IFSO

INTERNATIONAL FEDERATION FOR THE SURGERY OF OBESITY AND METABOLIC DISORDERS

Vienna, Austria, Aug 26-29, 2015

IFSO15 20th WORLD CONGRESS

Karl Miller, MD, FACS Congress President ; Rudolf Weiner, MD, Presidentof IFSO

Postgraduate Course (Pre-Congress Educational Course)

MINI-GASTRIC BYPASS
ONE ANASTOMOSIS GASTRIC BYPASS

Date : Wednesday, August 26, 2015 8:00-15:00

A Course Syllabus will be provided to the attendees

Course Directors and Moderators :

Mervyn Deitel (Canada) | Gerhard Prager (Austria) | Jean-Marc Chevallier (France) | K.S. Kular (India) | Pradeep Chowbey (India)

With :

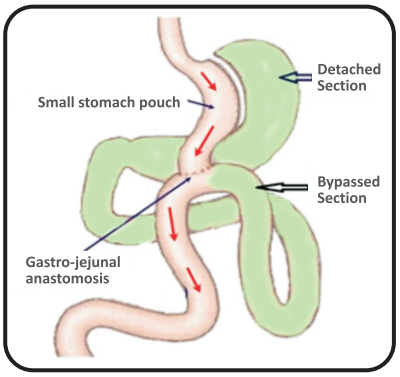
Wei-Jei Lee | C Peraglie | J Himpens | Om Tantia | D Hargroder | Arun Prasad | R Rutledge | M GarciaCaballero
M Musella | M Carbajo | M Bhandari | Milone | GS Jammu | R Tacchino | F Greco | M De Luca
Luque de Leon | J Apers | O Fonseca and other experts.

Program

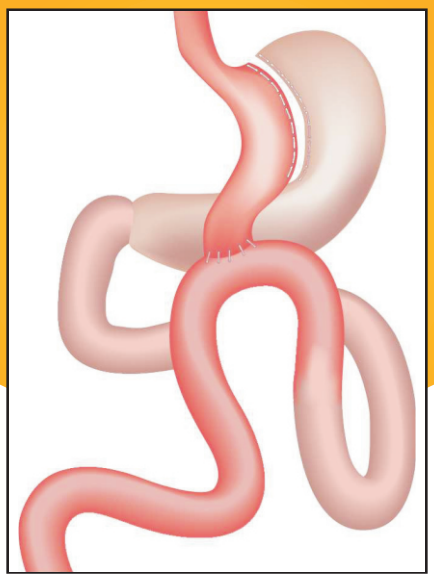
8:00 Introduction/Welcome 8:10-12.30 Presentations/Videos10:30 Coffee
Break : 12:30 - 1:15 Lunch : 1:15 - 15:00 Presentations/Videos/Discussions

COURSE OBJECTIVES :

- Understand the concepts and physiology of the MGB.
- Learn how to perform MGB (Techniques).
- How to treat complications, and excess or inadequate weight loss.
- Be acquainted with variations in technique.
- Be familiar with diet, supplements, follow-up, etc.
- Compare available data with other bariatric operations.



This syllabus is dedicated to Robert Rutledge, MD, FACS, who, after performing the other bariatric operations, boldly started the laparoscopic Mini-Gastric Bypass (MGB) in 1997. Despite unwarranted criticism by other bariatric surgeons who felt threatened, he persisted in his knowledge that this is a superior bariatric operation. The principle of the MGB has since been adopted by a progressively increasing number of bariatric surgeons. Dr. Rutledge has performed more than 6,500 MGBs, with remarkable results, and selflessly has taught this operation throughout the world.



Preamble :

The Mini-Gastric Bypass/One-Anastomosis Gastric Bypass has been increasing internationally. The simplicity, safety and results appear superior to other bariatric procedures, but the technique is of major importance.

MINI-GASTRIC BYPASS
ONE-ANASTOMOSIS GASTRIC BYPASS
MGB/OAGB PRE-CONGRESS COURSE

Wed. August 26, 2015, 8:00 am – 3:00 pm
IFSO 2015 Vienna – Hofburg Imperial Palace

Course Organizers

Mervyn Deitel (Canada), Gerhard Prager (Austria), Jean-Marc Chevallier (France)
Kuldeepak S. Kular (India), Pradeep Chowbey (India)

A SYLLABUS ON MGB/OAGB WILL BE PROVIDED TO ATTENDEES

8:00 am	**REGISTRATION**
8:05 am	**Welcome : Why the MGB is a good operation** – Pradeep Chowbey (Past-President of IFSO)
8:10 am	**History and Rationale of the "Rutledge Operation"**, and its names– Mervyn Deitel (Founding & Honorary Life Member of IFSO)
STANDARD MGB : Moderator – Kuldeepak S. Kular	
8:15 am	**Video–Technique of MGB** (from an 11-year personal series of >1,500 MGBs : data & long-term outcome) – CesarePeraglie (USA)
8:35 am	**Video–Step by step technique of MGB** – Om Tantia (India)
8:50 am	**Q&A on Technique of MGB** – Panel : CesarePeraglie, Om Tantia, Robert Rutledge (USA)
8:55 am	**Complications of the MGB** (based on personal results of>1,500 cases) – David Hargroder (USA)
9:05 am	**Marginal ulcer after MGB** – Prevention and Treatment (based on an experience with >1,300 MGB patients – comparison with RYGB) – KS Kular
9:15 am	**A technique used for prevention of internal hernias after MGB**– Jacques Himpens (Belgium)
9:25 am	**MetabolicBone Disease (including iPTH) : 10-year comparison of restrictive surgery, RYGB and MGB/OAGB : Prevention**– Wei-Jei Lee (Taiwan)
9:35 am	**1. Treatment of steatorrhea and hypoalbuminemia** after MGB – **2.VIDEO –Revision to MGB after primary restrictive operations.** Jan Apers (Netherlands)
9:45 am	**Panel discussion :** Leader–M. Deitel : R. Rutledge, W-J Lee, Gurvinder S Jammu (India), RuiRibeiro (Portugal), Ahmed Forrig (Egypt) : Management of hiatal hernia, *H. pylori*, post-op supplements, iron deficiency, excess weight loss with hypoalbuminemia, bile reflux
9:54 am	**Quality of life 5 years after MGB**– J-M Chevallier
10:03 am	**MGB in the super-obese** – AtulNC Peters (India)
10:12 am	**Experience with MGBin Italy**– Maurizio De Luca (Italy)
10:21 am	**Survey of MGB by Indian surgeons** – bypass length, diet (high satisfaction score), ease of reversal/ revision, personal preferences – Arun Prasad (India)
10:30 am	**Coffee Break – 20 minutes**

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Course Organizers

10:50 am	**Comparative analysis of sleeve, RYGB and MGB – morbidity resolution and mid-term complications – 3-year follow-up** – Mohit Bhandari (India)
10:56 am	**Is there any evidence for increased threat of cancer after MGB?** (plus discussion of CA after other bariatric operations) – M Deitel
10:56 am	**Is there any evidence for increased threat of cancer after MGB?** (plus discussion of CA after other bariatric operations) – M Deitel
ANTIREFLUX TECHNIQUE OF OAGB : Moderator – Gerhard Prager (Austria)	
11:06 am	**Video– Technique of the Garciacaballero OAGB** – Manuel Garciacaballero (Spain)
11:20 am	**Tailoredone-anastomosis gastric bypass :** technical details and management of complications – Revision surgery for OAGB with antireflux mechanism – M Garciacaballero
11:30 am	***Results of OAGB onDiabetes with BMI24-34 after 7 years follow-up*** – M Garciacaballero
11:40 am	**Q&A on Garciacaballero method**– M Garciacaballero
11:45 am	**Hypoglycemia : is there a difference between RYGB and OAGB?** – G Prager
11:55 am	**AntirefluxOAGB (Carbajo method) : 13-year results with >2,800 patients.** Comparative results of OAGB, RYGB, gastric banding and sleeve gastrectomy – Miguel-A Carbajo (Spain)
12:10 am	**OAGB as a revision for other bariatric operations** – Enrique Luque de Leon (Mexico), M-A Carbajo
12:20 am	**The effect of OAGB on the diseases of the metabolic syndrome** – Omar Fonseca G. (Mexico)
12:30–1:15 pm	**Lunch**
RESOLUTION OF CO-MORBIDITIES : Moderator – Pradeep Chowbey	
1:15 pm	**Efficacy of MGB in type 2 diabetes resolution and in other co-morbidities** – Mario Musella, Marco Milone (Italy)
1:25 pm	**Long-term comparison of MGB and RYGB (>10 years) and LSG** – weight loss, complications, resolution of diabetes – W-J Lee
1:35 pm	**1. Weight regain after LSG and RYGB – can MGB help?** **2. Can we consider MGB/OAGB as a perfect bariatric and metabolic procedure?** – GS Jammu
1:45 pm	**Greater weight loss with the MGB thanwith the RYGB :** a comparative study – Maud Robert (France)

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Course Organizers

TECHNIQUES & EFFECTS : Moderator - Jean-Marc Chevallier	
1:55 pm	**The mechanism of the MGB and why weight loss is sustained** – Also, **Comparison of results of MGB and sleeve gastrectomy** – KS Kular
2:05 pm	**Video – Revision surgery after MGB** – J-M Chevallier
2:20 pm	**Ileal Food Diversion : a major modification of MGB – results compared to BPD** – Roberto Tacchino (Bahrain)and Francesco Greco (Italy)
2:30 pm	**Robotic method of MGB** – A Prasad (India)
2:40 pm	**Video – Robotic Technique of MGB with totally sutured anastomosis** – Mohit Bhandari (India)
2:50 pm	**Video – Comparison of conversion of robotic sleeve to MGB or SADI** – A Prasad
3:00 pm	**Adjourn**

MINI-GASTRIC (ONE-ANASTOMOSIS) BYPASS
MGB/OAGB PRE-CONGRESS COURSE

IFSO 2015 Vienna – Wed. August 26, 2015

Course Organizers

Mervyn Deitel, MD, FASMBS, FACN, CRCSC, FICS

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Professeur Jean-Marc CHEVALLIER, Service de Chirurgie Digestive, Président de la SOFFCO-MM, Hôpital Européen Georges Pompidou, 20 rue Leblanc, 75015 Paris, France

Kuldeepak Singh Kular

President Kular Medical Education & Research Society, Kular Group of Institutes, National Highway 1, Bija, Khanna, Ludhiana, Punjab, India 141412.

