. Even in low BMI patients, it showed high technical skill demands, increased operation time and high conversion rate.

## Early Resolution of Type 2 Diabetes Mellitus by Laparoscopic Ileal Transposition with Sleeve Gastrectomy Surgery in 23 to 35 BMI Patients

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**Introduction:** Diabetes is considered a life style disease. 56% diabetic patients with BMI greater than 7 are at high risk of diabetes related complications. Bariatric surgery results in diabetes resolution in over 84% patients. Based on hindgut hypothesis suggesting role of incretins like GLP-1, early trials of ileal interposition surgery have displayed consistent HbA1c levels below 7 in over 80% patients with over 30 kg/m<sup>2</sup> BMI. In developing countries majority of T2DM patients are not morbidly obese and surgical procedures are to be evaluated for their efficacy in this group. In this study we have assessed the efficacy of ileal transposition with sleeve gastrectomy (SGIT) in 23 to 35 BMI T2DM patients. **Method:** After institutional ethical committee approval & Indian Council of Medical Research registration (CTRI/2008/091/00206), selected T2DM patients [HbA1c over 7, C Peptide more than 1] underwent Lap SGIT by a single surgeon. Data of first five patients with minimum 6 months follow up was analyzed for glycemic control, reduction/ discontinuation of diabetes medication. **Results:** The study target (HbA1c less than 7) was achieved in 60 % patients within 1 month , and in 100% patients within 6 months. Requirement of medicines reduced significantly within 6 months and their HbA1c levels reduced from 9.65% to 6.22%. **Conclusion:** Laparoscopic SGIT represents a new paradigm, for the treatment of T2DM even in non morbidly obese patients. **Conflict of Interest:** None. **Funding:** Research related to this study was funded by Bombay Hospital trust, Mumbai, India.

Is Laparoscopic Duodenojejunal bypass with Sleeve an effective alternative to Roux en Y gastric bypass:  
A Randomized Trial

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**Background:**The incidence of Obesity and related metabolic disorders including Carcinoma Stomach in India is one of the highest in the world .Hence one requires a procedure that allows postoperative surveillance of the stomach with the best outcomes in terms of weight control and resolution of comorbidities .Here we compare one such procedure, Duodenojejunal bypass with Sleeve against the standard Roux-en Y gastric bypass.**Methods:**52 patients were randomized into 2 groups of Laparoscopic Duodenojejunal bypass with Sleeve (DJB) and Laparoscopic Roux en Y gastric bypass (RYGB) of 26 patients each. **Results:**The mean BMI at the end of 6 months and 1 year was 35.16, 29.25 in RYGB and 34.51, 28.10 in DJB. The %excess BMI loss at 6 months and 1 year were 52%  $\pm$ 19 and 77%  $\pm$ 24 in RYGB and 58%  $\pm$ 14 and 82%  $\pm$ 19 in DJB, which was not statistically significant.14/26 patients in the RYGB and 19/26 in the DJB group had Type II Diabetes . In RYGB 12 had complete resolution and 2 had improvement and 16 patients in the DJB had complete resolution and remaining 3 had improvement . There was 100% resolution of Dyslipidemias in both groups. There was 1 patient in the DJB group who presented with internal herniation 1 month post-op was managed surgically. **Conclusion:**Laparoscopic Duodeno-jejunal bypass with Sleeve, which combines the principles and advantages of Sleeve Gastrectomy and RYGB is a safe and effective alternative to gastric bypass in weight reduction and resolution of comorbidities.Also, with the possibility that the procedure can be made less restrictive by altering the size of the sleeve, it can be employed as a procedure to treat Metabolic Syndrome even in the lower BMI group. But, a long term follow up is necessary to establish it as a standard procedure.

## Overview of Laparoscopic Sleeve Gastrectomy (LSG).

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Sleeve gastrectomy (SG) has been a simpler bariatric operation, which shows good resolution of co-morbidities and provides excellent weight loss. Laparoscopic SG was initially performed for high-risk patients (in 2000) to enable increased safety for both operations. However, indications for SG as a primary procedure have been increasing. The Third International Consensus Summit for SG was held in New York City, Dec 2-4, 2010, to evaluate techniques and results.

Methods: A questionnaire was filled out at the Second ICSSG March 19-22, 2009 in Miami Beach and compared to the recent one in NYC in 2010.

Results: Findings are based on 106 questionnaires, representing a total of 14,776 SG. In 86.3%, SG was intended as the sole operation and 81.9% of the surgeons reported no conversions from a laparoscopic to an open SG. Mean  $\pm$  SD %EWL: 1 yr 60.7  $\pm$  15.6, 2 yrs 64.7  $\pm$  12.9, 3 yrs 61.7  $\pm$  11.4, 4 yrs 64.6  $\pm$  10.5, >4 yrs 48.5  $\pm$  8.7. Bougie size was median 34.0 Fr., (range 16-60). The dissection commenced 5.0  $\pm$  1.4 cm (median 5.0, range 1-10) proximal to the pylorus. Staple-line was reinforced in 65.1%; of these, 50.9% over-sew, 42.1% buttress and 7% do both. Post-op, a high leak occurred in 1.5% and a lower leak in 0.5%, hemorrhage in 1.1%, splenic injury in 0.1%, and later stenosis in 0.9%. Post-op GE reflux (~3 months) was reported in 6.5% (range 0-83%). Mortality was 0.2  $\pm$  0.9% (total 30 deaths in 14,776 patients). This year, 5 years results showed a mean of 50% EWL, a higher result than with gastric banding, but comparisons with gastric bypass are still pending. Conclusion: SG for morbid obesity should be recognized as a primary operation.

