

# 4th International Alpine Obesity Surgery Expert Meeting, Sunday March 12 - Wednesday March 15, 2006, Saalfelden, Austria

Dear Colleague,

It is our special honor to invite you to participate in the *4th International Alpine Obesity Surgery Expert Meeting* to be held in Saalfelden, Austria, March 12th to 16th, 2006. We will provide an excellent overview of major topics related to progress in the laparoscopic treatment of morbid obesity. Leading experts will build the framework of this conference.

By learning from our experience, we will place major emphasis on sufficient discussion time during scientific sessions. The meeting will take place in the luxury Congress Hotel Brandlhof, which is located in a magnificent area with wellness and many sport facilities.

We are very much looking forward to welcoming you in Saalfelden, Austria.

**Karl Miller, MD, Symposium Director**

Krankenhaus Hallein,  
Buergermeisterstr. 34,  
A-5400 Hallein, Austria  
Tel: +43-6245-799-360

**Welcome Reception – Sun. March 12, 6:00 pm**  
**Scientific Program – Mon.-Wed. March 13, 14, 15**  
**(Farewell Party – March 15, 7:30 pm)**  
**Workshop program & Social Program**

## Main Topics

- Controversies – Case Reports
- Physiology of Weight Loss
- Bariatric Surgery in Children and Adolescents
- Technical Details – an Update
- Reoperative bariatric surgery
- Two-Step Procedures
- Patient Safety – Center of Excellence
- Insurance and Patient Coverage
- Complications and Challenging problems
- Failed Bariatric Surgery: What to do

## Venue

The Congress Hotel, Village Brandlhof, is situated in Salzburg County in the middle of Austria, 40 minutes by car from the Airport Salzburg, Wolfgang Mozart Amadeus.

## Information and Registration

Gabriele Wesely

**e-mail: [office@obesity-online.com](mailto:office@obesity-online.com)**

**[www.obesity-online.com/Expertmeeting](http://www.obesity-online.com/Expertmeeting)**

## Administration

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## Local Scientific Committee

- Austrian Society for Obesity Surgery, under the auspices of IFSO
- Ludwig Boltzmann Institute for Gastrointestinal and Experimental Surgery, Salzburg, Austria
- Gastroenterologie und experimentelle Chirurgie, Salzburg
- Salzburg Obesity Academy Foundation

## Official Language: English

## Hotel Reservations

All reservations will be processed and confirmed via internet:  
[www.obesity-online.com/Expertmeeting](http://www.obesity-online.com/Expertmeeting)  
Rates and specific requests for hotel categories received after December 31, 2005 cannot be guaranteed.



## SCIENTIFIC COMMITTEE

S Kriwanek, Austria  
F Aigner, Austria

## FACULTY 2006

A Alvarez (Argentina)  
L Angrisani (Italy)  
M Anselmino (Italy)  
A Baltasar (Spain)  
R Baker (USA)  
D Birk (Germany)  
GB Cadiere (Belgium)  
JM Chevallier (France)  
P Chowbey (India)  
F Daout (France)  
J Dargent (France)  
M Deitel (Canada)  
S DeRoover (Belgium)  
S Dexter (England)

JL Dulucq (France)  
G Fielding (Australia)  
M Fried (Czech Republic)  
MAL Fobi (USA)  
M Foletto (Italy)  
M Gagner (USA)  
JM Gileardin (Belgium)  
JW Greve (The Netherlands)  
E Hell (Austria)  
U Hesse (Germany)  
K Higa (USA)  
J Himpens (Belgium)  
E Hoeller (Austria)  
D Krawczykowski (France)  
T Lafullarde (Belgium)  
L Lanstberg (Israel)  
W Lechner (Austria)  
L Lemmens (Belgium)  
K Maksymowicz (Austria)

H Nehoda (Austria)  
D Nocca (France)  
T Olbers (Sweden)  
N Ott (Austria)  
P Pattyn (Belgium)  
W Pories (USA)  
G Prager (Austria)  
T Rogula (USA)  
N Scopinaro (Italy)  
C Stroh (Germany)  
M Suter (Switzerland)  
H Tigges (Germany)  
Ph Topart (France)  
GCM Van Hout (The Netherlands)  
B Van Ramhorst (The Netherlands)  
R Weiner (Germany)  
H Weiss (Austria)  
AM Wolf (Germany)

**Weather:** Generally mild temperatures for winter activities. Check weather on internet.

## CONGRESS HOTELS: Hotel / night / person €100

1. **Brandlhof** (Congress Hotel)
2. **Sporthotel Maria Alm** (15 minutes from the Congress Hotel)
3. **Schoerhof** (5 minutes from the Congress Hotel)

**ONLINE REGISTRATION:** [www.obesity-online.com/Expertmeeting](http://www.obesity-online.com/Expertmeeting)

**Registration Fee €220.** No Registration fee for accompanying persons.

# ABSTRACTS IN ALPHABETICAL ORDER OF 1ST Author

## BIOENTERIC INTRAGASTRIC BALLOON (BIB®) REDUCES THE OPERATIVE RISK OF LAPAROSCOPIC SLEEVE GASTRECTOMY (LSG) FOR CANDIDATES TO BILIOPANCREATIC DIVERSION WITH DUODENAL SWITCH (LBPD/DS) IN TWO STAGES

Luigi Angrisani, Vincenzo Borrelli, Monica Giuffrè, Michele Lorenzo, Francesco Persico, Carlo Paolo De Angelis, Melania Battaglini, Monica Ciannella, Giuseppe Capece, Carmine Fonderico. *Unit of Endoscopic Surgery, "S. Giovanni Bosco" Hospital, "Federico II" University of Naples, Naples, Italy.*

**Background:** Two stage BPD/DS in patients at high risk for obesity surgery was introduced by Gagner. Considering BIB to be the least invasive method to obtain temporary weight loss, we have adopted the strategy of implanting this device as first line treatment in view of a three stage procedure: BIB (6 months) followed by Laparoscopic Sleeve Gastrectomy (LSG) and finally DS. This is a report of the clinical outcome obtained by this approach.

**Methods:** 12 patients (3M, 9F) mean age 36.4 (22-49 yrs) mean BMI 63.9 (47.4-79.5) mean weight 162.8 kg (130-191),

mean EW%186.8 (115.4-261.4) entered this study. 12 co-morbidities were diagnosed preoperatively: hypertension (33%), hypercholesterolemia (25%), diabetes (16.6%), sleep apnea (8.3%), osteoarthritis (8.3%) and gastro-esophageal reflux (8.3%). BIB was implanted under conscious sedation and endoscopic assistance. 1 month after BIB removal LSG was performed on a 40 French oro-gastric bougie and bovine pericardial strips (Peri-Strips Dry®) was used for staple-line reinforcement. LBPD/DS was planned 1 month after weight loss plateau.

**Results:** 1 out of 12 patients experienced balloon intolerance resolved by endoscopic removal 40 days post BIB. At time of LSG (1 month after BIB removal), mean BMI was 54.6 (43.7-62.2), mean weight 142 kg (120-176), EWL% 21.1, and 9/12 co-morbidities were resolved. LBPD/DS was performed at mean BMI 46.9 (35.4-57.8), mean weight 124.2 kg (115-137), EWL% 40.2 with 2 remaining co-morbidities. Both LSG and LBPD/DS were performed without laparotomic conversion and postoperative complications.

**Conclusion:** BIB sharply reduces the weight and the co-morbidities of candidates to the two stage LBPD/DS.

## PROXIMAL GASTRIC BANDING AFTER FAILED GASTRIC RESTRICTIVE OPERATIONS

Eliezer Avinoah, Leonid Lantsberg, Solly Mizrahi. *Surgery A, Soroka Medical Center, Faculty of Health Sciences, Ben-Gurion University, Beer-Sheva, Israel.*

**Background:** We describe our clinical experience with the proximal gastric banding for failed gastroplasty and Roux-en-Y gastric bypass operations.

**Methods:** In 193 morbidly obese patients with failed vertical gastroplasty, 172 (95%) had staple-line disruption. 15 patients had failed gastric bypass as a result of an enlarged gastrojejunostomy. Their mean age was 52±21 years old (18 to 67 years). 33 (16%) of them were males. Their original BMI was 45±4, and before the second operation was 41±3.6. All 208 patients now underwent proximal adjustable gastric banding, 181 of whom had laparoscopic surgery. The average time elapsed from the first surgery was 6±7 years (3 to 17 years).

**Results:** 49 patients are 5-6 years after surgery, 72 are 3-4 years, 29 are >2 years after surgery, and 58 patients were operated during the last 2 years. Mean operative time was 60±15 minutes, and hospital stay was 20 hours after surgery. There was no mortality. 2-6 years after surgery the mean BMI is 28±6. 11 patients (5.3%) failed to lose weight because of no cooperation or slipped band.

**Conclusions:** We found that failed gastric restrictive operations result from the loss of restriction. Restoring the control of restriction induces effective long-term weight loss. Proximal gastric banding is a safe and effective operation after failed gastric restrictive surgery for morbid obesity.

## INDICATIONS FOR LAPAROSCOPIC SLEEVE GASTRECTOMY (LSG)

Aniceto Baltasar. *Alcoy, Spain.*

**Background:** Laparoscopic sleeve gastrectomy (LSG) was developed as a first stage of the more complex DS (duodenal switch) operation in SO (super-obese) patients. More than 80% of the stomach is removed at the greater curvature and a gastric tube based on the lesser curvature is made. A 12-mm NG tube is used as a stent to size the gastric tube. The remaining gastric pouch is <50 cc in capacity.