Pradeep Chowbey

Executive Vice-Chairman, Max Healthcare Institute Ltd., Director Max Institute of Minimal Access, Metabolic and Bariatric Surgery l, New Delhi, India. Honorary Laparoscopy Surgeon to the President of India and Armed Forces Medical Services, Surgeon to His Holiness the Dalai Lama. Founder President of Asia-Pacific Hernia Society, President of IFSO 2012-2013, President of Asia-Pacific Chapter of IFSO 2011-2013, President of Asia-Pacific Metabolic & Bariatric Surgery Society 2010-2012, President of Obesity & Metabolic Surgery Society of India (OSSI) 2006-2010. Board Member Gasless Laparoscopic & Endoscopic Surgeons Society International, Advisor Asia-Pacific Endosurgery Task Force, Trustee & Past President of Indian Association of Gastrointestinal Endo-Surgeons (IAGES).

Faculty

Jan A. Apers

Metabolic and bariatric surgeon, minimal invasive surgeon, Dept. of bariatric surgery, Sint-Franciscus Gasthuis, Rotterdam, Netherlands

Mohit Bhandari

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Academic Appointments Ex Hod Department of Surgery Gnmh, Hospital Jalandhar, Director and Hod Surgery Jammu Hospital, Jalandhar (Punjab), India

Wei-Jei Lee

President IFSO-Asia Pacific Chapter, President Taiwan Society for Metabolic & Bariatric Surgery, Vice-Superintendent of Min-Sheng General Hospital, Professor of Surgery, National Taiwan University & National Cheng Kong University, Taiwan

Enrique Luque-de-Leon

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Senior Consultant Surgeon, Minimal Access Surgery (Gastrointestinal, Robotic, Bariatric & Thoracoscopy), Apollo Hospital, New Delhi, India. Vice-President of OSSI.

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Om Tantia

Medical Director and Head of Department of Minimal Access and Bariatric Surgery, ILS Hospitals, Kolkata and Agartala, Immediate Past President of Association of Minimal Access Surgeons of India

IMPORTANT PAPERS ON MGB/OAGB :

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Tolone S, Cristiano S, Savarino E, Lucido FS, Fico DI, Docimo L. Effects of omega-loop bypass on esophagogastric junction function. SurgObesRel Dis 2015 (in press).

Mini-Gastric (One-Anaestomosis) Bypass Course

Held on August 27, 2014 at the IFSO Congress, Montreal

Mervyn Deitel, (Toronto, Canada) and Kuldeepak S Kular (Bija, India)

Mervyn Deitel Kuldeepak S Kular Wei-Jei Lee Pradeep Chowbey Jean-Marc Chevalier

ALL the Course presenters had published recent series with the MGB operation (OAGB), and these articles can be accessed under their names via PubMed. These papers keep disclosing that MGB has excellent results. A syllabus with abstracts of these current papers was disseminated to the attendees.

Under the organization of Jean -Marc Chevalier, Pradeep Chowbey, Kuldeepak S. Kular, Mervyn Deitel and Wei-Jei Lee, a mini-gastric bypass (MGB/OAGB, omega-loop gastric bypass) course was held in Montreal at the IFSO Congress. Besides the Faculty of 30 experts, there were 100 attendees, many of whom were already performing the MGB. It is noteworthy that all the those performing the MGB had previously performed other bariatric operations.

Dr. Cesare Peraglie of Florida presented the tips and techniques, based on a 10-years personal series of 1,500 MGBs [see Figures 1]. His patients had no operative mortality, and the long-term outcome in terms of maintained excess weight loss (mean 79%) and resolution of co-morbidities was excellent. His video showed the dissection commencing transversely just below the crow's foot, then going proximally beside a bougie, to the left of the angle of His antecolic gastrojejunostomy, 180-200cm distal to Treitz' ligament, is construced wide to avoid back-pressure.

Complications of the MGB were presented by David Hargroder of Missouri, based on a personal series of 1,400 cases. Gastroesophageal disease with the long gastric conduit was not a postoperative feature, and for the rare instance of inadequate or excess weight loss, the gastrojejunal anastomisis could be easily moved proximally or distally.

Kular presented prevention and treatment of marginal ulcer after MGB in a series of >1,000 patients. Salicylates and smoking were avoided postop, but in his practice in the Punjab (where a diet high in fruits and vegetables is consumed), whisky did not cause ulcer. Marginal ulcer after MGB is less that after RYGB.

Hiatal hernias (HH) are generally not repaired during the MGB, as the gastrojejunal anastomosis usually reduces the cardia. The MGB leads to >85% resolution of GERD. If a HH is still present, Robert Rutledge recommended repair if necessary 12-18 months after the MGB. However, when a HH contained adherent fundus, Peragliestated that the fundus was reduced and the hernia repaired at the MGB operation.

Rutledge, the originator of the MGB in 1997, emphasized the eradication of H. pylori and the necessity for postoperative supplements, including iron,calcium - preferably dairy, multi-vits, yoghurt, fresh fruits and vegetables. Postprandial bypoglycemia was rare. The MGB induces significant fatty food intolerance and mild steatonhea in response to large fatty meals.

Internal hernias had not occurred in the experience of the attendees, but leak at the gastrojejunostomy or distal small bowel obstruction did occur rarely. Atul Perers presented excellent results with MGB in the super obese. Jean-Marc Chevallier presented a study showing the excellent quality of life at five years after MGB.

The data from the MGB Consensus Conferences in Paris (the last being October 2013, previously published in the Dec 2013 issue of *Bariatric New*) was presented by Deitel. The weight loss and durability of the MGB was superior to the other bariatric operations.

Mario Musella and Marco Milone of Italy presented resolution of type 2 diabetes, hypertension and other co-morbidities after MGB, finding superiority in their study compared to Laparoscopic sleeve gastrectomy (LSG). The excellent Italian multi-center outcome of 974 consecutive laparoscopic MGBs was presented by Maurizio De Luca.

and RYGB (and more recently the LSG), in terms of postoperative weight loss, complications, resolution of diabetes, elevation of GLP-1 and quality of life, was presented by Prof. Wei-Jei Lee of Taiwan; he found superiority with the MGB in each instance. Better results were also found with the MGB in an audit comparing it with LSG and RYGB by G.S. Jammu of India.

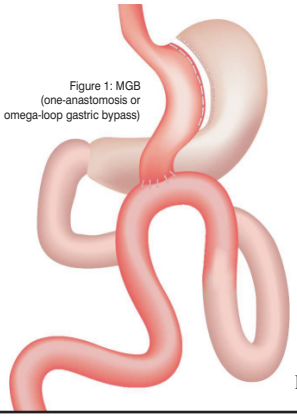

Figure 1: MGB (one-anastomosis or omega-loop gastric bypass)

The technique of the Caballero OAGB since 2004 was presented by Prof. Manuel Garcia Caballero of Spain, who inserts antireflux stitches between the afferent lim and stomach. His results have also been superior to the other bariatric operations with respect to remission or cure of diabetes. He tailors the OAGB in diabetes surgery and for BMI. The similar Miguel A. Carbajo method was presented by Ennique Lugue De Leon of Mexico. The results of 12 years with 2,400 OAGBs found superior results over RYGB, LSG and gastric banding. It is estimated that 15% of the MGB surgeons insert the antireflux sutures.

Deitel pointed out that there is no evidence for increased cancer after MGB. In the literature, more than 40 cases of carcinoma after RYGB were cited, in addition to a number of cases after LAGB, and two cases after the LSG. After MGB, no cases of carcinoma in the gastric tube or esophagus have been reported. It is noted that following the thousands of vagotomy and pyloroplasty operations for peptic ulcer disease in the 1960-70s, in which some bile was always present in the lower stomach, no cases of carcinoma were reported. Furthermore, a warning is often given about carcinoma developing in the rat's stomach when subjected to a bile preparation; however, Frantz showed that the neoplastic changes in the unique rodent stomach occur in the proximal two - thirds (which is squamous-cell), and not in the distal one-third (which is glandular like the human stomach).

Long-term follow-up after Billroth II which permits bile in stomach has indeed found a decreased incidence of carcinoma, and these studies were performed before H. pylori was known or treated.

Kular presented his comparison of MGB and LSG, in which the weight loss after MGB was greater and the complications less. Dis Jean Cadyand Antoine Sopriani presented a large series of MGB as a rescue operation after gastric banding failure. Techniques for converstion to MGB after failed band, LSG and other bariatric operations were presented by Jean-Marc Chevallier. He also presented a short video of the restoration of normal anatomy after MGB for very rare denutrition; reversal of MGB is an easy operation Robotics in MGB was presented by Arun Prasad of India, which showed the ease and accuracy of this method.

The technique of the Greco-Tacchino distal MGB with a larger proximal gastric conduit and a more distal gastroileostomy was presented and recently published as "Ideal Food Diversion" - which they compared to BPD. However, their operation is easier and has had better results.

The experts agreed that the MGB is a simple, rapid, safe operation, with excellent resolution of obesity-associated diseases, durable weight loss, a relatively short learning curve, is adjustable with BMI and, if ever necessary, easily reversible. Because of interest in this Course and the free papers on MGB presented during the IFSO Congress, it has been decided to hold and MGB Course in Vienna at IFSO-2015 on Aug. 26.