## Rise of Sleeve gastrectomy in Asia

Muffazal Lakdawala

### Abstract

Bariatric surgery is an ever evolving field. There have been several discoveries that have changed the way bariatric procedures are carried out. This has led to a lot of enthusiasm within the surgical community. Many of the bariatric surgical procedures have not been able to stand the test of time and have been replaced with newer, simpler and more effective procedures rendering the older ones obsolete.

Sleeve gastrectomy is a relatively new procedure. What was initially started as the first stage of a duodenal switch surgery in super super obese patients has now come of age to have its place as a standalone procedure in bariatric surgery. There is a lot of excitement in the surgical community about this procedure. Its popularity can be attributed to its favourable early results. Hence surgeons from across the world are now offering it to an increasing number of patients. The benefits of sleeve gastrectomy seem to far outweigh its risks. It is a technically easier procedure with a lower learning curve. There are less chances of developing nutritional deficiencies and the remnant stomach is always accessible for examination which is of great significance for stomach cancer endemic countries like Japan and Korea. Asian studies have already suggested better results in terms of weight loss and resolution of co-morbidities after a sleeve gastrectomy. Increasing proficiency of Asian surgeons in Single Incision surgery has led to further increase in the popularity of this procedure in Asia.

The only word for caution for complete adoption of LSG is that long term results are still awaited and leaks from staple lines are difficult to treat.

Long term results of laparoscopic sleeve gastrectomy for Korean

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**Purpose:** In Asia, its types and the main causes are different from than in the western society. Therefore, the treatment plan should be different, and the surgery for morbid obesity should be carefully chosen. Long term results of the isolated laparoscopic sleeve gastrectomy which was performed for the Korean are reported.

**Methods:** We retrospectively reviewed 168 patients who underwent LSG from January 2003 to January 2011. One hundred thirty nine of these patients had more than 6 months of follow-up, and they are subjects of this report. Sleeve gastrectomy was performed laparoscopically using Endo-GIA stapler to create a lesser curve gastric tube over a 48-Fr bougie. The longest follow up time is 8 year.

**Results:** Preoperative Body Mass Index (BMI) is  $36.7 \pm 5.4$  (30.0-59.1). The percentage of excess weight loss (%EWL) in the postoperative first, third, fifth, and seventh year was  $71.4 \pm 22.1$ ,  $66.0 \pm 29.9$ ,  $67.8 \pm 27.6$ , and  $60.4 \pm 29.3$ . The percentage of excess BMI loss (%EBMIL) was  $73.1 \pm 24.3$ ,  $67.8 \pm 31.0$ ,  $73.4 \pm 32.1$ , and  $62.2 \pm 29.7$ . However, the follow up rate is decreased by postoperative time. The follow up rate in third year is 62.5% and fifth year is 30.2%. There was no 30-day peri-operative mortality. Three major complications (1 delayed bleeding, 2 leakage) occurred.

**Conclusion:** Isolated laparoscopic sleeve gastrectomy has been an effective weight loss operation in the most of the Korean patients. However, the more follow up rate after LSG is needed.

Sleeve Gastrectomy in Banding country.

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Laparoscopic gastric banding has been the dominant bariatric procedure in Australia for the last 10 years. Most bariatric surgery are performed in private hospital and there is no database to allow us to examine adequately the trend of different operations. Overall the numbers of bariatric procedures increased from 500 per year to 15000 last year. However, from medicare data documented by government, we are able to estimate there is a decline in numbers of lap band performed and increase in numbers of sleeve gastrectomy. The presentation will examine the possible reasons behind it and illustrate the problems that will be facing Australian bariatric surgeons in the next 5 to 10 years.

## Laparoscopic sleeve gastrectomy in Japan

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In Japan, laparoscopic bariatric surgery was introduced in 2000, and laparoscopic sleeve gastrectomy (LSG) has been performed since 2005. Since gastric cancer is a frequently-occurred disease in Japan and the excluded distal stomach after laparoscopic Roux-en-Y gastric bypass (LRYGB) cannot be checked by usual endoscopy, LRYGB is probably not so suitable for Japanese patients. Therefore, a number of LSG is rapidly increasing. Japan Research Society for Endoscopic and Laparoscopic Treatments of Obesity (JELTO) which was organized 5 years ago carried out a nationwide survey on laparoscopic bariatric surgery in 2010. From 2000 to 2009, total 340 laparoscopic bariatric operations were performed by 9 Japanese institutes, and 102 of the operations (30%) were LSG. In 2009, 70 morbidly obese patients underwent laparoscopic bariatric surgery, and 50 of the 70 patients (71%) did LSG. There was no mortality and the postoperative complication rate was 7.8% in the 102 cases. Major complications were staple-line leakage in 4 cases (3.9%) and intra-abdominal bleeding (reoperation required) in 3 (2.9%). Percent excess weight loss after LSG was 66% at 12 months and 68 % at 24 months, respectively. According to the weight loss, 91% of patients with type 2 diabetes achieved remission, hypertension were resolved in 62% of patients, and dyslipidemia were resolved in 53%. This survey showed the safety and effectiveness of LSG in Japanese morbidly obese patients. In addition, LSG has been approved as a special advanced technique in some Japanese institutes by the Ministry of Health, Labour and Welfare since this year, which is partly covered by the government health insurance. Now, LSG has been rapidly spread in Japan and will play an important role in treatments for morbid obesity.