**Method:** 39 MO (morbidly obese) patients had the LSG with 4 trocars of 5-mm, one 10-mm trocar for the camera and a working 12-mm trocar. The stapled suture-line sero-serosa was always sutured with a continuous Prolene to prevent bleeding and leaks. The indications were weight loss, but the patients operated belong to different clinical settings: **I) SO** – 7 patients, with BMI >60 (61-74) as a first stage; **II) Severe medical conditions** – 10 patients were 6 cirrhotic (discovered at the time of surgery), 1 with Crohn's disease and right hemicolectomy, 1 HIV+ patient, 1 patient with Ardstil syndrome (pulmonary-poison condition) and 1 patient with severe diarrhea and on whom the DS was contraindicated; **III) Low BMI** (35-43) – 20 patients with at least a major co-morbidity; **IV) Lap-band removal** – 1 patient with a lap-band has a near normal BMI at the time conversion; and **V) Adolescence MO** – 1 patient.

**Results:** All weight losses are expressed in %EBMIL (%Excess BMI loss). A patient with a 74-BMI died as result of bleeding at the trocar site (<400 cc) but required a laparotomy and developed MOF, mortality 2.3%. **Type I** patients: Mean 61 (57-62) at 8-35 months. Only 1 61-BMI patient, so far, required the second stage operation when her BMI was 49 and she has a BMI of 35 at 9 months. **Type II** patients: Cirrhotic patients had 76 at 5 months, Crohn-66, AIDS-42% at 5 month, Ardstil syndrome-82%. **Type III** patients: 68.5% at 3-27 months – 1 patient bled at the trocar site and required re-Lap exploration and control; **Type IV** patient had a BMI of 28, and she is now BMI 27. All these are early results. MO adolescent patients may be another good indication for the

LSG. No secondary effects occurred in the **Type V** patient.

**Conclusions:** LSG can become a good operation in 5 different MO settings, and is an excellent alternative to gastric banding patients with low BMI, since no foreign material is used and no adjustments are required. It also may be a good indication for adolescent MO.

## STAPLING OF NG TUBE IN A LAPAROSCOPIC SLEEVE GASTRECTOMY (LSG): VIDEO

Aniceto Baltasar. *Alcoy, Spain.*

**Background:** Laparoscopic Sleeve Gastrectomy (LSG) is the first part, the restrictive, of a more complex operation, the LDS (Laparoscopic duodenal switch). M. Gagner is the first surgeon to have described the procedure as a staging procedure, but isolated LSG is more commonly used today for different settings.

**Methods:** While stapling and dividing the gastric tube of the LSG, the NG (Naso-Gastric) tube stent was divided at the upper part of the vertically made longitudinal gastrectomy. Most often this complication would have required the conversion to an open technique. The stent was disengaged from the staple-line. Repair of the gastric defect is critical since the size of the gastric tube is small and a possible gastric leak has to be avoided. Once the stent was free, then an interrupted layer of silk sutures was used to close the opening. A second standard, running suture of Prolene was used to close permanently the sero-serosa.

**Result:** The patient has an uneventful recovery.

**Conclusion:** During the performance of a LSG, accidental division of the stent tube may occur, but successful repair of the defect can be made without exposing the patient to conversion to the open technique.

## REDUCING THE RISK OF INTERNAL HERNIAS AND SMALL BOWEL OBSTRUCTION IN ROUX-EN-Y GASTRIC BYPASS SURGERY UTILIZING ANTECOLIC LIMB PLACEMENT AND BUTRESSING MATERIAL

Randal S. Baker, Paul R. Kemmeter, James A. Foote. *Michigan Medical P.C. Center for Health Excellence, Grand Rapids, MI, USA.*

**Background:** Postoperative small bowel obstruction (SBO) following Roux-en-Y gastric bypass (RYGBP) reportedly occurs with an incidence of 0.6-3.5%. A common etiology of SBO is internal hernia, which appears to be more common in laparoscopic surgery. In addition to minimally invasive surgery, retrocolic limb placement is associated with an increased incidence of internal hernias. Internal hernia with small bowel obstruction can be intermittent in nature, difficult to diagnose, and delay in treatment may result in death.

**Methods:** A retrospective review of our database was performed in regards to our rate of internal hernias and SBO. Initial RYGBP was performed with retrocolic placement of the Roux limb. After experiencing an internal hernia with SBO through the mesocolic window, the technique was converted to antecolic RYGBP when feasible. Buttressing material was utilized on the mesenteric staple-line in both techniques.

**Results:** From July 2000 to July 2005, 2,281 RYGBPs were performed. In the first 31 cases, retrocolic limb placement was utilized with a 6.5% incidence (2/31) of small bowel obstruction, resulting from internal hernias at the jejunal mesenteric defect and mesocolic defect. After converting to an antecolic RYGBP, 2,230 surgeries with the use of buttressing material were performed with one episode of internal hernia posterior to the Roux limb and another through the jejunojejunostomy defect, with an incidence of SBO and internal hernia of 0.04% (1/2,230). An additional 20 retrocolic RYGBPs were performed secondary to shortened mesentery, with 1 further episode of internal hernia found incidentally at time of cholecystectomy, bringing the total incidence to 5.9% (3/51).

**Conclusion:** Internal hernias with SBO after RYGBP can be a

diagnostic challenge. Delayed treatment may result in devastating consequences. Prevention is paramount and can be facilitated with antecolic limb placement and the use of buttressing material.

#### DIFFERENT TYPES OF ANASTOMOSIS DURING LAPAROSCOPIC GASTRIC BYPASS

G.B. Cadière, J. Himpens, G. Dapri. *Department of Gastrointestinal and Obesity Surgery, Saint-Pierre University Hospital, Brussels, Belgium.*

**Background:** After the first description of the technique of laparoscopic gastric bypass by Wittgrove and Clark in 1994, more methods were reported in the literature to construct the gastrojejunostomy and the jejunojejunostomy. The aim of this presentation is to show our technique to perform this procedure, overall with the different types of gastrojejunostomy and jejunojejunostomy, after an experience of more than 1,500 cases.

**Technique:** After identification of the ligament of Treitz, the bowel is lifted cephalad and a loop identified which can reach this level with acceptable traction. The part of the bowel that will become the alimentary loop is scored by the cautery. 150 cm are measured from this level distally on the small bowel. The jejunojejunostomy can be performed by these different methods: 1) *Semi-mechanical side-to-side*: a linear stapler anastomoses the alimentary and biliopancreatic limbs. The incisions are then sutured by a running suture. 2) *Entirely mechanical side-to-side*: a linear stapler anastomoses the alimentary and biliopancreatic limbs. Another firing of stapler anastomoses the limbs in the opposite direction. The incisions are closed by a third firing of stapler. 3) *Entirely hand-sewn end-to-side or side-to-side*: a running suture is performed between the biliopancreatic and the alimentary loop to perform the posterior layer of the anastomosis. Another running suture performs the anterior layer of the anastomosis. No matter what type of jejunojejunostomy, the mesenteric defect between the alimentary and the biliopancreatic loop is closed by a purse-string stitch so as to avoid an internal hernia. Below the third vessel from eso-gastric junction on the lesser curvature, a dissection until the lesser sac is reached is performed. A linear stapler transects the stomach perpendicularly to the lesser curvature. The gastrojejunostomy can be performed by these four techniques: 1) *Transabdominal circular mechanical end-to-side*: a gastrotomy at the fundus permits to introduce the anvil into the stomach, then other gastric sections in the direction of the angle of His are achieved by firings of the linear stapler. A circular stapler is inserted in the lumen of the bowel to perform the anastomosis. 2) *Linear mechanical side-to-side*: a linear stapler is inserted in the inferior part of the gastric pouch and in the beginning of the alimentary limb and is fired. The openings of the stomach and bowel are sutured by a running suture. 3) *Entirely handsewn end-to-side*: the running suture on the gastric pouch begins on the esophagus just above the beginning of the staple-line. The suture successively takes the alimentary limb and the gastric wall, and reaches the lesser curvature. The nasogastric tube is pushed down to the bowel and the anterior running suture is performed. 4) *Entirely handsewn end-to-end*: the running suture begins on the alimentary limb and on the gastric pouch at the right corner on the lesser curvature. The alimentary limb passes towards the gastric pouch and is taken all the way to the greater curvature. A new running suture interests the anterior edge of the gastric pouch and of the bowel. No matter what type of gastrojejunostomy, the Petersen's space between the alimentary limb and the transverse mesocolon, is closed by a purse-string stitch in order to avoid an internal hernia. The procedure ends with a leak-test of both anastomoses. A drain is placed in the vicinity of both anastomotic sites. The trocar sites are closed in layers.

#### A NEW ADJUSTABLE GASTRIC BAND WITH MESH, DEVELOPED TO AVOID PROXIMAL GASTRIC POUCH DILATATION. PRELIMINARY SERIES

A. Catona, G. Morone, R. Ruggiero, L. La Manna, A. Parziale, F. Luzzana, B. Spahia, C. Sampiero. *General and Miniinvasive Surgical Division IRCCS Fondazione S. Maugeri Pavia, Italy.*

**Background:** The main complication of Adjustable Gastric Banding (AGB) is proximal gastric pouch dilatation: it affects quality of life and may require emergency reoperation. We thought that one possible solution to prevent the proximal pouch from enlargement may be a mesh tied to a regular band to envelope the upper part of the stomach. Thus, we developed Basket Band (BB): a new AGB with a soft silicone mesh above.