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The 10-year comparison of MGB

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DOI 10.1007/s11695-014-1417-5

LETTER TO THE EDITOR/LED REPLY

Naming the Mini-Gastric Bypass

Robert Rutledge

Published online: 23 September 2014
Springer Science+Business Media New York 2014

To the Editor:

I am pleased to comment on the suggestions to rename the operation which I named the "Mini-Gastric Bypass" in 1997. Pullications from around the world demonstrate that my initially good results are confirmed. This is particularly rewarding given the early criticism attended to the mini-gastric bypass (MGB) in its early years. Critics said that the pouch was too big, the anastomosis too large, and there would be devastating and unmanageable bile reflox gastritis and that there be no weight loss. They were incorrect.

Carbajo and Caballero modified the MGB adding an "anti-reflux" technique and called their version the "One-Anastomosis Gastric Bypass (OAGB)". Others have suggested the Omega Loop Gastric Bypass which is a suitable name, but has its own limitations. The long-used names MGB and OAGB thus stand, and the use of single Anastomosis Gastric Bypass (SAGB) is similar to OAGB and is likely to be confused with the various SADI procedures.

The MGB is restrictive while not being obstructive. In contrast to the small pouch and small gastrojejunostomy of the RYGB, the tight gastric pouch of the sleeve, and the fixed plastic of the Lap-band, the MGB uses a larger gastric pouch with a wide open gastrojejunostomy to allow rapid emptying into the jejunum.

Also, in contrast to the RYGB, the MGB has a significant malabsorptive component. It induces significant fatty food intolerance, an increase in bowel movements, and mild steatorrhea in response to large fatty meals. The operation has been found to induce a "Mediterranean-type" diet post-p[eratively with a decrease in intake of sugar-sweetened beverages, fattly foods, processed meats, and an increase in yogurt, fresh fruits, and vegetables.

I believe now that my initial findings have been well fonfirmed; the MGB/OAGM is a short simple operation that is safe in the short and long terms. MGB/OAGB provides one of the best and most durable weight loss of any bariatric opeation; it can be easily tailored to threat the spectrum of metabolic disease from the thin diabetic to the super-super obese, and it can easily be reversed or revised.

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LETTER TO THE EDITOR

Discussion of Review Article by Lee and Lin on Mini Gastric Bypass (One-Anastomosis Gastric Bypass)-OBES SURG DOI 10.1007/s11695-014-1369-9

Mervyn Deitel & Kuldeepak S. Kular & Jean-Marc Chevallier

Published online: 3 September 2014
Springer Science+Business Media New York 2014

To the Editor:

Drs. W-J Lee and Y-H Lin have written a good appraisal of the clinical value of mini gastric bypass (MGB) or one-anastomosis gastric bypass (OAGB), although their final recommendations on specific uses of this operation are contentious. However, their renaming of the operation of SAGB is bothersome. The operation commencing in 1997 and described over the years as MGB [1] and also described since 2001 as OAGB [2] would best not be tampered with. Indeed, in the authors' references, either the well-established names MGB (as he used in his own many previous papers) and OAGB are used throughout, as in the earlier part of their article. The many articles on this operation are found in Pub Med under mini gastric bypass to this day [3] or one-anastomosis gastric bypass. A change in name will cause confusion, especially with the single-anastomosis doudenoileal (SADI-S) bypass of Torres' group [4], a modification of which Dr. Lee had also been performing [5].

The organizers of the IFSO 2014 Montreal Course had name it "MGB/OAGB", but Dr. Lee who was on the IFSO Scientific Planning Committee took it upon himself to rename the course "Single-Anastomosis Gas-tric Bypass," which led us to change our flyer and also has cansed some confusion with those who were looking into the course.

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There are many operations which we could rename more accurately (eg., sleeve gastrectomy in our papers), but this would cause confusion with the long-established recognized understood names.

Dr. Lee could have discussed his suggested name change with the attendees at the pas MGB/OAGB Consensus meetings or the upcoming IFSO Montreal Course. The common name for this operation one-anastomosis gastric bypass has the identical meaning in English as single-anastomosis gastric bypass, so why duplicate this? To be clear, in a number of invitied chapters that are now in press, we have been ursing MGB/OAGB in the title to be comprehensive and clear.

Conflict of Interest All three authors have approved the manuscript and have no conflict of interest.

Author Note Dr. Mervyn Deitel is Founding Editor and Editor-in-Chief Emeritus of Obesity Surgery Professor Jean-Marc Chevalier is President de la SOFFCO in Paris, France.

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DOI 10.1007/s11695-015-1605-y

LETTER TO THE EDITOR

Mini-Gastric Bypass/One-Anastomosis Gastric Bypass-Standardizing the Name

Miguel A. Carbajo & Enrique Luque-de-Leon

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To the Editor:

After performing many of the alternatives in bariatric surgery during more than two decades, we read with interest the initial ideas Dr. Rutledge proposed in regard to the Bmini-gastric bypass^ (MGB) and embraced the possibility of performing a very effective operation with fewer risks [1] Concerned about its major criticism, we modified the original version of the MGB in order to counteract the possibility of alkaline reflux and its sequelae by providing an anti-reflux mechanism; since the be-ginning and through time, other adjustments to the technique were done and have been [2, 3] and will be published elsewhere.

In 2005, we published the results of our original series with over 200 patients [2] and coined the term Bone anastomosis gastric bypass^ (OAGB) for this procedure (BAGUA-Bypass Gastrico De Una Anastomosis, in Spanish.) We were quite positively impressed with the results, and since 2002, we have adopted it as our main procedure for almost all kinds of patients bening submitted both to primary and revisional operations. Our series is now of over 2500 paties and we will soon published the long-term (6 to 12 years) follow-up of our initial 1200 patients which was recently presented at the 2014 IFSO meeting [3].

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The paucity of publications in regard to the MGB/OAGB which characterized the last decade has been changing in the last years, and there are now several publications from around the world, of series, comparative studies, randomized controlled trails, and even sys-tematic reviews [4-6]. This has brought about a contro-versay regarding the name for the procedure [7-9].

Billrogh II and omega loop gastric bypass were seldom used by some groups in the past. Regarding the recent proposal by Lee [7] to change the name to single anastomosis gastric bypass, we agree with everything stated by Deitel et al. [8] and Rutledge [9] in regard to the confusion that would arise. espe-cially with the various single-anastomosis duodenioleal bypass (SADI-S) procedures. The change in name of the IFSO 2014 Montreal Course from BMGB/OAGB^ to BSAGB^ indeed led to confusion and even made us change the title of our persen-tations from OAGB to SAGB [3] in order to be congruent with the title of this first postgraduate course on the subject. Deitel et al. are also correct in expressing that BAGUA can really be translared to OAGB or SAGB in English, so why bother?

Although we know it would be almost impossible (and unfair) to abandon the original term (MGB), the main problem we found with it relies on the fact that it Bminimizes^ the procedure. As an example of this, we have been asked by our colleagues why are we performing Bpartial^ or Bincomplete^ bypass, instead of the standard (complete) procedure! Since we believe its main attributes are effectiveness and safety, and not easiness and rapidness, we strongly believe calling it Bmini^ diminishes the perception of its real power and deviates attention from its more robust characteristics as an excellent alternative in bariatric and metabolic surgery.

We appreciate the recommendation of leaders in the field [8, 9] in considering OAGB as the only standing alternative name for the MGB, in order to reconcile terms and facilitate issues in the editing and publishing of future related courses and publications. We call on the various bariatric teams that are performing the original MGB or our modified version, the OAGB, to aid in the dissemination and acceptance of this standardizing the name (to MGB/OAGB), in order for all of us to be recognized as a whole.

Now that many of its controversies are being surpassed and the bariatric surgical community is accepting the procedure as a rational alternative in the bariatric repertoire, we should make all efforts in order to conciliate in regard to the name, avoid new disagreements, and work towards making the MGB/OAGB mainstream in obesity and metabolic surgery.

Conflict of Interest Both authors have approved the manuscript and have no conflict of interest.

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Surg Obes Relat Dis. : 2015 Mar-Apr;11(2):321-6. doi: 10.1016/j.soard.2014.09.004. Epub 2014 Sep 16.

Single anastomosis or mini-gastric bypass : long-term results and quality of life after a 5-year follow-up.

Bruzzi M,[1] **Rau C**,[2] **Voron T**,[2] **Guenzi M**,[2] **Berger A**,[2] **Chevallier JM**.[2]

Abstract

BACKGROUND :
Laparoscopic mini-gastric bypass (LMGB) is an alternative to the laparoscopic Roux-en-Y gastric bypass (LRYGB), which is considered to be the gold standard in the treatment of morbid obesity.

OBJECTIVES :
Present 5-year results of 175 patients who had undergone a LMGB between October 2006 and October 2008.

SETTING :
University public hospital, France.

METHODS :
Complete follow-up was available in 126 of 175 patients (72%) who had LMGB. Mortality, morbidity, weight loss, co-morbidities, and quality of life were assessed. Weight loss was determined as a change in body mass index (BMI) and percent excess BMI loss (%EBMIL). Quality of life in the treatment group was analyzed using the Gastrointestinal Quality of Life Index (GIQLI) and was compared with a retrospectively case matched preoperative control group.

RESULTS :
There were no deaths. Thirteen patients (10.3%) developed major complications. Marginal ulcers occurred in 4% of patients. Incapacitating biliary reflux developed in 2 (1.6%) who required conversion into RYGB. Gastric pouch dilation occurred in 4 patients (3.2%) and inadequate weight loss with severe malnutrition in 2 (1.6%). At 5 years, mean BMI was 31±6 kg/m(2) and mean %EBMIL was 71.5%±26.5%. Postoperative GIQLI score of the treatment group was significantly higher than preoperative score of the control group (110.3±17.4 versus 92.5±15.9, P<.001). Social, psychological, and physical functions were increased significantly. No significant differences were found in gastroesophageal reflux or diarrhea symptoms between the 2 groups. Long-term follow-up showed an improvement in all co-morbidities.