Update in the outcomes of over 800 sleeve gastrectomies with 6 years of followup.

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Since 2004 we have performed over 850 sleeve gastrectomies. This is a heterogenous group that includes 770 primary cases and 80 revisional sleeves. The first 107 sleeves were calibrated against a 50fr bougie and the next 680 against a 40 Fr bougie. We are now using a 36 Fr bougie (63) in most cases. Results in our largest series of 618, 40 Fr primary sleeves show an excess weight loss that peaks at 18 months at 74% and is now at 61% out to 4 years. In the earlier 50 Fr series the weight loss peaked at 62 % at 24 months and had fallen to 42 % by 60 months. So far in the earlier 50 fr series 12 of the patients have been re sleeved with their EWL returning to an average of 55 % EWL at 24 months. Only one 40 fr patient has required resleeve so far. Impact of sleeve size , surgical technique, commencement BMI, age and sex on outcomes will be discussed.

Conclusion:

We believe that sleeve gastrectomy produces robust weight loss in the medium term providing an appropriate size bougie is selected. ( no more than 40Fr) Late weight regain is in line with the natural history of other bariatric approaches and can be adequately managed by resleeve gastrectomy.

## Single Incision Transumbilical Laparoscopic Sleeve Gastrectomy (SITU-LSG), How I Do it?

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**BACKGROUND:** Sleeve gastrectomy has been recently proposed as a sole bariatric procedure because of the resulting considerable weight loss in Asian morbidly obese patients. Traditionally, laparoscopic sleeve gastrectomy requires 5-6 skin incisions to allow for placement of multiple trocars. With the progression of scarless concept, multiple abdominal procedures have been performed using a single incision trans-umbilical (SITU) incision, with good cosmetic outcomes.

**METHODS:** We retrospectively reviewed our patients receiving sleeve gastrectomy from November 2008 till September 2010 .A total of 27 consecutive patients underwent laparoscopic sleeve gastrectomy with single incision and trans-umbilical approach. Three trocars were inserted via the umbilical incision after pneumoperitoneum.

**RESULTS:** Of the 27 patients, 19 were women and 8 were men, with a mean age of 32 years (range, 20-46). The mean preoperative body mass index was 35.9 kg/m (range, 32.4-42.3). The mean operative time was 70 minutes (range, 30-170). Intra-operative novel liver suspension tape was used in all patients, and no perioperative or postoperative complications happened. No conversion or need for adding trocar during the procedure was found.No mortality was noted.

**CONCLUSIONS:** SITU laparoscopic sleeve gastrectomy is safe, technically feasible, and reproducible. Intra-operative modification of liver retraction is the key element in improving surgical field and decreasing operation time.

Possible mechanisms of rapid improvement of glucose tolerance and insulin secretion after laparoscopic sleeve gastrectomy (LSG)

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**【Objective】** LSG has been designed as the first of a two-stage procedure for the high-risk, super-obese patient. Recently LSG has been applied as a single-stage procedure because of excellent weight loss and low incidence of complications. More recently, the accumulating data suggested that LSG produces remission or cure of type 2 diabetes mellitus (DM). To investigate the mechanism which LSG improves glucose tolerance, oral glucose tolerance test (OGTT) was performed at preoperative and 3 months after surgery.

**【Methods】** We performed LSG on two diabetic patients, one patient with impaired glucose tolerance (IGT) and two non-diabetic patients. Plasma glucose, insulin and Glucagon-like peptide-1 (GLP-1) levels during OGTT were measured. Fasting ghrelin levels were also measured. To assess gastro-intestinal motility during OGTT, we used cine MRI.

**【Results】** Diabetic patients discontinued oral hypoglycemic agent or insulin immediately after surgery. HbA1c was improved in diabetic patients. OGTT showed that great improvement of glucose tolerance with enhancement of insulin and GLP-1 secretion in diabetic patients. Area under the curves (AUC) for insulin and GLP-1 were increased after LSG. Fasting ghrelin levels were decreased in all patients. Cine MRI during OGTT revealed that gastro-intestinal motility was remarkably induced after LSG.

**【Conclusion】** These results suggest that LSG can lead to rapid improvement of glucose tolerance and insulin secretion. Increased GLP-1 secretion and decreased fasting ghrelin levels may play a role of improvement of glucose tolerance and insulin secretion after LSG. Induced gastro-intestinal motility during OGTT may lead to increased GLP-1 secretion after LSG.

## Complications after laparoscopic sleeve gastrectomy for morbid obesity

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**Background:** Laparoscopic sleeve gastrectomy (LSG) is a quick and relatively simple type of bariatric surgery which shows good resolution of co-morbidities and good weight loss. We report on complications after LSG as a single-stage bariatric surgery and the results of a survey on LSGs conducted by the Japan Research Society for Endoscopic and Laparoscopic Treatments of Obesity.

**Methods:** Data were collected on all patients undergoing bariatric surgery between January 2005 and December 2009, which included 340 patients from nine hospitals in Japan. We evaluated short-term morbidity in 102 patients undergoing LSG and excluded patients undergoing LSG with duodenojejunal bypass.