**Methods:** With an experience of over 1,000 AGB, in the last year, we implanted 40 BB. To fit the mesh of BB, we need a wider freeing of the gastric fundus just like in the Nissen operation for hiatal hernia. Once the band is passed around the stomach, the superior mesh is closed with stitches to envelope the proximal pouch at 360°.

**Results:** 1 year %EWL in the BB group was 47.6% vs 40.8% in the AGB group. We had no gastric pouch dilatations in the BB group vs 6.6% in AGB group. At the moment, we did not observe symptoms like vomiting or dysphagia with BB.

**Conclusions:** Gastric banding is a safe operation that allows a 2-year %EWL of 40-50%. The main problem of AGB is long-term complications, particularly proximal pouch dilatation. We are aware that it is too early to assert that a mesh may be the solution to gastric pouch enlargement, because we know from our experience that this complication happens after about 2-3 years from operation, but the results of this preliminary series are encouraging.

#### BARIATRIC SURGERY – ASIAN PERSPECTIVE

Pradeep Chowbey. *Chairman, Department of Minimal Access Surgery, Sir Ganga Ram Hospital, Rajinder Nagar, New Delhi, India.*

The incidence of obesity in India is reported at 7-9%. Although comprising only a small percentage, the actual number of obese persons is significant due to the sheer size of the Indian population. The most important factor behind this escalating problem of obesity in India is a changing lifestyle. It is the affluent urban middle class with the highest prevalence of obesity. Lifestyle changes observed in this strata of society include a change in eating habits and an increasingly sedentary life. Refined food with low dietary fiber, an increasing ratio of sugars and fats in the diet contributes to obesity. This unbalanced diet results in vitamin and mineral deficiencies.

Surgery for obesity is relatively unknown in India. It is not surprising since the understanding of obesity as a disease is also a recent phenomenon. Bariatric surgery assumes a significant status when it comes to management of patients suffering from clinically severe obesity. Bariatric surgery in fact is the only treatment option which has reported effective, consistent and sustained prophylaxis and improvement of obesity-related complications.

The data on obesity from the Asia-Pacific region brings to light certain differences in behavior patterns of obese individuals here as compared to that observed in the west.

- 1) The onset of obesity-related complications occurs in this population at much lower BMIs.
- 2) A higher percentage of body fat for a given weight.
- 3) Predisposition to abdominal adiposity. Accumulation of visceral fat occurs at lower BMIs, increasing risk of hypertension, dyslipidemia, diabetes and metabolic syndrome.
- 4) Predominantly large vegetarian population, e.g. India.
- 5) Lack of adequate data on childhood obesity.

The above factors have resulted in the proposal of modified guidelines for recommending bariatric surgery in the Asia population.

Bariatric surgeons in India are in evolution, and to-day surgery is performed by only a few surgeons. The procedure of choice at most laparoscopic centres is LAGB. In some selected cases, the choice of surgery is Roux-en-Y gastric bypass.

#### **MAJOR HIATAL HERNIA AFTER LAP-BANDING: SURGICAL TREATMENT (VIDEO)**

Jerome Dargent. *Polyclinique de Rillieux, Rillieux-la-pape, France.*

**Background:** Hiatal hernia and/or gastroesophageal reflux are often deemed an important issue before bariatric surgery, particularly in case of laparoscopic gastric banding. It may be an important issue postoperatively as well.

**Methods:** A 62-year-old woman patient with an initial BMI of 41 has been operated on with a Lap-band in September 2001. Preoperative upper GI endoscopy showed no sign of hiatal hernia or reflux. Postoperative course went uneventful, and the weight loss was satisfactory, with minor disturbance and a good quality of life.

An urgent reoperation was performed in September 2004 for acute anterior slippage. The band was removed. Then chest radiograph, upper GI barium swallow, and CT-Scan showed the presence of a very large intra-thoracic hiatal hernia. Although there was no actual symptom, we performed the cure of this hernia through laparoscopy in February 2005

**Results:** Postoperative course was uneventful. Current excess weight is 45%. A video will be presented.

**Conclusions:** This case suggests that even without a prior hiatal hernia, Lap-banding may eventually cause a disruption of the esophageal crus. Preoperative assessment of the GE junction could be pointless, but its status is definitely a long-term issue in bariatric surgery.

#### **A PROGRESSIVE UNDERSTANDING OF OBESITY AS REFLECTED IN CARTOONS IN MAGAZINES**

Mervyn Deitel. *OBESITY SURGERY Journal, Toronto, Canada.*

Massively obese individuals have been the subject of cartoons in magazines, which reflect perceptions of obesity by the public. The cartoons have often indicated prejudice without sympathy. A review was undertaken of the attitudes to severe obesity as reflected in cartoons in 4 popular magazines (PB, NY, P, MM) from library archives, comparing 1980-1983 with 1997-2000. The magazine study found 14 cartoons in 1980-1983 and 36 cartoons in 1997-2000 related to obesity. These indicate a progressive awareness of the ramifications of obesity by society, its causes, and the serious sequelae of severe obesity. The cartoons also reflect a progressive understanding of the impact on the obese individual and the psychological difficulties endured by the obese. The later cartoons show an awareness of the serious comorbidities of obesity and the medical and surgical treatments.

#### **FACTORS IN THE PROGRESSING WORLDWIDE OBESITY EPIDEMIC**

Mervyn Deitel. *OBESITY SURGERY Journal, Toronto, Canada*

Obesity (BMI >30) has been accelerating throughout the developed and developing world in the past 25 years. This was originally attributed to genetic causes, but the rapidity indicates that the major cause is lifestyle change. The world has become mechanized, where individuals are sedentary and spend hours at the computer. Even minor activities have become unnecessary. We use the remote control to lift the garage door. We travel by automobile, and no longer walk distances. We take the elevator for more than one floor. At the same time, the food industry has developed low-cost, high-caloric, low-protein, fast foods. Larger sized portions have made these attractive. Children are playing computer games instead of being active. Obesity, with secondary

diseases of diabetes, high blood pressure and high serum lipids, is appearing in adolescents. The current youth may become the first generation of humans who will not live as long as their parents. Obesity exists throughout North America, Europe, the Middle East, and now the Asia-Pacific region where industrialization and a sedentary lifestyle have developed.

The World Health Organization (WHO) in January 2004 approved the international guidelines to overcome "globesity"; the passage was delayed for a number of months by the USA which felt that food intake and exercise are a personal responsibility. However, many measures are under way in the USA, mainly on a state-by-state basis, to thwart increasing obesity. The WHO is disseminating recommendations, and the measures of the European Union will be enforced shortly. To thwart the epidemic requires available regular physical activity, labeling nutritional content, education, control of junk food advertising, and governmental action and incentives. This is very important for children, now that both parents tend to be at work during the day. The recent passage of the "Cheeseburger Bill" in the USA will not be helpful. There is widespread fear that the obesity epidemic cannot be reversed.

#### **CANCER RISK AND BARIATRIC SURGERY**

Arnaud De Roover, Claude Desaive, Olivier Detry, Carla Coimbra, André Scheen, Pierre Honoré, Michel Meurisse. *Department of Abdominal Surgery, CHU, ULG, Liège, Belgium.*

**Background:** While potential surgical and metabolic complications have been well defined after bariatric surgery, the risk of cancer in this population remains ill-defined.

**Methods:** We report 2 cases of gastric cancer, a B-cell lymphoma of the distal stomach after gastric bypass and a GIST after vertical banded gastroplasty, which illustrate the delay in diagnosis that results from the procedure and from the negligence of upper gastrointestinal symptoms often present in this population.

**Results:** High BMI *per se* is a risk factor for adenocarcinoma of the esophagus. The risk for this cancer in the bariatric surgery population is further emphasized by the high incidence of gastroesophageal reflux disease (GERD), in particular after restrictive procedures. Follow-up studies after gastrectomy for benign disease suggest that procedures associated with duodenogastric reflux lead to increased risk of gastric stump carcinoma after 15-25 years. Roux-en-Y gastrojejunostomy is associated with less pouch gastritis and should be accompanied by a lower risk of carcinoma, but long follow-up studies are lacking. While biliopancreatic reflux appears common in the distal stomach after bypass, more data are needed on long-term histologic changes. Reports of cancer of the esophagus and the stomach after bariatric surgery represent only about 20 cases. This may, however, reflect insufficient follow-up, under-reporting, or the effect of surgical pre-screening.

**Conclusions:** The risk factors gathered by the bariatric patients underline the need to detect potential precancerous conditions before surgery. Candidates for postoperative endoscopic surveillance could include patients with a >15 year history of gastric surgery, but also symptomatic patients for GERD in whom a high incidence of Barrett's metaplasia has been reported.

#### **WHY APPLY A BAND IN THE GASTRIC BYPASS OPERATION FOR OBESITY**

MAL Fobi. *St. Mary Medical Center, Long Beach, CA, USA.*

**Background:** The short-limb gastric bypass operation is the gold standard in bariatric surgery because it has been used for >35 years by many surgeons with well known outcome. This operation has a significant failure rate due to inadequate weight loss in a significant subset of patients and weight regain in another significant subset of patients. Placing a band that controls the

outlet stoma in the gastric bypass operation appears to significantly decrease this failure rate.