CONCLUSIONS :
At 5 years, LMGB was safe, effective, and provided interesting quality of life results.

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Greater weight loss with the omega loop bypass compared to the Roux-en-Y gastric bypass : a comparative study.

Disse E[1], **Pasquer A**, **Espalieu P**, **Poncet G**, **Gouillat C**, **Robert M**.

Author information

Abstract

BACKGROUND :
Despite similar initial results on weight loss and metabolic control, with a better feasibility than the Roux-en-Y gastric bypass (RYGBP), the omega loop bypass (OLB) remains controversial. The aim of this study was to compare the short-term outcomes of the laparoscopic OLB versus the RYGBP in terms of weight loss, metabolic control, and safety.

METHODS :
Two groups of consecutive patients who underwent laparoscopic gastric bypass surgery were selected: 20 OLB patients and 61 RYGBP patients. Patients were matched for age, gender, and initial body mass index (BMI). Data concerning weight loss, metabolic outcomes, and complications were collected prospectively.

RESULTS :
Mean duration of the surgical procedure was shorter in the OLB group (105 vs. 152 min in the RYGBP group; p?<?0.001). Mean excess BMI loss percent (EBL%) at 6 months and at 1 year was greater in the OLB group (76.3 vs. 60.0%, p?=?0.001, and 89.0 vs. 71.0%, ?p =?0.002, respectively). After adjustment for age, sex, initial BMI, and history of previous bariatric surgery, the OLB procedure was still associated with a significantly greater 1-year EBL%. Diabetes improvement at 6 months was similar between both groups. The early and late complication rates were not statistically different. There were three anastomotic ulcers in the OLB group, in smokers, over 60 years old, who were not taking proton pump inhibitor medication.

CONCLUSIONS :
In this short-term study, we observed a greater weight loss with OLB and similar efficiency on metabolic control compared to RYGBP. Long-term evaluation is necessary to confirm these outcomes.

Obes Surg. : 2014 Dec;24(12):2040-7. doi: 10.1007/s11695-014-1288-9.

Changes of body composition in patients with BMI 23-50 after tailored one anastomosis gastric bypass (BAGUA): influence of diabetes and metabolic syndrome.

Garciacaballero M,[1] **Reyes-Ortiz A**, **García M**, **Martínez-Moreno JM**, **Toval JA**, **García A**, **Mínguez A**, **Osorio D**, **Mata JM**, **Miralles F**.

Author information

Abstract

BACKGROUND :

The use of bariatric surgery to treat diabetes mellitus (DM) requires procedures developed for morbid obese in patients with normal and over-weight. Therefore, we started tailoring one anastomosis gastric bypass (BAGUA) adapted to each patient. This study analyzes changes in body composition (BC) of patients with BMI 23-50 after BAGUA as well as influence of DM and MS.

METHODS :

We studied 79 (37 diabetic and 42 non-diabetic) patients (BMI 23-50) who completed all evaluation appointment (preoperative, 10 days, 1, 3, 6, and 12 months) after tailored BAGUA for obesity, diabetes, or diabesity. Patients were classified according to BMI (23-29, 30-34, 35-50) and bearing or not diabetes. Variables are components of BC as well as DM and MS.

RESULTS :

Preoperatively, mean values of weight varied 37 kg(78-115 kg), muscle mass (MM) 8 kg (54-62 kg), while fat mass (FM) 30 kg (22-53 kg). Basal metabolism (BM) was higher in diabetic. After surgery, percentage (%) of excess weight loss (%EWL) ranged from 76 % (BMI 35-50) to 128 % (BMI 23-29), FM 56 % (BMI 23-29) to 65 % (BMI 35-50), without differences bearing DM. MM 12 % (non-diabetics BMI 30-34) to 17 % (diabetics BMI 35-50) and visceral fat (VF) 50 % (diabetics BMI 30-34) to 56 % (non-diabetics BMI 35-50).

CONCLUSIONS :

After tailored BAGUA, MM maintains steady while FM is highly reduced and variable. BM is reduced in all groups. Diabetics lose less weight and VF but more MM than non-diabetic patients. Preoperative presence of MS influences the changes in BC.

Obes Surg. : 2014 Oct;24(10):1724-8. doi: 10.1007/s11695-014-1264-4.

Analysis of the five-year outcomes of sleeve gastrectomy and mini gastric bypass: a report from the Indian sub-continent.

Kular KS,[1] **Manchanda N**, **Rutledge R**.

Author information

Abstract

BACKGROUND :

Few reports have compared laparoscopic sleeve gastrectomy (LSG) to laparoscopic Roux-en-Y procedure (LRNY). This study aims at comparing the 5-year follow-up results of mini gastric bypass (MGB or omega gastric bypass (OGB)) and LSG in terms of weight loss, weight regain, complications, and resolution of co-morbidities.

METHODS :

A retrospective analysis of the prospectively collected database was done from the start of our bariatric practice from February 2007 to August 2008 (minimum 5-year follow-up). During this period, 118 patients underwent LSG. These patients were matched in age, gender, preoperative weight, and BMI to 104 patients who underwent MGB in the same time period. The results were compared.

RESULTS :

Follow-up was achieved in 72 MGB vs 76 LSG patients up to 5 years. The mean BMI for the MGB and LSG group was 44?±?3.1 and 42?±?5.2 kg/m (2), respectively (P?<?0.001). The average percentage of excess weight loss (%EWL) for MGB vs LSG was 63 vs 69 % at 1 year and 68 vs 51.2 % at 5 years (P?=?0.166), respectively. Post-op gastro-esophageal reflux disease (GERD) was seen in 2.8 % MGB patients and marginal ulcer was diagnosed in 1 MGB patient (1.4 %). GERD was seen in 21 % post-LSG patients.

CONCLUSIONS :

Both MGB and LSG are safe, short, and simple operations. Weight loss is similar in MGB and LSG in the first years, but lesser %EWL with LSG at 5 years (68 % in MGB vs 51 % in LSG). Post-op GERD is more common after LSG.

Obes Surg. : 2014 Sep;24(9):1430-5. doi: 10.1007/s11695-014-1220-3.

A 6-year experience with 1,054 mini-gastric bypasses-first study from Indian subcontinent.

Kular KS[1], **Manchanda N**, **Rutledge R**.

Author information

Abstract

BACKGROUND :
We started laparoscopic mini-gastric bypass (MGB) for the first time in India in February 2007 for its reported safety, efficacy, and easy reversibility.

METHODS :
A retrospective review of prospectively maintained data of all 1,054 consecutive patients (342 men and 712 women) who underwent MGB at our institute from February 2007 to January 2013 was done.

RESULTS :
Mean age was 38.4 years, preoperative mean weight was 128.5 kg, mean BMI was 43.2 kg/m(2), mean operating time was 52?±?18.5 min, and mean hospital stay was 2.5?±?1.3 days. There were 49 (4.6%) early minor complications, 14 (1.3%) major complications, and 2 leaks (0.2%). In late complications, one patient had low albumin and one had excess weight loss; MGB was easily reversed in both (0.2%). Marginal ulcers were noted in five patients (0.6%) during follow-up for symptomatic dyspepsia, and anemia was the most frequent late complication occurring in 68 patients (7.6%). Patient satisfaction was high, and mean excess weight loss was 84, 91, 88, 86, 87, and 85% at years 1 to 6, respectively.

CONCLUSIONS :
This study confirms previous publications showing that MGB is quite safe, with a short hospital stay and low risk of complications. It results in effective and sustained weight loss with high resolution of comorbidities and complications that are easily managed.

Obes Surg. : 2014 Sep;24(9):1552-62. doi: 10.1007/s11695-014-1344-5.

Laparoscopic sleeve gastrectomy versus single anastomosis (mini-) gastric bypass for the treatment of type 2 diabetes mellitus: 5-year results of a randomized trial and study of incretin effect.

Lee WJ[1], **Chong K**, **Lin YH**, **Wei JH**, **Chen SC**.

Author information

Abstract

BACKGROUND :
Bariatric surgery may be beneficial in mildly obese patients with poorly controlled diabetes. The optimal procedure to achieve diabetes remission is unknown. In 2011, we published the short-term results of a pilot study designed to evaluate the efficacy of diabetic control and the role of duodenal exclusion in mildly obese diabetic patients undergoing laparoscopic sleeve gastrectomy (SG) vs. a laparoscopic single anastomosis (mini-) gastric bypass (SAGB). This study analyzes the 5-year results and evaluates the incretin effect.

METHODS :
A double-blind randomized trial included 60 participants with a hemoglobin A1c (HbA1c) level higher than 7.5%, a body mass index (BMI) between 25 and 35 Kg/m(2), a C-peptide level ≥1.0 ng/mL, and a diagnosis of type 2 diabetes mellitus (T2DM) for at least 6 months. A SAGB with duodenal exclusion or a SG without duodenal exclusion was performed.

RESULTS :
The 5-year results of the primary outcome were as an intention-to-treat analysis for HbA1c ≤6.5% without glycemic therapy. Assessments of the incretin effect and β cell function were performed at baseline and between 36 and 60 months. The patients were randomly assigned to SAGB (n?=?30) and SG (n?=?30). At 60 months, 18 participants (60%; 95% confidence interval (CI), 42 to 78%) in the SAGB group and nine participants (30%; 95% CI, 13 to 47%) in the SG group achieved the primary end points (odds ratio (OR), 0.3; 95% CI, 0.1 to 0.8%). The participants assigned to the SAGB procedure had a similar percentage of weight loss as the SG patients (22.8?±?5.9 vs. 20.1?±?5.3%; p?>?0.05) but achieved a lower level of HbA1c (6.1?±?0.7 vs. 7.1?±?1.2 %; p?<?0.05) than the SG patients. There was a significant increase in the incretin effect before and after surgery in both groups, but the SAGB group had a higher incretin effect than the SG group at 5 years.