**Results:** A total of 102 LSGs were successfully performed without conversions to an open surgery. In 2004, there were no LSGs reported. In 2009, the most commonly-performed procedures were LSG (50 patients), laparoscopic gastric bypass (8), LSG with duodenojejunal bypass (8), and laparoscopic adjustable gastric banding (4). Approximately 8% of patients had perioperative complications. The most common complications were staple line leaks (4%). Reoperation occurred in seven patients (7%), four with bleedings and three with staple line leaks. No mortalities occurred. In our eight LSG patients, late gastric leak occurred in one patient; and it was treated with an endoscopic mucosal closure after failed attempts to treat the percutaneous abdominal drainage.

**Conclusion:** The frequency of serious complications among patients undergoing LSG was relatively low. It is a safe single-stage bariatric surgery for Japanese morbid obesity.

Is LSG perfect for Asian?

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Laparoscopic Sleeve Gastrectomy(LSG) was initially introduced as a primary stage in super obese patients to optimize their medical / anaesthesiological fitness and also to ease the surgical technique for the index bariatric operation at a later date. With evolving technique it has become popular stand alone procedure with proven results of an efficient Bariatric operation in terms of effective excess weight loss , co morbidity evolution and improvement in the quality of life. Our center has performed more than 700 LSG till date. The longitudinal data analysis of them is presented at multiple International Bariatric and Metabolic conferences. With Asian peculiarities of high adiposity, prone for type 2 diabetes, high carbohydrate diet ,these studies have highlighted LSG with a favorable effect on hyperglycemia ,with difficulty to monitor or treat nutritional deficiencies. Before we call it as an ideal Bariatric operation, some facets need to be thrown light on: like longevity of the results, recidivism etc. Long term data with the large population and comparative studies with the existent bariatric operations is awaited.

National report: treatment of morbid obesity from Australia

President, Obesity Surgery Society of Australia and New Zealand(OSSANZ)

Lilian Kow

Obesity is considered the greatest public health challenges confronting Australia. Amongst developed nations, Australia is one of the most overweight, with over 60% of adults and 25% children overweight or obese.

**PREVALENCE OF OBESITY BY AGE AND GENDER, 2008**

Age Group	Males (%)	Females (%)	Males ( '000)	Females ( '000)	Total ( '000)
0-4	0%	0%	0	0	0
5-19	7.8%	6.2%	165.4	124.9	290.3
20-24	11.1%	9.3%	84.7	68.2	152.9
25-34	19.4%	13.5%	281.8	193.0	474.8
35-44	19.9%	21.2%	301.5	324.6	626.1
45-54	23.2%	29.2%	338.6	430.8	769.4
55-64	28.5%	35.6%	344.9	431.7	776.6
65-74	22.2%	31.9%	164.4	244.2	408.6
75+	14.2%	16.9%	79.6	134.3	213.9
<b>Total</b>	<b>16.5%</b>	<b>18.5%</b>	<b>1,760.8</b>	<b>1,951.8</b>	<b>3,712.5</b>

5% of Australians have Type 2 diabetes. Of these, 10.8% are as a result of being obese.

OSSANZ (est 1980) represent the obesity society in Australia and New Zealand. Membership: 350 health professional: surgeons, physicians and Allied Health.

The OSSANZ Bariatric Surgical Standards(OBSS) are the credentialing guidelines . A National registry is being set up. The average cost for bariatric surgery in Australia is about \$15000-20000

National Report from Taiwan (Republic of China)

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In the past decade, the incidence of obesity (BMI > 27) increased from 10.5% to 19% in male Taiwanese. Among them, those with moderate or severe obesity increases more rapidly, from 2.4% to 6%. This alarming phenomenon is more common in rural than in urban area. Although the incidence of overweight remained stationary (20.3% to 19.3%) in female Taiwanese, the incidence of mild obesity still increased from 7.6% to 10.5%. More importantly, diabetes ( Glucose > 126 mg/dl) incidence increased from 4.6% to 9.3% of adult male in the past decade.

Bariatric surgeries steadily increased in the past 5 years in Taiwan. IFSO Taiwan chapter was founded in 2009. There are more than 5 comprehensive bariatric centers now in Taiwan. In a survey from IFSO Taiwan chapter, the total registered number of bariatric surgeries increased from 255 cases in 2005 to 726 cases in 2009. Laparoscopic gastric bypass is the most commonly performed procedure, followed by sleeve gastrectomy and gastric banding. The results of bariatric surgery in Taiwan are comparative to international standard.

## **National report of treatment of obesity and metabolic disorder from (India).**

**Dr. Mahendra Narwaria, MS, FICS.**

### **President, Obesity and Metabolic Surgery Society of India**

Asian Indians exhibit unique features of obesity; excess body fat, abdominal adiposity, increased subcutaneous and intra-abdominal fat, and deposition of fat in ectopic sites (liver, muscle, etc.). Obesity is a major driver for the widely prevalent metabolic syndrome and type 2 diabetes mellitus (T2DM) in Asian Indians in India and those residing in other countries. Based on percentage body fat and morbidity data, limits of normal BMI are narrower and lower in Asian Indians than in white Caucasians. A consensus statement, was published for revised guidelines for diagnosis of obesity, abdominal obesity, the metabolic syndrome, physical activity, and drug therapy and bariatric surgery for obesity in Asian Indians after consultations with experts from various regions of India belonging to the various medical disciplines representing reputed medical institutions, hospitals, government funded research institutions, and policy making bodies.