**Method:** Series with gastric bypass, banded gastric bypass, gastric bypass revised to banded gastric bypass, and banded gastric bypass revised to gastric bypass are reviewed to determine the weight loss, the success rate and the weight loss maintenance.

**Results:** The banded gastric bypass patients lost more weight. The super-obese and even the >60 y/o had higher weight loss after the banded gastric bypass. Patients with failed gastric bypass lost more weight by addition of a band. Patients with a banded gastric bypass who had the band removed, gained weight. There are more reports by more surgeons using the banded gastric bypass and more surgeons revising failed gastric bypass by adding a band to the operation.

**Conclusion:** The band in the gastric bypass results in more weight loss in more patients maintained over a longer period of time. The banded gastric bypass may be the new standard for bariatric operations.

### RESULTS FROM PILOT PHASE OF PROSPECTIVE RANDOMIZED STUDY ON "CLASSIC" TITANIUM PORT (SAGB-QC) AND VELOCITY® PORT (SAGB-QC) PERI-OPERATIVE IMPLANTATION AND SHORT-TERM POSTOPERATIVE OUTCOMES

Martin Fried, Karin Kormanova, Mojmir Kasalicky\*. *Clinical Center for Minimally Invasive & Bariatric Surgery ISCARE, Prague, Czech Republic, 1st Medical Faculty, Charles University, \*1st Surgical Department, General Faculty Hospital.*

**Background:** Port implantation in adjustable gastric banding (AGB) is usually considered as the least compelling; however, it is one of the very important parts of the operation. Port placement can take up to 10% of the overall AGB operating time, and inadequate technique can result in complications in the short- and long-term postoperative period (port torsion, infection, protrusion, port-site persistent pain, etc.).

**Methods:** From Dec 2005 - Feb 2006, 40 consecutive patients were recruited into the Pilot phase of a prospective randomized study and operated in a single institution by bariatric teams with >300 SAGB experience. In 2 patient groups, the intraoperative and immediate postoperative outcomes of the (SAGB-QC) "classic" titanium port and the Velocity® port, were compared.

Recorded parameters were: 1) pre-op BMI & sex; 2) duration of port implantation (min); 3) length of incision (mm); 4) complications (signs of infection/skin reaction, port-torsion, protrusion, etc.); 5) port-site pain scoring (day 1 & 2 post-op, 6-8 days and 6 weeks after the operation).

**Results / Conclusions:**

- 1) Velocity® port implantation time is significantly shorter than that of "classic" titanium port (mean 2.5 min vs 6 min,  $P < 0.01$ ).
- 2) Reduction in patient subjective pain complaints in favor of the Velocity® port recipients was noted in the immediate post-op period. No difference at 6 weeks after operation.
- 3) Port-site infection occurred in 1 patient from the "classic" titanium port group and in none in the Velocity® group.
- 4) Port-site skin incision was longer in the Velocity® group (45 mm) vs the "classic" titanium port implantation group (35 mm).

### TIPS AND TRICKS FOR AVOIDING SHORT- AND LONG-TERM COMPLICATIONS IN ADJUSTABLE GASTRIC BANDING. OUR EXPERIENCE AFTER MORE THAN 1,200 PLACEMENTS WITH THE OBTECH RING: A VIDEO PRESENTATION

Jean-Marc JP Gillardin, Wim Ceelen, Piet Pattyn. *St. Martins Latem, Belgium.*

**Background:** When placing an adjustable gastric band, several issues have to be worked out: Selection of candidates.

**Methods:** We restrict the gastric banding to motivated patients with a BMI between 35 and 45 after failure of conservative measures. Why do we prefer the band we're using? It's an adjustable band with a large volume, low pressure balloon that can be closed in 2 different positions allowing a personal adjustment to each patient. Which position? Literature has clearly demonstrated that the pars flaccida technique results in less complications. The closing system of the band should be placed on the spleen side to avoid erosions into the liver parenchyma. What instruments should be used? In order to retrieve the band in an atraumatic way in the plane between esophagus and aorta, we started using the 'Goldfinger' to our great satisfaction. How to create a pouch? In order to create a pouch of 5 to 15 cc, we place a calibration suture just beneath the Belsey fat pad. This suture is pulled up in a cranial way and the band is closed around the prolapsing stomach.

**Conclusions:** We believe that sticking to these principles has helped us achieve our excellent results.

### COMPLICATION MANAGEMENT IN GASTRIC BYPASS PROCEDURES

Kelvin Higa. *Fresno, USA.*

**Background:** Gastric bypass procedures for the treatment of morbid obesity have been utilized for nearly 50 years since first introduced by Mason and Ito in 1967. However, with the development of minimally invasive techniques, the incidence of these procedures has increased. The complications associated with open procedures were predictable and included a significant proportion of wound issues. With the popularity and exponential growth of laparoscopic procedures, additional complications specific to this approach have emerged. This paper reviews the common complications and their management in the laparoscopic era of gastric bypass

**Methods:** The authors experience with laparoscopic as well as open gastric bypass procedures will be compared with other published series. The technical aspects and algorithms associated with complication management will be discussed.

**Results:** The overall complication rates of laparoscopic gastric bypass appear to be lower than most reported open series, mostly due to avoidance of wound issues. However, there appears to be a higher incidence of major complications: leaks, bleeds, and small bowel obstructions in the laparoscopic group. Minimally invasive approaches provide an additional method of damage control in the diagnosis and management of complications.

**Conclusions:** Complication management in gastric bypass procedures requires early recognition and prompt treatment to limit the severity of the complication. Laparoscopic intervention can help to avoid significant wound issues that complicate recovery.

### IS BANDED DUODENAL SWITCH AN OPTION FOR INADEQUATE WEIGHT LOSS WITH GASTRIC BANDING?

D.R. Krawczykowski, M. Lecko. *Centre Hospitalier Vitry le François, France.*

**Background:** As primary bariatric surgery, laparoscopic gastric banding is the least invasive and carries the lowest early postoperative morbidity. However, longer term rate of inadequate weight loss and its best surgical management remain to be defined.

**Methods:** Between Dec 2001 and Dec 2005, 29 patients with a well located or at least well tolerated gastric band underwent an additional duodenal switch (DS), thus creating a so-called two-step banded duodenal switch. Mean time between the banding and the switch was 38.4 (14-74) months. Mean BMI before restriction was 47.3 (36.8-61.7) and before additional DS 36.4 (24.5-55.1). The laparoscopic approach has been attempted in 9 patients.

**Results:** There was no death in this series. In the early postoperative course, there were 6 major complications in 4 patients

that have been reoperated (1 gastric hemorrhage, 1 distal leak, 1 duodenal stump leak, 1 distal kink, 2 cellulites) and *minor* treated by medical means (8 gastroparesis, 2 pancreatitis, 1 dehydration). The late surgical care complications were 17 band removals (11 cases for intolerance), 1 ileal perforation, and so far 1 sleeve gastrectomy. At 1 year, mean additional drop in BMI was 6.3.

**Conclusion:** An additional DS after gastric banding may result in a substantial increase in weight loss; however, in our experience the rate of late reoperation is high and does not support this option.

#### MANAGEMENT OF SURGICAL COMPLICATIONS AFTER ROUX-Y GASTRIC BYPASS AND SLEEVE GASTRECTOMY

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**Background:** Although Roux-en-Y gastric bypass (RYGBP) and sleeve gastrectomy (SG) represent secure operations, potentially dangerous postoperative complications may occur in some patients.

**Methods:** From 2000 to 2005, 156 RYGBP operations (79 open and 77 laparoscopic) and 26 laparoscopic SGs were performed. Gastro-jejunostomies in RYGBP were performed with circular staplers, and jejunio-jejunostomies with linear staplers. The lengths of the biliopancreatic and alimentary limbs were 100 cm.

**Results:** Severe postoperative complications developed in 10 patients after RYGBP (6%) and 1 patient after SG (5%). The following severe complications occurred after RYGBP: Leakage of gastro-jejunostomies (2) or jejunio-jejunostomies (2), rupture of gastro-jejunostomy due to small bowel obstruction caused by incarceration (1), stenosis of jejunio-jejunostomy (1), massive bleeding from gastro-jejunostomy (1), and intra-abdominal or mediastinal abscess formation (3). After SG, 1 leakage of the staple-line occurred. All complications (with the exception of 1 percutaneous drainage of an abscess) were treated surgically. In 2 cases, open abdominal treatment with VAC system was necessary. 1 elderly and multi-morbid patient (rupture of the gastro-jejunostomy due to bowel obstruction) died due to progressive organ failure despite surgical repair of the complication (0.6%). Intensive care treatment >5 days was necessary in 4 patients. Most complications occurred during the learning curve (within the first 25 operations). On follow-up, weight loss and quality of life data of patients were very good or excellent in most patients.

**Conclusions:** Surgical complications after RYGBP and SG represent potentially dangerous situations and often require demanding reoperations and a multidisciplinary team approach (intensive care, gastroenterology, radiology) in order to achieve success. The majority of complications occur during the learning curve.

#### COMPLICATION MANAGEMENT IN GASTRIC BYPASS: LEAKAGE

Th. Lafullarde. *Department of Surgery, St. Dimna General Hospital, Geel, Belgium.*

**Background:** Leakage after gastric bypass surgery is a serious and potentially life-threatening complication. Optimal preventive measures, early diagnosis and adequate therapy are mandatory.