CONCLUSIONS :
In mildly obese patients with T2DM, SG is effective at improving glycemic control at 5 years, but SAGB was more likely to achieve better glycemic control than SG and had a higher incretin effect compared to SG.

Int J Surg. : 2015 Feb;14:28-32. doi: 10.1016/j.ijsu.2014.12.025. Epub 2015 Jan 7.

Lipid profile changes in patients undergoing bariatric surgery : a comparative study between sleeve gastrectomy and mini-gastric bypass.

Milone M[1], **Lupoli R**[2], **Maietta P**[3] **Di Minno A**[2], **Bianco P**[3] **Ambrosino P**[2], **Coretti G**[3], **Milone F**[3], **Di Minno MN**[2] Musella M[3].

Author information

Abstract

OBJECTIVE :
To prospectively evaluate the effect of different types of bariatric surgery on lipid profile.

METHODS :
Total cholesterol (TC), High-Density-Lipoprotein cholesterol(HDLc), Low-Density-Lipoprotein cholesterol (LDLc) and triglycerides (TG) levels were evaluated before surgery and at 3 different post-operative time-points (3, 6 and 12 months) in consecutive obese subjects undergoing mini-gastric bypass (MGB) or sleeve gastrectomy (SG).

RESULTS :
At baseline, 74 MGB and 86 SG subjects were comparable for lipid profile and prevalence of hypercholesterolemia/ hypertriglyceridemia. During the post-operative follow-up, both MGB and SG subjects showed significant changes in lipid profile. However, at 3 months, MGB patients showed higher changes in TC ($\beta = 0.179$, $p = 0.022$) and TG ($\beta = 0.265$, $p = 0.001$) than those undergoing SG. At 6-month post-operative follow-up, these differences were confirmed only for TC. After a 12-month follow-up, MGB and SG were entirely comparable for changes in lipid profile with the exception of HDLc, whose changes were higher in SG group ($\beta = 0.130$, $p = 0.039$). Overall, the probability to normalize lipid profile during the 12-month follow-up was similar in MGB and in SG patients (OR:1.24, 95%CI:0.41-3.76, $p = 0.689$).

CONCLUSIONS :
Despites some differences at 3-6 post-operative months, during a 12-month follow-up, SG and MGB showed a similar efficacy in the improvement of lipid profile of obese patients.

Surg Endosc. : 2014 Jan;28(1):156-63. doi: 10.1007/s00464-013-3141-y. Epub 2013 Aug 28.

The laparoscopic mini-gastric bypass : the Italian experience : outcomes from 974 consecutive cases in a multicenter review.

Musella M[1], **Susa A**, **Greco F**, **De Luca M**, **Manno E**, **Di Stefano C**, **Milone M**, **Bonfanti R**, **Segato G**, **Antonino A**, **Piazza L**.

Abstract

BACKGROUND :
Due to the failure of the "old Mason loop," the mini-gastric bypass (MGB) has been viewed with skepticism. During the past 12 years, a growing number of authors from around the world have continued to report excellent short- and long-term results with MGB.

METHODS :
One university center, three regional hospitals, and two private hospitals participated in this study. From July 2006 to December 2012, 475 men (48.8 %) and 499 women (51.2 %) underwent 974 laparoscopic MGBs. The mean age of these patients was 39.4, and their preoperative body mass index was 48 ± 4.58 kg/m(2). Type 2 diabetes mellitus (T2DM) affected 224 (22.9 %) of the 974 patients, whereas 291 of the 974 patients (29.8 %) presented with hypertension. The preoperative gastrointestinal status was explored in all the patients through esophagogastroduodenoscopia. The major end points of the study were definitions of both MGB safety and efficacy in the long term as well as the endoscopic changes in symptomatic patients eventually produced by surgery.

RESULTS :
The rate of conversion to open surgery was 1.2 % (12/974), and the mortality rate was 0.2 % (2/974). The perioperative morbidity rate was 5.5 % (54/974), with 20 (2 %) of the 974 patients requiring an early surgical revision. The mean hospital length of stay was 4.0 ± 1.7 days. At this writing, 818 patients are being followed up. Late complications have affected 74 (9 %) of the 818 patients. The majority of these complications (66/74, 89.1 %) have occurred within 1 year after surgery. Bile reflux gastritis was symptomatic, with endoscopic findings reported for 8 (0.9 %) and acid peptic ulcers for 14 (1.7 %) of the 818 patients. A late revision surgery was required for 7 (0.8 %) of the 818 patients. No patient required revision surgery due to biliary gastritis. At 60 months, the percentage of excess weight loss was 77 ± 5.1 %, the T2DM remission was 84.4 %, and the resolution of hypertension was 87.5 %.

CONCLUSIONS :
Despite initial skepticism, this study, together with many other large-scale, long-term similar studies from around the world (e.g., Taiwan, United States, France, Spain, India, Lebanon) demonstrated the MGB to be a short, simple, low-risk, effective, and durable bariatric procedure.

Surg Endosc. : 2015 Mar 27. [Epub ahead of print]

Laparoscopic mini-gastric bypass in patients age 60 and older.

Peraglie C[1].

Abstract

BACKGROUND :
Bariatric surgery in patients over age 60 was previously not considered, due to higher risk. The author presents a study of patients ≥60 years who underwent laparoscopic mini-gastric bypass (LMGB), to evaluate outcomes with follow-up to 6 years.

METHODS :
From 2007-2013, a prospectively maintained database was reviewed and patients ≥60 years were identified. Demographics evaluated included age, sex, weight, BMI, comorbidities, operative time, complications, length of stay (LOS) and %EWL up to 72 months.

RESULTS :
From 2007-2013, a total of 758 LMGBs were performed by one surgeon (CP). Eighty-eight (12 %) were ≥60 years old, with 62 % female. Mean age of this cohort at operation was 64 (60-74), and mean weight and BMI were 118 kg (78-171) and 43 kg/m2 (33-61), respectively. Comorbidities were present in all patients, and one-third had previous abdominal operations. All patients underwent LMGB, without conversion to open. Mean operative time was 70 min (43-173). Only one patient required overnight ICU admission. Average LOS was 1.2 days (1-3). Overall complication rate was 4.5 % (all minor); there were no major complications. Readmission rate was 1.2 % (one patient). There was no surgical-related mortality. Follow-up to 90 days was 89 %, but steadily declined to 42 % at 6 years (72 months). The %EWL was 72 % at 72 months.

CONCLUSIONS :
LMGB can be safely performed with good weight loss in patients ≥60 years old, despite numerous comorbidities and previous abdominal operations.

Surg Obes Relat Dis. : 2015 Mar 27. pii: S1550-7289(15)00081-7. doi: 10.1016/j.soard.2015.03.011. [Epub ahead of print]

Effects of omega-loop bypass on esophagogastric junction function.

Tolone S[1], **Cristiano S**[2], **Savarino E**[3], **Lucido FS**[2], **Fico DI**[2], **Docimo L**[4].

BACKGROUND :
At present, no objective data are available on the effect of omega-loop gastric bypass (OGB) on gastroesophageal junction and reflux.

OBJECTIVES :
To evaluate the possible effects of OGB on esophageal motor function and a possible increase in gastroesophageal reflux.

SETTING :
University Hospital, Italy; Public Hospital, Italy.

METHODS :
Patients underwent clinical assessment for reflux symptoms, and endoscopy plus high-resolution impedance manometry (HRiM) and 24-hour pH-impedance monitoring (MII-pH) before and 1 year after OGB. A group of obese patients who underwent sleeve gastrectomy (SG) were included as the control population.

RESULTS :
Fifteen OGB patients were included in the study. After surgery, none of the patients reported de novo heartburn or regurgitation. At endoscopic follow-up 1 year after surgery, esophagitis was absent in all patients and no biliary gastritis or presence of bile was recorded. Manometric features and patterns did not vary significantly after surgery, whereas intragastric pressures (IGP) and gastroesophageal pressure gradient (GEPG) statistically diminished (from a median of 15 to 9.5, P<.01, and from 10.3 to 6.4, P<.01, respectively) after OGB. In contrast, SG induced a significant elevation in both parameters (from a median of 14.8 to 18.8, P<.01, and from 10.1 to 13.1, P<.01, respectively). A dramatic decrease in the number of reflux events (from a median of 41 to 7; P<.01) was observed after OGB, whereas in patients who underwent SG a significant increase in esophageal acid exposure and number of reflux episodes (from a median of 33 to 53; P<.01) was noted.

CONCLUSIONS :
In contrast to SG, OGB did not compromise the gastroesophageal junction function and did not increase gastroesophageal reflux, which was explained by the lack of increased IGP and in GEPG as assessed by HRiM.

Surgery for Obesity and Related Diseases 10 (2014) 984-991

Review article

SURGERY FOR OBESITY AND RELATED DISEASE

Efficacy and safety of laparoscopic mini gastric bypass. A systematic review

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Abstract

Background : Laparoscopic mini-gastric bypass (LMGB) is a relatively new bariatric procedure; published studies are accumulating in various settings. The objective of this study was to summarize the available evidence about the efficacy and safety of LMGB.

Methods : A systematic search in the literature was performed, and PubMed and reference lists were scrutinized (end-of-search date : July 15, 2015). For the assessment of the eligible articles, the Newcasble-Ottawa quality assessment scale was used.