According to National Family and health Survey (NFHS), approximately 7.1% of Indian population is under obesity risk. Almost 65% of adult urban Indian are –either over weight, obese or have abdominal obesity. The highest incidence is observed in North western (Punjab) part of India (M: F- 30.3/37.5%), followed by South (M: F-24.3/34%) and North east (M: F-17.3/21%).

With an estimated 50.8 million people living with diabetes, India has the world's largest diabetes population, followed by china with 43.2 million. The prevalence of type II DM in adult population ranges from 9% to 16%, with 14.2 % of male and 17.5 of female.

The Obesity and Metabolic Surgery Society of India was established in 2001. The indication for surgery is generally in accordance with guidelines using the WHO standard for obesity on Asia, i.e. BMI >37.5/32.5 with co-morbidities. There are few no of bariatric and metabolic surgeries carried out outside the standard guidelines for obesity surgery but they are mainly as part of some clinical trials.

There are about 80 surgeons (certified general, GI surgeons with training and experience) performing bariatric surgery regularly in India, carrying out 2000 procedures per year.

There are 5 high volume centres and few of them applied for centre of excellence (ICE) certification from ASMBS.OSSI is jointly working with SRC to develop centre of excellence in India. Cost of bariatric treatment depends upon

the types and location of the operative procedure. We accept and operate the international patients.

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## Current status of Bariatric surgery in Korea

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(*The Korean Metabolic and Bariatric Surgery Society*)

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Obesity is not only a health problem in western countries, but also in Korea. According to 2009 Korean National Health & Nutrition Examination Survey (KNHANES), prevalence of obesity in adults was 32.4% which is a big change over the last 10 years. More alarming is the problem of children and adolescent. From 2003 to 2009, number of bariatric procedures was increased in 622%.

All surgeries were performed through laparoscopic procedures. 63.3% adjustable gastric bandings, 12.6% gastric sleeve resections, 5.9% VBGs (with or without sleeve resection) were the restrictive operations performed. 12.0% Roux-en-Y gastric bypass, 12.6% Mini-gastric bypass, 2.6% Duodeno-jejunal Bypass were the malabsorptive (both restrictive) procedures since 2003.

Based on the statistics, the surgeon were performed in most hospitals when the BMI was over 35kg/m<sup>2</sup> while more than 2 significant obesity related co-morbidities were found with BMI over 30kg/m<sup>2</sup>. Currently the bariatric surgery in Korea is still at a developing level, and has not been performed very much compared with the number of patients who need it.

As the bariatric surgery will gain more important as the number of obesity people increases every day, physicians need to make more efforts to help the public to have correct understanding about the bariatric surgery. Insurance coverage is another concern in my country because bariatric surgery is not covered by National Health Insurance in Korea. So, it became an expensive surgery, not accessible for everybody. As obese people are often from middle to lower socioeconomic class, access to surgery is very limited. As these people are in need, we have to raise our voice about reimbursement for bariatric patients.

## BARIATRIC & METABOLIC SURGERY in the Philippines

President, Philippine Society for Metabolic and Bariatric Surgery  
Hildegardes C. Dineros, MD, FPCS FACS

Third world countries like the Philippines was not immune to the epidemic of Obesity, with a progressively rising prevalence, one in four being overweight and one out of twenty is obese. Roughly, there are 4 million obese Filipinos and close to a million are morbidly obese. Of about 90 million population, the extrapolated prevalence of Diabetes is 5 million, more than 90% of which belong to Type 2 category.

The Philippine experience in Bariatric Surgery started in 2001 as VBG. The following year, Open Gastric Bypass was performed and 5 years later, Laparoscopic techniques were done for RYGBP, Gastric Banding, BPD-DS, and Sleeve Gastrectomy. Class II Obesity, defined as BMI  $30\text{kg}/\text{m}^2$  was the baseline criterion for weight loss surgery since at this level, co-morbid conditions are already observed.

The Philippine Society for Metabolic and Bariatric Surgery was established in 2007, composed of about 25 surgeon members, half of which are doing bariatric surgical procedures already, and majority doing mostly Gastric Banding. Certified General Surgeons with training and experience in laparoscopic bariatric surgery, have up to the present, performed close to 600 bariatric operations. Surgery for Non-obese Type 2 Diabetes was first done in 2008 using LSG with Loop DJB.

National report from Hong Kong

Wilfred Mui

Hong Kong Bariatric and Metabolic Institute

Bariatric surgery is a new specialty in Hong Kong and it is growing from its infancy stage. It was introduced in Hong Kong in 2001 and the development was very rapid in the past ten years. Bariatric procedure in Hong Kong is evolving from a single surgical procedure (gastric banding) to the full package of both endoscopic and laparoscopic surgeries. The primary procedures in Hong Kong at the moment are restrictive procedures (intra-gastric balloon, gastric banding, sleeve gastrectomy and sleeve plication), whereas malabsorptive procedures (mini-gastric bypass and sleeve gastrectomy with DJB) are reserved as second-line therapy. Initially, we encountered difficulties in persuading patients and even doctors in accepting such an invasive treatment for obesity. Now, more and more physicians and patients understand the importance of weight control in severe obesity and agree that the beneficial effect of surgery seems out-weighted its risk in selective group of patients. We will report the development of this specialty in Hong Kong.