**Methods:** Medline was searched on prevention, diagnosis and management of leakage after gastric bypass surgery and compared with our own experience.

**Results:** Leakage after gastric bypass surgery occurs in about 1-3%. Maximal prevention by optimal technique is obvious. Less consensus exists on predictive patient characteristics, except on higher incidence with redo surgery. The potential advantage of staple-line reinforcement is discussed. Routine intra-operative testing of the anastomotic integrity (methylene-blue, air-bubble or endoscopic air-test), routine use of drainage and routine postoperative upper GI studies are discussed and have both pros and

cons. Diagnosis is mainly based on clinical signs (tachycardia and respiratory distress) and can be confirmed by CT-scan and/or upper GI studies. Management is usually re-operative, but successful conservative treatment has been reported if the leak is small, generalized peritonitis is absent and adequate drainage is present or can be achieved.

**Conclusion:** Gastro-intestinal leakage is a well-known cause of major postoperative morbidity and even mortality after gastric bypass surgery. Optimal prevention, early diagnosis and adequate management are mandatory.

#### LAPAROSCOPIC GASTRIC BANDING IN ADOLESCENTS

Leonid Lantsberg, Avraham Yizhak, Eliezer Avinoach, Solly Mizrahi. *Surgery A, Soroka University Hospital, Beer-Sheva, Israel.*

**Background:** Estimated incidence of obesity in adolescents is approximately 35% in the U.S.A. and >20% in Europe. IFSO recommended that the age limits for LAGB should range 18 to 55. Nevertheless, obesity causes serious mental and physical disorders in the child and among the adolescent population, and should be treated earlier. The aim of this study was to evaluate LAGB outcome in adolescents in our department.

**Methods:** Since 1996, about 3300 LAGB operations were performed in our department. 160 of the patients were younger than 18, among whom 100 are in close follow-up. Of them, 51 have a minimum of a 2-year period after surgery, and are enrolled in this study. The surgical technique consists of 5 trocars and pars flaccida approach for a retro-gastric blunt dissection to create a tunnel for the band. No gastro-gastric suturing was undertaken. The patient was discharged home after 24 hours and was able to get back to normal activities within 1 week. The band is adjusted by the operating surgeon 1 month following the operation. The following parameters were evaluated: age, sex, family history of obesity, quality of life after surgery, original BMI, lowest postoperative BMI and BMI at the time of interview.

**Results:** All the 51 (32 female) patients had an uneventful operation. The average follow-up period was 27 months (range 24 to 62 months). The mean age of responders was 16 years (9 to 17.5 years of age). The mean preoperative BMI was 42.9. Of the 51 patients, 17% underwent a re-operation for repositioning the gastric band due to slippage, and 2 patients requested their band to be removed. The mean postoperative BMI after 36 months follow-up was 31. 46 of the 51 patients reported satisfaction with the operation's outcome.

**Conclusion:** LAGB is a safe, successful and completely reversible operation, that does not cause permanent harm to the growing adolescent. Also, the weight loss was maintained for a period of at least 3 years of follow-up on average. Therefore, LAGB should be considered the front-line operation in the treatment of morbid obesity among adolescents.

#### ESOPHAGEAL PERISTALSIS AND INTRABAND PRESSURES.

Wolfgang Lechner, Michael Gadenstätter, Ruxandra Ciovisa, Werner Kirchmayr, Gerhard Schwab. *Krems, Austria.*

**Background:** The gastric band has an expandable section for adjustment of the stomal opening by injecting or withdrawing fluid. The *in vivo* intraband pressure correlates with the amount of outflow obstruction and can be regulated by band adjustment. Intraband pressure curves reflect the esophageal peristalsis, primary and secondary. This correlation to peristalsis was demonstrated by simultaneous accomplishment of esophageal standard manometry and intraband manometry.

**Methods:** 8 patients had simultaneous measurements of standard manometry and intraband manometry. Mean age was 39.8

years, 75% women. Mean BMI before gastric banding was 46.1 (range 42.9-61.2), and at the time of investigation 30.2 (range 22.8-40.5). Mean time interval between operation and investigation was 26.1 months (range 7-44). All operations were performed laparoscopically using the pars flaccida technique.

**Results:** During the overall time of record of 61 minutes and 50 seconds, there were 62 primary and 107 secondary peristaltic waves. Peristaltic waves show a clear timing to intraband pressure amplitudes. There is a strong correlation between the duration as well as the amplitude of pressure waves inside the gastric band and inside the stomal pouch.

**Conclusion:** By simultaneous investigation of the standard manometry and the intraband manometry, a strong correlation between peristaltic action and intraband pressures could be demonstrated.

#### LAPAROSCOPIC ADJUSTABLE GASTRIC BANDING (SWEDISH BAND): BAND RELATED COMPLICATIONS AND BAND FILLING – A 5.5 YEAR FOLLOW-UP

Karl Maksymowicz, Dietmar Wohlgenannt. *LKH Hohenems, Surgical Department, Austria.*

**Background:** As band-related complications present a major problem of laparoscopic gastric banding, it has been our aim to establish a possible correlation between band-filling and band-associated complications. Therefore, we have determined the average cumulative band filling for the last 5 years. Furthermore, the outcome of our treatment regarding weight loss, %EWL and BMI was analyzed.

**Methods:** 141 patients operated between June 2000 and Dec 2003 were followed for up to 5½ years. Weight loss, %EWL, BMI and above all the medium value of cumulative band filling (The monthly volumes of band filling of each patient were added up for up to 5½ years and divided by the number of patients of both the complication and the non-complication group) were analyzed retrospectively.

**Results:** Within 5 years, we saw a medium BMI reduction from 41 to 29.8. 18 patients, ie. 12.8% suffered band-associated complications (6 migrations, 2 perforations, 2 reflux associated bronchitis/esophagitis without slippage or pouch dilatation, 8 pouch dilatations/slippages). The average cumulative band filling (ml x mth) of this complication group, was 98.5. Of the complication-free group it was, however, 136.5 ml x mth.

**Conclusions:** Laparoscopic adjustable gastric banding is an effective operation for surgical weight reduction. The present results do not show any relation between band-filling and band-related complications.

#### GASTRO-GASTRIC FISTULA FORMATION IN GASTRIC BYPASS PROCEDURES

K. Miller, A. Pump, P. Herbst. *Obesity Surgery Center, Krankenhaus Hallein, Salzburg, Austria.*

**Background:** Gastro-gastric fistulas are infrequent but serious complications of gastric bypass procedures, leading to stomal ulceration and failure of weight loss.

**Methods:** All patients (n=187) underwent a form of proximal antecolic Roux-en-Y gastric bypass, in which a pouch is constructed along the lesser curvature of the stomach. The pouch and stomach were stapled and separated by transection. A male patient (age 24 years, BMI 43) underwent a revisional surgical procedure for symptomatic fistula formation. In a second male patient (age 36 years, BMI 47), the fistula was closed by endoscopic fibrin gluing. Unfortunately, 5 patients developed a leak from the proximal pouch and subsequently a gastro-gastric fistula between the pouch and the remnant stomach.

**Results:** 3 patients were treated conservatively with PPI, 1 surgically and 1 endoscopically. Both, surgically- and endoscopically-

treated patients recovered fully and they could eat and drink without any restriction. Repeat examination with x-ray and endoscopy revealed that no fistula remained. Remarkably, the surgically/endoscopically-treated patients lost weight to a BMI of 28 and 30, respectively (ie. lost 85% and 80% of their original excess body weight). No weight regain was observed in the conservative treated patients but continuous PPI medication was given.

**Conclusion:** In our 2 patients, weight loss was stable for 2-4 years, when the fistula was closed surgically and endoscopically, to avoid chronic proton pump inhibitor medication for stomal ulcer.

#### THE IMPLANTABLE GASTRIC STIMULATOR (IGS™) FOR OBESITY: A REVIEW OF THE EUROPEAN EXPERIENCE

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**Background:** Implantable gastric stimulation (IGS™) has been shown to be a safe and effective minimal invasive surgical therapy for morbid obesity. The aim of this study was to evaluate the efficacy of a gastric stimulation procedure for the treatment of morbid obesity.

**Methods:** All IGS™ systems were implanted as a laparoscopic procedure. We focus on the results of the LOSS (Laparoscopic Obesity Stimulation Survey) study, which is a multi-center European survey of 16 hospitals. 91 patients underwent IGS™ implantation to date in the LOSS study.

**Results:** The patient population is comprised of 62 (68%) females and 29 (32%) males. The mean age is 41 years, mean weight was 116 kg and mean BMI was 41 kg/m<sup>2</sup>. All surgical procedures could be successfully completed. There were no deaths, and no severe peri- or postoperative complications. The mean excess weight loss (EWL) was 20% 12 months after surgery and about 25% at 2 years after implantation. Selected (Baroscreen) patients achieved a weight loss of 32% EWL which is significantly different from those who failed the screening (15% EWL) ( $P<0.01$ ).

**Conclusion:** Gastric pacing is a promising, minimal invasive, safe and effective surgical method with a very low impairment of the patient. Patient selection for IGS therapy seems to be an important determinant of outcome.