Results : Ten eligible studies were included in this study, reporting data on 4,899 patients. According to all included studies, LMGB induced substantial weight and body mass index reduction, as well as substantial excess weight loss. Moreover, resolution or improvement in all major associated medical illness and improvement in overall Gastrointestinal Quality of Life Index score were recorded. Major bleeding and anastomotic ulcer were the most commonly reported complications. Readmission rate ranged from 0%-11%, whereas the rate of revision operations ranged from .3%-6%. The latter were conducted due to a variety of medical reasons such as inadequate or excessive weight loss, malnutrition, and upper gastrointestinal bleeding. Finally, the mortality rate ranged between 0% and .5% among primary LMGB procedures.

Conclusion : LMGB represents an effective bariatric procedure ; its safety and minimal post-operative morbidity seem remarkable. Randomized comparative studies seem mandatory for the further evaluation of LMGB. (Surg Obes Relat Dis 2014;10:984-991.) 2014 American Society for Metabolic and Bariatric Surgery. All rights reserved.

Keywords : Laparoscopic mini gastric bypass; efficacy; safety; bariatric procedure

Bariatric surgery significantly decreases overall mortality and offers a marked survival benefit to patients [1]. The fact that there are so many different types of surgical procedures. for morbid obesity (i.e., laparoscopic adjustable gastric band [LAGY]), sleeve gastrectomy [SG], Roux-en-Y gastric bypass [RYGB], and biliopancreatic diversion [BPD] [1] suggest in part, that none of them is an "ideal" choice. Each bariatric operation has its own advantages as well as its own attendant problems and complications, although it is well known that patient selection, education, compliance, and surveillance also influence the results. Laparoscopic techni-ques, which have been shown to be safe and effective.

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alternatives to open surgery [2], have made implementation of surgical procedures easier, decreased related morbidity, and increased patient's consent to surgery.

Laparoscopic Roux-en-Y gastric by pass (LRYGB) has been the most favored bariatric procedure in the USA [1], despite the fact that it ranks as 1 of the most difficult laparoscopic procedures [3]. Various reviews and meta-analyses have been conducted to trace the most effective and safe bariatric procedure among the most popularones : LAGB, LRYGB, and LSG [3,4]. All seem to result in sustained weight loss and improvement in weight-related co-morbidities, although appropriate long-term outcome data for all procedure types are needed. The LRYGB seems to offer the greatest benefit; however, it seems associated with the highest risks. On the other hand, laparoscopic mini-gastric bypass (LMGB) is an emerging surgical method that was first reported by Rutledge [5]. According to Rutledge's report, this modification of the Mason's loop gastric bypass is a safe and effective procedure with better reversibility compared to the original procedure; nevertheless, there are concerns about biliary reflux and risk of malignancy after LMGB [6,7]. Thousands of procedures have been performed worldwide [8], and the efficacy of LMGB on weight loss and the improvement of co-morbidities,aswell as its safety has been reported [9,10].

We conducted a systematic review of published studies on morbidly obese individuals that have received LMGB, and we studied the efficacy as well as morbidity and mortality of this particular operation.

Methods

Search algorithm and eligibility of studies

This systematic review was performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines and in line with the apriori protocol agreed by all of the authors. Two authors (D.G. and A.N.), working independently, performed the selection of studies, abstracted data and rated the quality of studies, and in case of a disagreement, the final decision was reached by team consensus.

Eligible studeis were sought in PubMed; end-of-search date was July 15, 2013. The following search algorithm was used (mini-gastric OR [mini AND gastric]) AND bypass. Eligible articles included single-center or multicenter, randomized or nonrandomized clinical trials providing directly or indirectly effect estimates for efficacy (weight, body mass index [BMI] co-morbidity resolution, quality of life, perioperative outcomes) and/or safety (complications, readmission, revision operations, and mortality) of LMGB in obese (BMI Z30 kg / m2) populations. Case reports, studies on special populations or children, as well as studies written in Chinese language were excluded. In case of overlapping study populations, the study with the longest follow-up period was included; however, additional data from the overlapping articles providing supplemental information (either regarding efficacy or safety) were included and these articles were referred to as "additional articles providing supplemental information". Reference lists of reviews and eligible articles were systematically searched for relevant articles in a "snowball" procedure.

Data extraction and effect estimates

The extraction of data comprised first author's name, study year, journal, study design (randomized, non randomized clinical trial), follow-up period, study population and region, age of participants (range, mean), percentage of males, inclusion/exclusion criteria, comparator method, outcomes examined (BMI, weight, hemoglobin, metabolic syndrome, glycated hemoglobin (HbA1 c), systolic-diastolic blood pressure (SBP-DBP), excess weight loss (EWL) (%), weight loss (% or kg) and Gastrointestin al Quality of Life Index (GIQLI) score preoperatively-postoperatively as well as percentage of diabetes type 2, hyperlipidemia, hypertension, dyspnea/sleep apnea, and asthma resolution/ improvement postoperatively). Perioperative outcomes (mean operative time, conversion rate, intraoperative blood loss, postoperative flatus passage, analgesic use, postoperative hospital stay) complication rates, readmission, revision operations, and mortality rates were also recorded.

Assessment of study quality and risk of bias

For the assessment of study quality, the Newcastle-Ottawa scale was used. BMI was treated as the main outcome; in case BMI was not reported, the main outcome is declared in our text. Long enough follow-up was considered 12 months or more, whereas adequate follow up was considered when Z90% of the obese population had results at the final time point. With regard to comparability, age was considered the major risk factor. For studies without comparator method, maximum score was 6 (instead of 9 for studies with comparator method), because 3 items (selection of the nonexposed, comparability on age, comparability on other risk factors) were irrelevant.

Results

Selection and description of studies

The flow chart presenting the selection of studies is provided in Fig. 1. Taken as a whole, 10 articles were deemed eligible [8, 11-19], corresponding to 4,899 patients (Table 1). Description of "additional articles providing supplemental information" is provided is Supplemental Table 1.

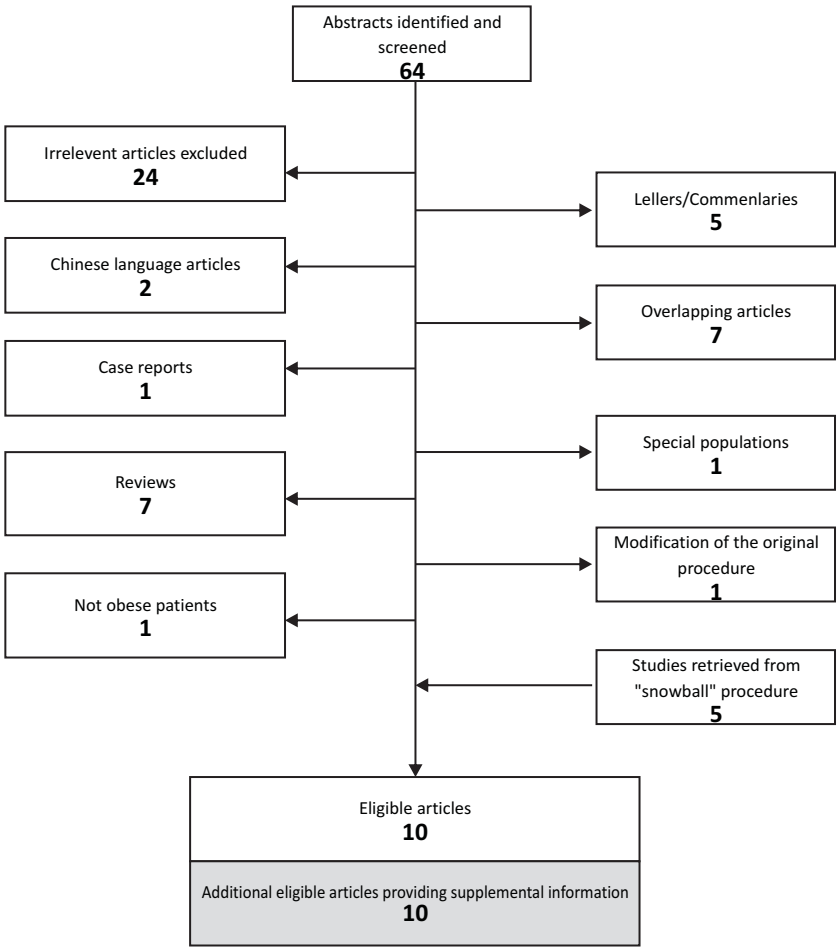

Fig. 1. Flow chart presenting the successive steps in the selection of eligible studies.

Efficacy of LMGB

Table 1 presents concisely the most meaningful outcomes of LMGB, whereas in Supplemental Table 2 we present additional outcomes pertaining to efficacy. According to all studies examining weight [8,16–18,20,21] and BMI [8,9, 11–13,15,17–20,22–25] postoperatively, LMGB induced substantial weight and BMI reduction. EWL success (namely 450% of EWL accomplished by the procedure) was noted in all pertinent studies; [5,8,9,12– 22], success was achieved between 6 to 12 months and was maintained during the follow-up period. EWL% at 2 years ranged from 64.4 8.8% [9] to 80% [15] and 1 study [13] reported EWL% at 5 years 72.9 19.3%.

Five studies examined hemoglobin values after LMGB [9,12,13,20,25].Only 1 of them [25], with relatively short follow-up (6 months) compared to the other studies (12, 24, and 60 months), presented an increase in hemoglobin after LMGB, in contrast to the remaining studies that pointed to the opposite direction. SBP and DBP were also examined in 4 studies [9,11,20,25]; all have concluded that reduction in both parameters occurred after the operation. HbA1 c change was assessed in 3 included studies [11,20,25]; all agreed on its reduction. A few studies [5,8,12,15,17,19] examined the effect of LMGB operation on obesity-related co-morbidities such as dia-betes, hyperlipidemia, hypertension and dyspnea-sleep apnea; resolution or improvement in all major associated medical illnesses was recorded. All studies examining quality of life [9,12,13,26] confirmed the improvement in overall GIQLI score regardless of the time of follow up; the improvement was reproducible upon the GIQLI domains of physical, social, and emotional function. Two studies reported no significant change in GIQLI symptoms domain after surgery [9,13]whereas a signifi-cant decrease was reported by Wang et al. [12].