National Report from Malaysia

Professor Dr Chin Kin Fah (Presenter), Dr Pok Eng Hong

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In Malaysia, a developing country, the increasing prevalence of obesity and associated metabolic syndrome has created major healthcare problem due to the adoption of more westernized lifestyle and diet. Population surveys have found the prevalence of obesity has rapidly increased 3 folds in recent decade. The National Health & Morbidity Study in 1996 and 2006 revealed that the prevalence of overweight (BMI 25-30) rose from 16.6% to 29.1%. The prevalence of obesity (BMI>30) increased from 4.4% to 14%. It was also showed our female population, ethnicity of Indian & Malay and house wife tend to be obese. It was noted the prevalence of diabetes mellitus in this population also increased from 8.3% to 14.9% with substantially portion of them undiagnosed. There is an estimated about 1.5 million diabetes patient (5.7%) which is a significant healthcare burden in Malaysia with a small population of about 26 million people in 2006. Although the bariatric surgery has been prove to be cost-effective treatment of obesity and associated co-morbidity especially DM, the adoption of this advanced surgery is still slow in Malaysia. Currently, only hospitals with qualified and experienced laparoscopic surgeon are routinely offering this procedure. The lack of surgical training opportunity, public awareness and no insurance coverage for obesity might be the factors that hinder the progress of this surgery. Lastly, we foresee, with the rising prevalence of T2DM affecting younger age group and the promising effectiveness of bariatric surgery as a form of metabolic procedure, the most cost effective therapy for early obese T2DM should be surgery, as a first line modality in future.

## National Report on Bariatric Surgery from Japan

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Kazunori Kasama MD, FACS

Obesity among adults is defined as a BMI of 25 or higher in Japan. The obesity prevalence (BMI  $\geq$  25) has increased to 28.6% in male and 20.6% in female over the past decade. Obesity prevalence (BMI  $\geq$  30) is 3.2%.

The prevalence of diabetes mellitus with HbA1c  $>$ 6.5 or under treatment has increased from 6.9 million in 1997 to 8.9 million in 2007.

Recently, one of our bariatric societies (Japanese Society for Surgery of Obesity and Metabolic disorders) has announced a statement on BMI criteria for bariatric surgery in Japan. The criteria recommends bariatric surgery for people who have BMI  $\geq$  35 or BMI  $\geq$  32 with obesity-related comorbidities. But bariatric surgery for people with BMI between 32 to 35 remained to be positioned on a clinical trial.

From 2000 to 2009, totally, 340 laparoscopic bariatric procedures were performed in 9 institutes. The most popular procedure was laparoscopic Roux-en-Y gastric bypass (LRYGB, n=147), then the second one was laparoscopic sleeve gastrectomy (LSG, n=102) and the third one laparoscopic adjustable gastric banding (LAGB, n=55). However, the number of LRYGB has decreased and in contrast, the number of LSG has rapidly increased.

The medical cost of bariatric surgery is approximately 10,000–20,000 dollars. It depends on the types of procedures.

There are several problems to prevent and treat obesity. Modern lifestyle and foods are out of alignment with true health. Nation's recognition of obesity is an obstacle to civilization and enlightenment of bariatric surgery in Japan.

In conclusion, we are still ill-equipped to deal with the crisis of obesity and diabetes mellitus. It is essential to establish the international network in APC for development in this field.

National report on surgical treatment of obesity and metabolic disorder in Singapore

KTP Hospital Singapore  
Dr Anton Cheng

According to the Singapore National Health Survey 2004, obesity rate ( BMI > 30) in Singapore was 7.3% in female and 6.4% in male. Among the three major racial groups in Singapore, 4.2% of Chinese, 19.3% of Malays and 13.4% if Indians are obese. In 2004, 8.2% of the population was diabetic , with 8.9% of male and 7.6% of female. The latest unpublished data showed obesity rate has gone to 10.8% of the population in the 2010 National Health Survey, With the Malay population showing 25% obesity. DM rate however, has not changed over the last 12 years.

The Obesity and Metabolic Surgery Society of Singapore is registered as of January 2011. A national database is being set up. Indication for surgery is generally in accordance with the Singapore Ministry of Health guidelines using the WHO standard for obesity on Asia, i.e. BMI > 37.5 or BMI > 32.5 with obesity associated co-morbidities. There is no metabolic surgery carried out outside the standard guidelines for obesity surgery.

There are about 10 surgeons performing bariatric surgery regularly in Singapore, carrying out about 200 procedures per year. 80% of these, divided equally, are sleeve gastrectomies and gastric bands. There are smaller numbers of bypass and other procedures.

There is no certified center of excellence in Bariatric surgery in Singapore. Cost varies according to where these procedures are carried out. A lot of those performed in government hospitals are heavily subsidised.