#### THE VALIDATION OF THE MOOREHEAD-ARDELT QUALITY OF LIFE QUESTIONNAIRE II AND BARIATRIC ANALYSIS AND REPORTING OUTCOME SYSTEM (BAROS)

Melody Moorehead. *Center for Severe Obesity and US Bariatric, Ft. Lauderdale, FL, USA.*

**Background:** The Moorehead-Ardelt Quality of Life Questionnaire was originally developed as a disease-specific instrument to measure postoperative outcomes of self-perceived quality of life (QoL) in obese patients. 5 key areas were examined: self-esteem, physical well-being, social relationships, work, and sexuality. Each of these questions offered 5 possible answers, which were given + or - points according to a scoring key. The questionnaire was used independently or incorporated into the Bariatric Analysis and Reporting System (BAROS). The instrument is simple, unbiased, user-friendly and can be completed in <1 minute. It has been found useful, reliable and reproducible in numerous clinical trials in different countries. Further research and feedback from some of its users prompted refinements, now included in the Moorehead-Ardelt Quality of Life Questionnaire II (MA QoLQII). This study tested the validity of the improved instrument.

**Methods:** The wording of the questions was changed, to make them less suggestive and allow for the use of the survey before and after medical intervention, and with control groups. A 6th

question, analyzing eating behavior, was added. The  $\pm 1$  point given to the evaluation of self-esteem was split with this new question, thus maintaining the consistency of the scores. The drawings were simplified. Finally, the scoring key was changed to a 10-point Likert scale, to improve response-differentiation. To validate the M-A QoLQII, we examined its concordance with other health and well-being indicators, specifically the MOS 36-Item Short-Form Health Survey (SF-36), the Beck Depression Inventory-II (BDI-II) and the Stunkard and Messick Eating Inventory. The study population included 110 morbidly obese patients (20 males, 90 females, mean BMI=50), participants of gastric bypass support groups. Reliability of the M-A QoLQII was determined using Cronbach's alpha coefficient. Construct validity was measured by conducting a series of Spearman rank correlations.

**Results:** A Cronbach's alpha coefficient of 0.84 indicated satisfactory internal consistency. The M-A QoLQII was found to be significantly correlated ( $P < 0.01$ ) to 7 of the 8 SF-36 scales: Physical Role ( $r = 0.357$ ), Bodily Pain ( $r = -0.486$ ), General Health ( $r = 0.413$ ), Vitality ( $r = 0.588$ ), Social Functioning ( $r = 0.517$ ), Emotional Role ( $r = 0.480$ ), and Mental Health ( $r = 0.489$ ). The questionnaire also significantly correlated ( $P < 0.01$ ) to the Beck Depression Inventory-II ( $r = -0.317$ ), as well as to the 'Disinhibition' ( $r = -0.307$ ) and 'Hunger' ( $r = -0.254$ ) factors of the Stunkard and Messick Eating Inventory.

**Conclusions:** The M-A QoLQII correlates well with other widely used health and well-being indicators such as the SF-36, Beck Depression Inventory II and the Stunkard and Messick Eating Inventory. The study established the validity and reliability of this improved disease-specific instrument for QoL measurement in the obese population.

#### LAPAROSCOPIC GASTRIC RE-BANDING VERSUS LAPAROSCOPIC GASTRIC BYPASS AS RESCUE PROCEDURE FOR PATIENTS WITH POUCH DILATATION

Herman Nehoda. *University Clinic Innsbruck, Austria.*

**Background:** As >100,000 patients have received a laparoscopically placed gastric band over the past decade worldwide, it can be predicted that we could expect some patients requiring rescue procedures. We assessed, whether laparoscopic re-banding or Roux-en-Y gastric bypass is the best approach for failed gastric banding after pouch dilatation.

**Methods:** Between Jan 2000 and June 2005, 489 patients underwent laparoscopic gastric banding. Of these, 33 (6.7%) required rescue procedures due to pouch dilatation. We contacted each patient to obtain information about their postoperative courses. Furthermore, preoperative weight and BMI, weight reduction 1 year postoperatively, weight at the time of pouch dilatation and the time-period between the primary operation and the time that pouch dilatation occurred were analyzed.

**Results:** At our institution, the most widely performed operation after pouch dilatation was re-positioning or re-banding (16 patients). Band removal without replacement was performed in 7 patients. 8 patients were converted to a gastric bypass. 1 Patient had undergone laparoscopic gastric sleeve resection, and 1 patient received an intragastric balloon. Patients who had undergone conversion to gastric bypass are extremely content, and although weight reduction is nearly the same as with gastric banding, they prefer the bypass to the gastric banding.

**Conclusion:** Conversion to gastric bypass offers significant advantages, but further studies will be necessary to support our opinion that this procedure appears to be the rescue therapy of choice after failed laparoscopic gastric banding.

#### TECHNICAL IMPROVEMENTS FOR LAPAROSCOPIC GASTRIC BYPASS PROCEDURES

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**Background:** Nowadays, the laparoscopic gastric bypass is the most performed procedure to treat morbid obesity in the USA.

**Methods:** The effectiveness of this procedure in terms of weight loss is based on 4 points: 1) A restrictive part performed in transecting the stomach so as to create a small vertical gastric pouch; 2) A malabsorptive part in bypassing the stomach, the duodenum and the proximal part of the jejunum due to a Roux-en-Y limb; 3) A dumping syndrome resulting from a too quick arrival of hyperosmolar liquid in the jejunum; 4) A hormonal effect consisting in the decrease of the secretion of Ghrelin and probably other type of hormones.

**Results:** The results in terms of excess weight loss may reach 70 to 80% at 2 years. The laparoscopic approach has decreased some complications (ventral hernia, wound infections). However the morbidity rate is not nil.

**Conclusion:** This presentation aims to describe the recent technical improvement used by our teams to increase the safety of this procedure.

#### QUALITY CONTROL OF OBESITY SURGERY IN AUSTRIA

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**Background:** The epidemic of obesity (BMI>30) has by now affected 11% of the Austrian population, with a pronounced increase of morbidly obese people (BMI>40). Weight loss surgery as the only effective treatment has, therefore, steadily increased in the last years. To ensure surgical quality, the Austrian National Federation for Surgery of Obesity started a quality control program in 2003.

**Methods:** 1) A nationwide review was performed to assess the development of bariatric surgery in Austria in detail. E-mail requests were sent to every department of surgery in public hospitals and clinics, in order to obtain an overview of growth and time trends of obesity surgery in Austria from 1992 until 2004. Additional questions about the pre- and postoperative care, the length of hospitalization and the number of surgeons performing the procedures were asked. 2) Guidelines for bariatric surgery were released and 3) an online data-base for bariatric procedures was created investigating demographic data, information on procedures and follow-up using the Bariatric Analysis and Reporting Outcome System (BAROS).

**Results:** A steady increase of obesity surgery has been noticed for almost the whole investigation period. The years 1998 through 2001 exhibited the largest increase in bariatric operations (500%). Since 2001, a constant number of interventions of about 1,400 per year (2004:1,445) has been observed. Geographical comparison showed a decline in numbers of bariatric procedures from the west to the east of Austria. Predominant operative techniques were restrictive procedures: 1992-1998 VBG (vertical banded gastroplasty) and nearly exclusively AGB (adjustable gastric banding) since 1998. From 2002 on, a steep increase of RYGBP (Roux-en-Y gastric bypass) paralleled by a decrease of AGB has been observed. The peak of AGB interventions was seen in 2002. Currently, the incidence of second-line procedures, mainly RYGBP after AGB is growing. Specialized centers offering various types of bariatric surgery are emerging. These centers perform most of the operations. So far, 10 bariatric centers have registered for the online data-base.

**Conclusion:** A study conducted by the Austrian Society for

Surgery of Obesity demonstrated a steady increase of bariatric operations in Austria. In view of this, development of guidelines and quality control by continuous data collection are of major importance

### **SURGICAL TREATMENT OF TYPE II DIABETES**

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**Background:** Type II diabetes afflicts at least 21 million Americans, most of whom are overweight, obese or morbidly obese. Because the diabetes resolves with bariatric surgery along with the weight loss, the remission of the disease has been attributed to the partial resolution of obesity.

**Methods:** 4 studies suggest that the resolution is not due to weight loss but rather to the exclusion of food from the proximal foregut. 1) Our studies at ECU demonstrating the resolution of insulin resistance and need for insulin in diabetic morbidly obese patients within 6 days after surgery; 2) our studies documenting long-term remission of diabetes in 83% of patients; 3) the work of Rubino and Mariscaux demonstrating that exclusion of the duodenum and proximal jejunum in diabetic, lean rats prevents the development of diabetes in spite of good weight gain with growth; 4) the recent report by Arguelles et al that a similar procedure in non-obese or mildly obese patients yielded resolution of the disease.

**Results:** All of these studies documented decreased blood glucose and freedom from the requirement for insulin. Further, the effect is dose-related in that the resolution of the diabetes is gastric band < gastric bypass < duodenal switch.

**Conclusions:** Diabetes is most likely a disease caused by over-stimulation of the islets by incretin hormones with secondary hyperinsulinism and insulin resistance. The over-active response is probably due to food stimulating the incretin producing cells. Exclusion of food from the proximal gut may well become the treatment of choice for Type 2 diabetics whether or not they are obese.

### **DUODENAL SWITCH – OUR TECHNIQUE AND OUTCOME**

Asnat Raziel, Todd Kellogg, Sayeed Ikramuddin, Henry Buchwald. The Israeli Center for Bariatric Surgery, Tel Aviv, Israel, and Department of Surgery, University of Minnesota, Minneapolis, MN, USA.