Table 1
Description of included articles; the respective data on "additional articles providing supplemental information" is provided in Supplemental Table 1

Study	Study design	Period	Population and region	Sample size	Mean age	Follow up %	Body mass index (BMI)	Weight preoperatively-postoperatively	Excess weight loss (%)	Weight loss (%) - (kg)
Wang (2012)	Nonrandomized comparative (versus LAGB)	May 2008–April 2010	Han Chinese, multicenter study including 3 hospitals, Taiwan	344	30.3 7.6	70.9% (12 mo)	Baseline: 42.7 6.5, decrease: 14.9 3.8 (12 mo)/*	n/a	n/a	n/a
Wang (2005)	Nonrandomized	October 2001–October 2004	Obese patients, En-Chu-Kong Hospital, Taipei, Taiwan	423	30.6 9.3	73.75% (12 mo) 7.32% (36 mo)	Baseline: 44.2 7.0 final: 35.1 (3 mo), 31.9 (6 mo), 29.2 (12 mo), 28.4 (24 mo) and 28.8 (36 mo)/‡	Baseline: 120.3 23.4	At 3 mo 39.1%, at 6 mo 55.6%, at 12 mo 69.3%, at 24 mo 72.2% and at 36 mo 70.5%/‡	n/a
Lee (2012)	Nonrandomized comparative (versus LRYGB)	October 2001–September 2010	Morbidly obese patients, Endoscopic Bariatric Center of the Min-Sheng General Hospital of National Taiwan University, Taiwan	1163	32.3 9.1	56% (60 mo)	Baseline: 41.1 6.1 final: 27.7 5.8 (60 mo)/‡	n/a	72.9‡ 19.3 (60 mo)/	n/a
Kular (2010)	Nonrandomized comparative (versus LRYGB)	February 2007–September 2007	Obese patients, Ludhiana, Punjab, India	45	38.5	n/a	Baseline: 47.4	Baseline: 134.2	61.2 % (12 mo),‡ 75.4 % (24 mo)/	n/a
Piazza (2011)	Nonrandomized	October 2008– May 2011	Severely obese patients. A single institution (ARNAS Garibaldi, General and Emergency Unit), Catania, Italy	197	37.9	81.21% (12 mo) 33.5% (24 mo) 2.5% (36 mo)	Final: 34.2 3.4 (6 mo), 39.4 4.2 (12 mo), 30.3 3.6 (24 mo), 28.3 2.6 (36 mo)/‡	n/a	12 mo: 65% 24 mo: 80%/ ‡	n/a
Peraglie (2008)	Nonrandomized	n/a	Super- super-obese, The Centers of Laparoscopic Obesity Surgery (CLOS) Florida, USA	16	40	31.25% (12 mo) 12.5% (24 mo)	Baseline: 62.4	n/a	1 mo: 13%, 3 mo: 26%, 6 mo: 38%, 12 mo: 57%, 24 mo: 65%/ ‡	1 mo: 15 (kg), 3 mo: 29 (kg), 6 mo: 43 (kg), 12 mo: 63 (kg), 24 mo: 72(kg)/‡
Chakhtoura (2009)	Nonrandomized	October 2006– May 2009	Obese patients, 61 patients (23.1%) had previous restrictive procedures: 48 gastric banding, 10 vertical banded gastroplasty and 3 sleeve gastrectomy Paris, France	264	41.6 11	n/a	Baseline: 48.1 7.8 final: 29 5.5 (24 mo)/‡	Baseline:134 24	72 ±18 % (24 mo)/	n/a
Noun (2007)	Nonrandomized	March 200–February 2006	Obese patients, France	30	39 7.2	50% (12 mo)	Baseline: 41.8 4.5 final: 37.4 2.5 (1 mo), 35.2 3.5 (3 mo), 32.3 3.0 (6 mo), 30.8 3.1 (12 mo)/‡	112 19.8 , 1 mo 100.3 17.1, 3 mo 94.6 17.4, 6 mo 86.8 10.8, 12 mo 82.8 9.5/‡	1 mo: 27.2%, 3 mo: 40.4%, 6 mo: 58.4%, 12 mo: 67.6%/ ‡	n/a
Rutledge (2005)	Nonrandomized	September 1997–February 2004	Obese patients, Las Vegas, USA	2410	39	68% (60 mo)	Baseline: 46‡7 final: 29 (12 mo)/	n/a	At 1 year 80%/ ‡	At 1 year, mean weight loss was 59 kg/ ‡
Copæscu (2004)	Nonrandomized	Before October 2002	Super-obese patients, Bucharest	7	46	57.14% (12 mo) 14.28% (18 mo)	Baseline: 61.47 7.76 final: 50.99 6.55 (3 mo), 43.26 6.51 (6 mo), 39.38 7.81 (12 mo)/‡	Baseline: 185.71	At 3 mo 28.76 7.72, at 6 mo 48.73 8.99, at 12 mo 60.84 14.51/‡	n/a

LAGB ¼ laparoscopic adjustable gastric banding; LRYGB ¼ laparoscopic Roux-en-Y gastric bypass; n/a ¼ not available.
*Statistically signi ficant.
†Non significance.
‡Not tested statistically (comparisons pertain to the baseline versus final time points)

Supplemental Table 3-5 present in detail the quantitative results of comparative studies regarding perioperative features, efficacy, and safety, respectively. LMGB tended to offer larger decrease in BMI and HbA1 c than LAG B, although the amount of data was particularly limited. (Wang et al. [11]; Liou ei al. [25], personal communication).

Safety of LMGB

Table 2 presents the rates of postoperative complications, readmission, and revision operations as well as mortality. Minor early postoperative complication rates ranged from 3.6%–7.5% whereas major early postoperative complication rates ranged from 0-7%.

Major bleeding [12,13,15,18,19,22,26] (0.2%-28.6%), requiring endoscopic intervention or revision surgery, and anastomotic ulcer (1%-14.3%) [5,8,12,15,17,19,22,26] were the most commonly reported complications followed by bowel obstruction (0.1%-3.5%) [5,12,13,17,22,26], major leakage (0.8-1.6%) [5,8,12,13,22], infection (0.1- 28.6%) [8,18,19,22,26], and trocar wound hernia (0.1-1.1%) [5,8,12, 18,27]. Other more rare LMGB postoperative complications were stricture of the anastomosis (0.1-1%) [13,22], pulmonary embolish (0–1%) [5,15], bile reflux (2%) [22], esophagitis (0–1%) [5,15], and postoperative diarrhea (6–9%) [18,22]. Anemia was also reported [8,12] at relatively high rates (4.9% and 9.7%, respectively). Respiratory failure (0.1%) [13], renal failure (0.1%) [13], and deep vein thrombosis (0.1%) [5] were extremely rare complications. Readmission rate ranged from 0% [16] to 11% [28] whereas the rate of revision operations ranged from .3% [27] to 6% [22]. The latter were conducted due to a variety of medical reasons such as inadequate [13] or excessive [8] weight loss, malnutrition [13], upper GI bleeding [12], leakage complicated by intra-abdominal abscess [12], bowel obstruction [5,12,13], marginal ulcer [8, 12,13] , bile reflux [13], and stricture of the anastomosis [13]. Finally, the mortality rate ranged from 0% [16,18,19] to .5% [15] among primary LMGB procedures; a 3.5% mortality rate was reported in a study where patients underwent revisional LMGB after failed vertical banded gastroplasty (VBG) [26].

Risk of bias-quality of included studies

Supplemental Table 6 presents the ratings according to the Newcastle- Ottawa scale. More details are provided in Supplemental Results.

Discussion

This systematic review points to the satisfactory efficacy and safety of LMGB, which seems to combine low morbidity and mortality rates with effectiveness and sustainability in weight loss.

Specifically, LMGB is effective regarding BMI reduction and EWL% success. All included studies reported BMI reduction that was increasing during nearly the entire follow-up period; statistical significance was tested and stated in 5 studies [9,11,20,23,26]. Notably however, the amount of data stemming from comparative studies is particularly limited. In studies where LMGB was compared to LAGB [11,23,25] the former bariatric operation seemed more effective in BMI reduction at all follow-up time points. On the other hand, in studies where the comparator method was LRYGB, BMI reduction after LMGB seemed comparable to LRYGB [9]; however, 1 study reported LMGB outperforming the latter [13]. EWL success was accomplished after LMGB in all relevant studies, between 6 months to 1 year and EWL had an increasing trend during the follow up period.

LMGB led to postoperative reduction in hemoglobin levels in all [9,12,13,20] but 1 [25] study included in this review. Hemoglobin reduction seems to be the result of the long intestinal loop, which is routinely bypassed at 200 cm (in both the alimentary and the biliopancreatic limbs) in LMGB leading to iron malabsorption. When LMGB was compared to LRYGB, lower hemoglobin levels were detected at 1 year after surgery and were maintained up to 5 years postoperatively [9,13]; of note, the length of both biliopancreatic (50–100 cm) and alimentary (100-150 cm) limbs in LRYGB, are shorter compared with LMGB. When the comparator method was LAGB [25], no statistically significant difference was found in hemoglobin values postoperatively between the 2 procedures; the minor increase in hemoglobin level postoperatively in the LMGB arm [25] was not tested longitudinally statistically and may be attributed to the inadequate, 6-month only, follow-up period. Moreover, a few patients underwent revisional operation after LMGB due to malnutrition [13].