# National report of treatment of morbid obesity and metabolic disorder from Thailand countries

Suthep Udomsawaengsup

## Slide-1

- Obesity and overweight prevalence in adults in your country
  - Grade I Obesity = 15.4%
  - Grade II Obesity = 2.2%
- Obesity prevalence in children in your country
  - Age 2-5 = 7.9%
  - Age 6-12 = 6.7%
- Gender and age distribution (possibly)

\*use most recent statistics

## Slide-2

T2DM prevalence in adults in your country

9.6% 4.8% previously diagnosed and 4.8% newly diagnosed diabetes

Gender and age distribution (possibly)

Male 33.8% Female 66.2%

Mean age = 60.9 + 11.5 and duration of diabetes 10.5+ 7.6 years,

## Slide-3

- Do you perform bariatric surgery in your country?  
Yes
- If yes, who is a candidate for bariatric surgery?  
BMI >40kg/m<sup>2</sup> or >35 with co-morbidity and had try non surgical Rx
- Do you have a bariatric society in your country?  
Yes Thai Society of Metabolic and Bariatric Surgery (TSMBS)  
<http://www.thaibariatric.org>

## Slide-4

- Approximately how many bariatric surgery operations are being done in your country yearly 100
- What is your estimate as to the relative percentages (adding up to 100%) distribution of bariatric operations in your country RYGB 63% LAGB 29% Sleeve 8%

## Slide-5

- Who performs bariatric surgery in your country  
general surgeon- endoscopic surgeon 9 , certified bariatric surgeon 6

- Approximately how many surgeons practice bariatric surgery in your country?  
= 15 surgeons

Slide-6

- Is there any credential system (surgeon, facility)?  
Yes, For Surgeons: the Royal College of Surgeons of Thailand and the Medical Council of Thailand  
Facility: Hospital credential
- If any, what type of professional education or training currently exists for the bariatric surgeon?  
Yes Clinical fellow in Bariatric surgery (2 institute / 4 regular fellow a year)

Slide-6

- Is there any nationwide database for sharing the pre- and post-operative data results to provide a cumulative picture of the success of bariatric surgery?  
Not yet applied

Slide-7

- Roughly, what is the average cost for bariatric surgery in your country?  
\*In US dollars  
RYGB = 6000 USD (Government)    20000 USD (private)  
LAGB = 5000 USD (Gov)            15000 USD (pri)  
Lap Sleeve =3000 USD (Gov)       13000 USD (pri)
- Are insurances (government, public, private) paying for the cost of surgery?  
Yes Partially

Slide-8

- Do you perform metabolic surgery for the patients with lower BMI (beyond indication for bariatric surgery) in your country? Yes for Some
- Do you perform revision bariatric surgery in your country?  
Yes
- Do you accept patients from overseas (so called “medical tourist” ) in your country?  
Yes

Slide-9

- Which are the problems you face in your country to prevent the obesity disease from spreading?  
Availability and advertising of Junk food    Philosophy of Living, Some Believe such as Obese is a sign of Wealthy
- Which are the problems you face in your country to treat the obesity disease?  
Reimbursement system, Acceptance for medical co-worker, Cost of Treatment
- Which are the needs?

Slide 10

- Your favorite topics,  
Metabolic result of Bariatric Surgery in Thais
- Particularity of your country regarding Bariatric/Metabolic surgery.

Slide-11

- Your conclusions to the obesity problems in your country  
The incidence of obesity in Thailand is increasing. Prevention is certainly important. Public has been alerted more about effect and hazard of obesity. Media takes more involvement and helps very much in distributing medical information
- Recommendations

## National report of treatment of morbid obesity and metabolic disorders from Turkey

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Yeniyuzyil University Faculty of Medicine

Department of General Surgery,

Istanbul / Turkey.

### Slide-1

- \*Approximately 66% of whole Turkish population is under obesity risk.
- \*The incidence of obesity is 24% for males and 31% for females.
- \*The highest incidence is observed in Southeastern part of Turkey (61%), followed by mid-Anatolia (55%), Northern west (50%), and West parts (15%)
- \*The percentage of normal weight adults is 13.6% in females and 20% males.
- \*The incidence of overweight children is 24% for females and 31% for males.
- \*The incidence of obesity among children below age 15 is 9% for females and 12% for males.

### Slide-2

- \*The prevalence of T2DM in adult population (35-70 y) is 14.7%
- \*The prevalence of Glucose Intolerance in adult population is 9.6%.
- \*T2DM prevalence increases with age, 50 years being the cut-off point. After age 50, T2DM prevalence reaches 30%.

### Slide-3

- \*We have a national bariatric and metabolic surgery society in Turkey.
- \*I perform both metabolic and bariatric surgery.
- \*For bariatric surgery purposes my indication is BMI over 40
- \*For patients with T2 Diabetes or Metabolic Syndrome, BMI (unless over 20) is not a limitation in my surgical practice.

### Slide-4

- \*The annual number of bariatric operations is estimated to be around 500 cases.
- \*I performed 76 operations within 2 years on my own (7.6%).

### Slide-5

- \*There are no specified or certified bariatric surgeons in Turkey.
- \*The number of surgeons mainly doing bariatric surgery is around 10.

#### Slide-6

\*There is no credential system in Turkey and bariatric surgery is not regarded as a specification.

#### Slide-6

\*There is no nationwide database for sharing the pre- and post-operative data of bariatric surgery.

#### Slide-7

\*The average cost for bariatric surgery in Turkey varies between 5000 and 20000 USD, depending on the type and location of the operative procedure.

\*The government only pays 30-40% of the bill if the patient obtains a multidisciplinary council approval. (The council mainly consists of endocrinologists!)

#### Slide-8

\*For patients with T2DM, I operate on all patients with a BMI above 20, if they meet the metabolic criteria for the operation.

\*I did 4 revision bariatric surgeries. (1 anastomotic stricture, two band removals with sleeve and one band removal with BIB).