**Background:** The duodenal switch (DS) is increasing in its utilization as a surgical treatment for morbid obesity.

**Methods:** From 2001 to 2004, 65 patients underwent DS as a primary bariatric operation at the University of Minnesota. A longitudinal sleeve gastrectomy was performed, using multiple loads of the GIA stapler and oversewing the entire staple-line. A common channel of 75 cm was used, and the rest of the small bowel was divided into 2 equal halves, creating a biliopancreatic (BP) and a Roux limb. The duodenoileostomy was performed end-to-side using a 2-layer hand-sewn technique.

**Results:** DS was performed in 65 patients: 16 (25%) males and 49 (75%) females. The mean age was 42 years (23-64). Mean preoperative BMI was 53.1 kg/m<sup>2</sup> (39-100). Mean size of the pouch was 118 ml (100-200). The mean length of the BP limb and the Roux limb was 212.9 cm (150-400). The length of the common channel was 75 cm. Mean operative time was 356 minutes (221-482). Mean hospitalization time was 7.15 days (4-25). 8 patients (12%) stayed in the ICU 1-5 days – mean 2.5 days. In 37 patients (57%) other procedures were done. Operative mortality was 0%. There was 1 (1.5%) intraoperative complication – bleeding from a laceration of a left hepatic vein that was sutured. There were 6 (9.2%) early complications: 1 anastomotic stricture at the duodenoileostomy that mandated multiple endoscopic dilations; 1 acute pancreatitis; 2 respiratory failures treated with mechanical ventilation; and 2 wound infections. There were no leaks. There were 5 (8.3%) late complications – 4 ventral hernias and 1 cholelithiasis. The mean EWL in 3 months was 37% (17-70); in 6 months 47% (23-78); in 1 year 65% (38-104); in 2

years 77% (49-114); and in 3 years 79% (57-111).

**Conclusion:** DS with oversewn stapled sleeve gastrectomy and 2-layer end-to-side hand-sewn duodenoileostomy is a safe and effective primary procedure for the treatment of morbid obesity.

### **RHABDOMYOLYSIS AFTER BILIOPANCREATIC DIVERSION WITH DUODENAL SWITCH**

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**Background:** Rhabdomyolysis is an uncommon event in bariatric surgery. It can be caused by ischemia, crush injury, alcohol ingestion and drug intake, and as a consequence renal failure can develop. Only a few reports suggest that patients undergoing bariatric surgical intervention are at risk for rhabdomyolysis, the incidence of which is reported to be 0.9% to 22.7%.

**Methods:** We describe a super-obese male (BMI 52 kg/m<sup>2</sup>) who underwent a laparoscopic biliopancreatic diversion with duodenal switch. Etiology, pathophysiology, spectrum of complications, and the diagnostics as well as therapeutic management are reviewed.

**Results:** Operation time was 265 minutes. Interventional course was uneventful. Postoperatively, the patient complained about pain in both hips and the left shoulder. In addition, he suffered from oliguria. The patient was treated with fluids (isotonic saline), bicarbonate, and mannitol. Despite this, he developed renal failure, which subsequently required hemodialysis. The patient died from arrhythmia and cardiac arrest on the 8th postoperative day.

**Conclusions:** Obese patients undergoing bariatric surgery should be considered at risk of rhabdomyolysis, which is a severe complication with a multifactorial and complex biochemistry and pathophysiology. Prolonged compression of the muscles over the time period of surgical intervention, in particular in laparoscopic procedures, may be a reason for the development of this complication.

### **LAPAROSCOPIC GASTRIC BYPASS: LESSONS LEARNED FROM MORE THAN 600 CASES**

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**Background:** Laparoscopic gastric bypass is one of the most commonly performed bariatric operations, but surgical technique varies greatly among authors. Our aim is to describe the impact of a number of technical modifications on our postoperative morbidity.

**Methods:** All patients who underwent a laparoscopic gastric bypass in both our departments are included. Modifications included: suturing techniques, reinforcement of the staple-lines, afferent limb position, closure of the mesenteric defects, prevention of infection.

**Results:** 607 laparoscopic gastric bypasses have been performed. Overall mortality was 0.16%. Overall morbidity has slightly decreased from the first 100 patients, but remains at about 17%. Major morbidity has significantly decreased from 9% to 3.9% (P=0.03). Leaks from the distal gastric suture-line and from the jejunojejunostomy have disappeared, and obstruction at the level of the jejunojejunostomy has decreased from 3% to 0.9%. The wound infection and the intraabdominal abscess rates have dropped from 4.8 and 2% to 2.6 and 0.9% respectively. In the long term, the incidence of internal hernia has decreased significantly from 5.2 to 1% (P=0.01). Weight loss remained stable.

**Conclusions:** Laparoscopic gastric bypass remains a challenging operation even with extensive experience. Technical details and patient management have evolved on the basis of our experience and the literature, with a consecutive decrease in major morbidity. In this difficult patient population, major complications will continue to occur despite optimal surgical technique. Their

early recognition, with prompt and aggressive management, is essential to maintain a low mortality.

### MORBID OBESITY – A PATHOPHYSIOLOGICAL COMPONENT OF GASTROESOPHAGEAL REFLUX DISEASE (GERD)

H. Tigges, H. B. Reith. *Department of Surgery, General Hospital Konstanz, Germany.*

**Background:** Morbid obesity is an increasing phenomenon in industrialized countries. Since symptoms of heartburn and epigastric pain are common in overweight patients, a pathophysiological correlation to gastroesophageal reflux disease is pronounced.

**Methods:** A prospective study was done in 108 patients (male 20, female 88) with morbid obesity (BMI >40 kg/m<sup>2</sup>). All patients underwent gastrointestinal function testing with stationary manometry and 24 h pH manometry before laparoscopic gastric banding from 1997 to 2003. The data of the morbidly obese patients were compared to those of 10 normal weight healthy volunteers (male 2, female 8).

**Results:** There was no pathological acid reflux into the esophagus in tested normal weight and healthy volunteers (male 2, female 8) with a medium age of 35.2 years ( $\pm 7.7$  years) and a medium BMI of 22.0 kg/m<sup>2</sup> ( $\pm 1.4$  kg/m<sup>2</sup>). In contrast to these normal weight volunteers, 48 patients of 108 with morbid obesity and a medium BMI of 47.8 kg/m<sup>2</sup> ( $\pm 4.8$ ) showed an increased and pathological DeMeester Score. Only 47 morbidly obese patients with proven gastroesophageal reflux disease complained about typical reflux symptoms.

**Conclusions:** Morbid obesity with a BMI >40 seems to be another pathophysiological risk factor for developing gastroesophageal reflux disease (GERD). Prophylaxis of GERD therefore means also weight control and prevention of morbid obesity.

### BILIOPANCREATIC DIVERSION WITH DUODENAL SWITCH AS A REVISIONAL PROCEDURE FOR FAILED GASTRIC BANDING

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**Methods:** From Feb 2002 to Nov 2005, 16 patients had a biliopancreatic diversion with duodenal switch (BPD-DS) as a revisional procedure after a failure or complications of a gastric banding.

**Results:** The 15 women and 1 man were aged 44.9  $\pm$  9.1 years. Prior to gastric banding the initial BMI was 50.6  $\pm$  5.6 and the lowest BMI after gastric banding was 40.4  $\pm$  6.4 after a period of 17.7  $\pm$  10.5 months. 11 bands were removed at the time of the completion of the BPD-DS and the others 12.4  $\pm$  7 months before the BPD-DS. Overall, the delay between gastric band placement and the BPD-DS was 27.7  $\pm$  16 months. Operation duration was 243.4  $\pm$  62.4 mn and the hospital stay was 15.7  $\pm$  16.4 (3 to 68) days. Half of the procedures were done deliberately open and laparoscopy was attempted for the other 8 procedures. Five of the laparoscopies were converted to open. Complications were seen in 10 patients: papilla disinsertion and anastomotic fistula (3), wound abscess (5), bleeding (1) and abdominal abscess (1). No fistula occurred on the gastric staple-line. 4 patients had to be reoperated for fistula (2), intra-abdominal bleeding (1) and wound abscess (1). There was no postoperative death. Before the BPD-DS, the BMI was 45.6  $\pm$  5.7 and the Table below shows the BMI evolution over time after the BPD-DS. The lowest BMI achieved by the gastric band in these patients was attained only 3 months after the BPD-DS.

Preop.	1 mo	3 mo	6 mo	9 mo	1 yr	1.5 yr
45.6 $\pm$ 5.7	42.3 $\pm$ 3.6	40.5 $\pm$ 3.7	37.0 $\pm$ 4.3	35.1 $\pm$ 5.0	33.3 $\pm$ 6.2	34.1 $\pm$ 6.4

**Conclusions:** Despite a high rate of conversion and complications, BPD-DS is an effective revisional approach for failed or complicated

gastric banding. This context can be partially explained by the learning curve for the laparoscopic approach and the BPD-DS itself.

### IMBALANCE BETWEEN CLINICAL GUIDELINES AND INSURANCE DECISIONS ABOUT OBESITY SURGERY IN GERMANY

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**Background:** Criteria for selection of patients for bariatric surgery have been well-defined in numerous international studies. However, German guidelines recommend bariatric surgery as an "ultima ratio" and stipulate an intense conservative treatment before considering surgery. Furthermore, German medical insurers are using these guidelines as excessively restrictive. We analyzed our own patients in order to maximize chances of getting an insurance approval.