\*I work at a private university and its private hospitals in Istanbul. We accept and operate on overseas patients.

#### Slide-9

\*The main problem, also affecting my country from obesity pandemic is the so called "Coca-colonization", which refers to global standardization of refined or saccharified food.

\*From my (surgical) aspect, the main problem is internists and endocrinologists who are trying to discover America once again.

\*The main need is education and social awareness.

#### Slide-10

\*Protection is more important than treatment. I personally believe that we should worldwide keep away from refined and saccharified food. However, these products are easy to keep, suitable for overseas transport and unfortunately, they are tasty.

\*Each government should establish their policy for nationwide food supplies and consumption of childhood food products.

\*Turkish people like to eat bread with spaghetti and/or rice. I think that we should at first educate people, than we should raise a social awareness about the global food industry, metabolic syndrome and the importance of physical exercise.

\*For those with already settled metabolic syndrome, the importance and affectivity of surgical treatment should be emphasized, with particular notation on the advantages of laparoscopic surgery.

#### Slide 11

\*From bariatric point of view, the importance of a team work has always been emphasized. I have recently moved to a new institute in Istanbul and am trying to settle my own team.

\*From metabolic point of view, I operate on T2DM patients with end-organ damage. I have operated on 46 non-obese, overweight or type 1 obese (BMI=30-35) patients with T2DM. I believe that we should also emphasize and try to produce a global awareness for surgical treatment of Diabetes.

National report

Bariatric surgery in Brazil: Current status

Joel Faintuch , Francisco Karkow, Fernanda Pezzi (Sao Paulo University Medical School and Fatima Faculty, Caxias do Sul)

Introduction

Obesity is a growing epidemic not only in industrialized countries but also in the developing world. The main difference in places like Brazil is the phenomenon of nutrition transition. Till the recent past undernutrition was the main problem. The rapid shift toward excessive body weight resulted in the relatively frequent coexistence, in the same family and in the same house, of examples of the two derangements, namely undernourished children with obese parents, or the opposite association.

Antiobesity procedures were started in this country in the 1970's, in the form of jejunoileal bypass. Multiple modalities were tested along the years, especially in Hospital das Clinicas, Sao Paulo, which was the pioneer institution, till the creation of the Brazilian Society of Bariatric and Metabolic Society (BSBMS) in 1999, by Artur Garrido Jr.

Yearly congresses have been organized since that time, and the Society counts more than 900 members including surgeons as well as allied health professionals. Current president is Ricardo Cohen. A Bulletin was created in 2000 by Joel Faintuch and Artur Garrido Jr and converted into a quarterly Journal five years later. Now the Journal has merged with the Brazilian Archives of Digestive Surgery, which also appears every three months.

Acceptance of the specialty

Until the early 1990's just a few dozen surgeons had interest in bariatric operations and very few surgical residents had exposure to such the techniques. However after the establishment of BSBMS growth has been exponential, notably after government and private health providers accepted reimbursing the operations. At this moment such procedures are very well established all over the country, and actively sought by obese patients. Indeed, public hospital often suffer with long waiting lines.

Surgical residents in large academic hospitals and also in certain private ones have the chance of operating bariatric candidates during their rotations, and a couple of Centers of Excellence in Bariatric Surgery has been created in Sao Paulo, with a tendency to grow towards other cities as well.

Surgical procedures

The most practiced modality in the country is the Roux-en-Y gastric bypass (RYGB), which is the first intervention recognized and funded by the Federal Social Security System. Approximately 75% of the candidates undergo this treatment, but multiple other options are endorsed by BSBMS, namely vertical banded gastroplasty, sleeve gastrectomy, gastric banding, Scopinaro procedure and duodenal switch, along with the endoscopically placed intragastric balloon.

Patient care and hospital facilities

A national consensus signed by six surgical and clinical professional societies in 2007 established directives for most routines and indications concerning bariatric interventions, from patient selection to hospital equipment and postoperative care.

Current statistics

Brazil has roughly 190 million inhabitants of which between 2 and 4 million are morbidly obese, depending on the estimate. About 30 000 bariatric procedures are conducted each year, of which 25-30% are paid by the Federal Social Security System, 60-70% by commercial Health Providers, and around 5% privately financed.

### Distribution of morbid obesity

A national survey under the initiative of BSBMS revealed that though morbid obesity doesn't spare any of the regions of Brazil, distribution is not homogeneous. The two poorest areas, namely the North and Northeast, display the lowest proportion (2%). The rich Southeastern region, which includes Sao Paulo, wasn't bad either with 2.5% prevalence. The highest rates corresponded to the Western region and to the South, both with 5% values.

As concerns the South there is a rather obvious explanation. This area is quite affordable, there is strong immigrant influence especially from Italian and German people, and the population appreciates hearty meals. The Western region was a surprise and no obvious explanation is available, though meat is particularly abundant in that area because of vast cattle-raising farms.

### Metabolic surgery

In the last five years several groups have engaged in standard bariatric or tailor-made operations for non-morbidly-obese diabetics, with variable results. Animal investigations were started in a number of University laboratories, and Master's as well as PhD theses are going on. Some controversy occurred when a couple of teams started performing such interventions on a routine basis. A consensus established in 2009 decided that these treatments are still experimental and should be conducted under approval of an Ethical Committee, for the purposes of scientific investigation only.

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