**Methods:** We prospectively examined a consecutive series of patients who demanded bariatric surgery in 2004. Evaluation included telephone contact with specialized staff, provision of information brochures and ambulatory check up by a surgeon, by a psychologist and by other specialists. The insurance application process was supported by providing a medical certificate confirming the need for bariatric surgery.

**Results:** After providing the first information, 163 of 192 patients consulted our outpatient center (BMI 47 $\pm$ 8; age 44 $\pm$ 12 years; female 65%). Patients suffered from diabetes (28%), hypertension (64%), sleep apnea (10%) and arthralgia (78%). Of 88 patients deemed to be appropriate candidates for surgery according to the German guidelines, only 39 (44%) finally received insurance approval.

**Conclusions:** Although we applied strict selection criteria for bariatric surgery and performed an intense preoperative work-up, the rate of insurance approval was inappropriately low. Some denials will not be overturned without the assistance of qualified counsel. However, some potential denials can be defeated before they start, by carefully documenting conservative treatment and co-morbidity. In addition, bariatric surgeons should adapt the German guidelines to international guidelines which are much less restrictive in applying bariatric surgery.

### SELF-CONTROL AFTER BARIATRIC SURGERY

G. C. M. van Hout, J. J. J. Jakimowicz, J. P. J. van Spreeuwel. *The Netherlands.*

**Background:** Bariatric surgery is the treatment of choice for patients with morbid obesity; it does not only lead to substantial weight reduction, but also to improvement or cure of co-morbidities, including diminishing of psychopathology and abnormal eating behavior, and improvement in quality of life. However not all patients are successful. Some patients regain weight, sometimes after developing an eating disorder, report serious reductions in quality of life or need psychiatric or psychological treatment. Long-term efficacy of bariatric surgery is predominantly determined by the extent of successful adjustment of eating patterns and compliance with adequate dietary rules. In addition to medical-somatic and surgical-technical factors, psychosocial factors can play a major role.

**Methods:** In this presentation, a self-control/ guided self-help approach to unsuccessful procedures will be presented.

**Results:** Even after bariatric surgery, some people do not succeed in bringing about essential and lasting changes in their eating habits and weight. Very often this is due to poor motivation or poor self-control. Self-control not only focuses on the quantity and quality of food, but also on how, when and why people eat. Before attempting to bring about changes in behavior, it is important to ensure adequate motivation. If motivation is inadequate, interventions may be used to increase motivation. The next step is to devel-

op a tailor-made treatment program. After registration, patterns in eating behavior are outlined. In this self-control program, stimulus-control, stimulus-response intervention and response consequences are major factors. In addition, there is also concern for physical exercise and social support to enhance long-term success.

**Conclusion:** In fact, bariatric surgery is a forced behavior modification; however, some patients need more help to change their eating patterns and life-style.

#### **PREDICTORS FOR SUCCESS AFTER BARIATRIC SURGERY**

G. C. M. van Hout, J. J. J. Jakimowicz, J. P. J. van Spreeuwen. *The Netherlands*

**Background:** Bariatric surgery is a forced behavior modification, and, in addition to surgery, a number of psychological factors have been shown to play a role in its long-term results. Various studies of potential predictors failed to find any relationship or provided conflicting results, and, as a result, objective criteria that reliably predict whether a given patient will have an acceptable outcome are lacking. As a consequence, each treatment team proposes its own exclusion criteria. A better understanding of the relationship between these variables and weight loss and other parameters of success following bariatric surgery will not only enable better patient selection, but also the development of interventions to improve outcome.

**Methods:** In addition to a systematic literature review, in the context of preoperative and postoperative psychological evaluation, 77 patients were interviewed by a psychologist and completed a battery of psychological tests. Both our literature review and our study were designed to understand the potential psychosocial predictors of success following bariatric surgery.

**Results:** According to our literature review, bariatric surgery results in more success for self-critical, flexible patients, with high self-esteem, direct and acting coping behaviors, good mental health, satisfactory and solid marriage, and who suffer from and are concerned about their obesity, have realistic expectations and undisturbed eating behaviors. Our study points at depression and restrained eating as positive predictors of postoperative weight loss. Negative physical quality of life was predicted by functional-somatic complaints and hostility. Positive mental quality of life was predicted by active coping, whereas negative mental health was predicted by preoperative inadequacy, depression and bulimia.

**Conclusion:** Weight loss as well as quality of life may be predicted by certain personality characteristics, psychopathology and eating behavior. The influence of psychosocial factors has been noticed in many patients who obtained a poor weight outcome. It is important to identify patient's characteristics which may be linked to their prognosis and to provide necessary pre- and postoperative psychosocial interventions.

#### **COMPARISON BETWEEN GASTRIC BANDING, ROUX-EN-Y AND SINGLE-ANASTOMOSIS GASTRIC BYPASS, BPD, BPD-DS AND GASTRIC STIMULATION – SINGLE CENTER EXPERIENCES**

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**Background:** The feasibility and safety of a laparoscopic approach to patients who are morbidly obese have been demonstrated for a large number of bariatric procedures. Further research is needed to examine the morbidities, frequency of complications and efficacy in controlled trials comparing the various laparoscopic operations. Most of the bariatric surgeons prefer only one or two laparoscopic techniques, so that controlled trials comparing the various laparoscopic operations are rare.

**Methods:** 1,042 consecutive patients (F 82.5%) underwent in the period 2/2001-01/2005 different bariatric procedures. All primary procedures were performed laparoscopically. In the group

of secondary gastric bypass, 12 open and 4 conversions were included. Adjustable gastric banding (group A: n=224), primary Roux-en-Y gastric bypass (B: n=658), primary single-anastomosis gastric bypass (C: n=64), secondary gastric bypass (D: n=84), biliopancreatic diversion (E: n=54), biliopancreatic diversion with duodenal switch (F: n=134), sleeve gastrectomy (G: n=52) and gastric pacing (IGS: H: n=2 and Tantalus I: n=12) by a single surgeon. Initial body weight of the total population was  $127.9 \pm$  SD 23.9 kg and body mass index (BMI) was  $46.4 \pm$  SD 7.2 kg/m<sup>2</sup>. Mean age was 37.9 (16-82). In a follow-up of median 27 months (60-3 months), the outcome of the patients were controlled.

**Results:** Lethality, morbidity, complications, hospital stay, operating-time and readmissions differ significantly. The hospital lethality was in all series 0%, except in the BPD-DS group (F: 1.5% lethality). In the 1-year mortality, 1 death after gastric bypass (0.15%: late liver abscess) and a late death after BPD-DS (0.75%: after open revision of a gastric fistula) were reported (events in other hospitals). The hospital morbidity (%) was A: 0.8, B: 20.6, C: 6.2, D: 19, E: 3.7, F: 24, G: 13.6, H: 0, I: 8.3. The rate of reoperations (major complications) during the hospital stay was higher in the stapled than in the non-stapled surgery (4% versus 0%). The mean operating-time (min) was A: 38, B: 58, C: 42, D: 118, E: 62, F: 166, G: 52, H: 43, I: 126 min. A marked leaning curve with decreasing operating-time was seen in most series. The most common complications were seen in the stapled operations with bleeding and wound-infection. Reinterventions and wound-infections prolonged the hospital stay markedly. The mean excess weight loss (%) 1 year after was A: 54, B: 72, C: 74, D: 48, E: 74, F: 82, G: 81, H: 18, I: 32.

**Conclusions:** Marked differences in excess weight loss seems to be an argument for a tailored therapy concept in bariatric surgery. In super-obese patients, the LBPD-DS seems to be the most effective procedure regarding weight loss. The LBPD-DS can be performed in two steps to reduce the operative risk. The LAGB is a basic bariatric procedure with lowest risks, which offers a switch to other procedures by laparoscopy.

#### **REDEFINING SUCCESS IN BARIATRIC SURGERY**

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**Background:** Successful bariatric surgical outcomes are usually defined solely in terms of a given percentage of excess weight loss (EWL). This definition fails to acknowledge improvement in health status which is the most important reason for bariatric surgery. In our study, we have followed changes in the metabolic status of bariatric patients at various EWL stages in an effort to redefine the meaning of "success" with bariatric surgery.

**Methods:** 431 morbidly obese (MO) and super-obese (SO) patients were included in the study, 361 females and 70 males, all of whom underwent restrictive bariatric procedures. Metabolic parameters (lipids, insulin, leptin, hepatic transaminases) were measured preoperatively and at defined points of EWL (25%, 50%, 75%).

**Results:** The data show that insulin levels, elevated prior to surgery, returned to normal values after an EWL of 25% ( $P < 0.000001$ ,  $P < 0.05$ ) for all patients except SO males. Hypertriglyceridemia resolved in the SO and MO females ( $P < 0.00001$ ) at 25% EWL and, for the males, at 50% EWL ( $P < 0.01$ ). Normal HDL-cholesterol levels were reached at 50% EWL. ALT was elevated in all patient groups at 25% EWL but showed normal values after an EWL of 50%.

**Conclusion:** A number of metabolic parameters in MO and SO patients are significantly improved with an EWL of only 25% and nearly all metabolic aberrations are resolved with an EWL of 50%. These findings suggest that the definition of successful bariatric treatment should not be limited to changes in weight loss alone.