Two included studies [11,20] examined the effect of LMGB on HbA1 c longitudinally and confirmed a statistically significant reduction thereafter. Interestingly, the 2 individual studies [11,25] that compared LMGB versus LAGB pointed to marginal, borderline trends of LMGB superiority. LMGB caused also improvement [13] or resolution of metabolic syndrome [9] as well as reduction in SBP and DBP [9,11,20]. Moreover, health status was excellent after LMGB, with resolution or improvement in all major associated medical illnesses [5,8,12,15,17,19] and amelioration in quality of life scores [9,12,13,26].

The minor and major early postoperative complication rates in LMGB were satisfactory; the most common cause of major complications was bleeding. The high percentage of bleeding reported by Copăescu et al. [19] may reflect the small sample size and solely the initial experience of that Center, given that the learning curve for LMGB span s 30 cases [9,13]. If that survey is excluded, the maximum bleeding rate would be 3.5% [26]. Due to the abundant blood supply in the gastric tube, gastroenterostomy staple

Table 2
Results of the included articles regarding the safety of laparoscopic mini-gastric bypass (LMGB); the "additional articles providing supplemental information" and the results extracted from them, have been integrated in the Table with the use of asterisks

Study	Overall complication rate	Minor early postoperative complications	Major early postoperative complications	Major leakage	Bowel obstruction	Major bleeding	Anastomotic ulcer	Bile reflux	Esophagitis	Infection	Anemia	Trocar wound hernia	Mortality	Revision surgeries overall	Re-admission
Wang (2012)/ Liou (2011)*	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Wang (2005)/ Wang (2004)*/ Chiu (2006)**	n/a	18 (4.3%)	7(1.65%)	3 (.71%)	1 (.2%)/1 (3.5%)*	3 (.7%)/ 1 (3.5%)*	34(8.0%)/2 (6.9%)*	n/a	0%	1 (3.5%) *	41 (9.7%)	0.3% (2/610) **	2 (0.5%)/ 1 (3.5%)*	7(1.7%)/ 1 (3.5%) */.3% (2/610) **	n/a
Lee (2012)/Lee (2009)*/Lee (2008)**/Lee (2005)***/Chen (2007)****	n/a	78 (6.7 %)/23 (3.6%)**/3 (7.5%)***/10 (4.4%)****	21 (1.8 %)/13 (2.0%)**/0 (0.0%)***/7 (3.1%)****	15 (1.3 %)	1 (.1 %)	2 (.2 %)	n/a	n/a	n/a	n/a	n/a	n/a	2 (.2 %)/1 (0.2%) **/0% ***/0% ****	33 (2.8%)	3 (7.5%) ***
Kular (2010)	4.4% operative morbidity, late complications 2.2%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Piazza (2011)	n/a	n/a	n/a	n/a	n/a	6/197 (3%)	3/197 (1.5%)	n/a	2/197 (1%)	n/a	n/a	n/a	1/197 (0.5%)	n/a	n/a
Peraglie (2008)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0%	n/a	0%
Chakhtoura (2009)/ Chakhtoura (2008)*	4.5%	n/a	7%*	1%*	3% reoperation*	1.1%/ 1%*	1%*	2 (2%) *	n/a	1.5%/ 1%*	n/a	1.14%	0%/ 0%*	8(3.0%)/ 6%*	1%*
Noun (2007)	n/a	n/a	n/a	n/a	3.3% reoperation	n/a	3.3%	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Rutledge (2005)/ Rutledge (2007) */Rutledge (2001) **	5.9%	n/a	n/a	1.08%/ 1.6%**	0.1%**	n/a	5.6%/1.8% **	n/a	0.5% (moderate-mild)**	0.12%	4.9%	0.1%/ .2**	.1% early, .2% late, .3% overall/ .1%**	1.3%./ .6%)**	11%*
Copaescu (2004)	n/a	n/a	n/a	n/a	n/a	2 (28.6%)	1 (14.3%)	n/a	n/a	2 (28.6%)	n/a	n/a	0%	n/a	n/a

n/a ¼ not available.

line arterial bleeding may sometimes require reoperation and routine reinforcement of the staple line has been reported [5].

Another frequent adverse effect of LMGB is the development of marginal ulcer, which is usually transient and well controlled by proton pump inhibitors. To avoid the development of marginal ulcer, it is mandatory to keep the gastric tube narrow during LMGB and avoid ulcerogen ic drugs. The relatively rare bowel obstruction reoperation was sometimes mandatory [17,22]. Infection, from minor to severe, and postoperative diarrhea had higher effect after LMGB. Finally, anemia was reported in 2 studies [8,12] with relatively high rates. The duodenal bypass, with iron malabsorption, was probably the underlying reason; marginal ulcer with chronic bleeding may also contribute. The anemia could be controlled by long-term iron and multi-vitamin supplementation.

There is paucity of comparative data regarding the safety of laparoscopic bariatric procedures; 1 study pointed to LAGB as safer than LMGB [23], whereas other researchers suggested higher postoperative morbidity after LRYG B than LMGB in low volume centers [9], with the latter discrepancy fading away in high volume bariatric units [13]. LRYGB is a technically demanding procedure [9], using a high retrocolic or antecolic gastrointestinal anastomosis, whereas a relatively easier, lower antecolic gastrointestinal anastomosis is performed in LMGB.

The mortality rate ranged from 0%-.5% in primary LMGB procedures. A high mortality rate (3.5%) [26] was only reported in a small study on patients undergoing revisional LMGB after failed VBG; on the contrary, the percentage of patients that had undergone previous restrictive procedures was _24% in the studies by Chakhtoura et al.[18,22] and 0% in the remaining studies.

Two main problems remain to be addressed concerning LMGB : the postoperative esophagitis and gastritis caused by bile reflux [7] and the risk for remnant stump gastric cancer due to chronic alkaline gastritis. Despite the fact that alkaline reflux esophagitis has been hypothesized not to be a severe problem in LMGB because of the low placement of anastomosis in the stomach and away from the esophagus [5], this side effect may have been underestimated or underreported in relevant studies [6]. In light of studies that have highlighted that the intractable bile reflux gastritis is the most common complication encountered in patients requiring reoperation after LMGB6, more prospective and well-designed studies should validate the incidence and consequences of bile reflux in LMGB. LMGB is compli-cated with gastritis [29]; although the risk of gastric cancer in gastric stump is extremely low [30], studies with long-term follow-up are needed to secure the long-term safety of this procedure.

The limitations of this systematic review essentially reflect the limitations of the included studies. It should be declared that the main corpus of the relevant published literature pertained to non comparative studies; among comparative approaches, only one study was prospective randomized [9], being relatively small and including only 40 patients with LMGB. The bulk of the literature is retrospective, with most of the existing literaturestemming from 2 prolific centers (one in the U.S. [8] and 1 in Taiwan [13]), whereas the follow-up was sometimes based on electronic contact-data as opposed to direct patient contact. Moreover, the inadequacy in reporting long-term follow-up might lead to underestimation of postoperative mortality and morbidity and might limit the reliability of the evaluation of LMGB efficacy. Attrition bias, as reflected upon the low rates of patients spanning the whole interval of long-term follow-up, represents a drawback of the included studies; studies suffered from especially high attrition rates at 2 or more years. Heterogeneity in the duration of follow-up may also hamper the straightforward comparability of results. In addition, several studies did not conduct statistical analysis regarding LMGB efficacy. Additional long-term outcomes, such as a potential reduction in cancer rates or cardiovascular events, would be extremely interesting; future systematic reviews assessing also the total amount of evidence on LRYGB and LAGB may be particularly meaningful.

Regarding the strengths of this effort, we believe that this systematic review contributes to the literature, as it is the only one on this particular bariatric procedure, whereas we thoroughly rated the quality of included studies.

Conclusion

LMGB represents an efficient and safe bariatric procedure. Its malabsorptive component that leads to anemia can be easily treated with postoperative prescription of multi-vitamin and iron supplements, whereas the rarely occurring malnutrition can be treated with LMGB revision. Concerns regarding bile reflux and risk of gastric cancer remain to be further elucidated. Well-designed randomized trials comparatively examining LMGB, LRYGB, and LAGB are needed before any firm conclusions are drawn.

Disclosures

The authors have no commercial associations that might be a conflict of interest in relation to this article.

Appendix

Supplementary data

Supplementary data associated with this article can be found in the online version at 10.1016/j.soard.2014.02.009.

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Mini-Gastric (one-anastomosis) Bypass Becoming a Mainstream Bariatric Operation

Posted on November 25, 2013 by Mervyn Deitel — 3 Comments ↓

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The mini-gastric one-anastomosis bypass (MGB) was conceived by Dr. Robert Rutledge in USA 16 years ago, as a safe, rapid and effective bariatric operation. The MGB has slowly gained proponents throughout the world, particularly increasing in the past 5 years. In October 2012, an international MGB Conference of 55 experts was held in Paris, under the leadership of Drs. Rutledge and Jean-Marc Chevallier (President of the French bariatric society–SOFCO). Because of international requests, a second MGB Conference was held in Paris in October 2013, with 35 MGB surgeons from 13 countries, many at the professorial level.

Mini-Gastric Bypass Symposium in Paris - view of audience

Mini-Gastric bypass Symposium in Paris–are moderators Mervyn Deitel, Robert Rutledge and K.S. Kular.

The Chair of the 2013 Conference was Prof. Pradeep Chowbey, immediate Past-President of the International Federation for the Surgery of Obesity; many see Prof. Chowbey as the Father of both laparoscopic and bariatric surgery in India, where the MGB is being rapidly adopted following the excellent results reported by Kular and others. The MGB Consensus attendees all reported prior experience with other bariatric operations – Roux-en-Y gastric bypass (RYGB), gastric banding (GB) and sleeve gastrectomy (SG).

Technique

The laparoscopic operation (Figure 1) creates two components: first, a restrictive lesser-curvature gastric pouch ; second, a 200 cm or longer jejunal bypass with a single antecolic gastro-jejunostomy (GJ) anastomosis, which leads to significant fat malabsorption.

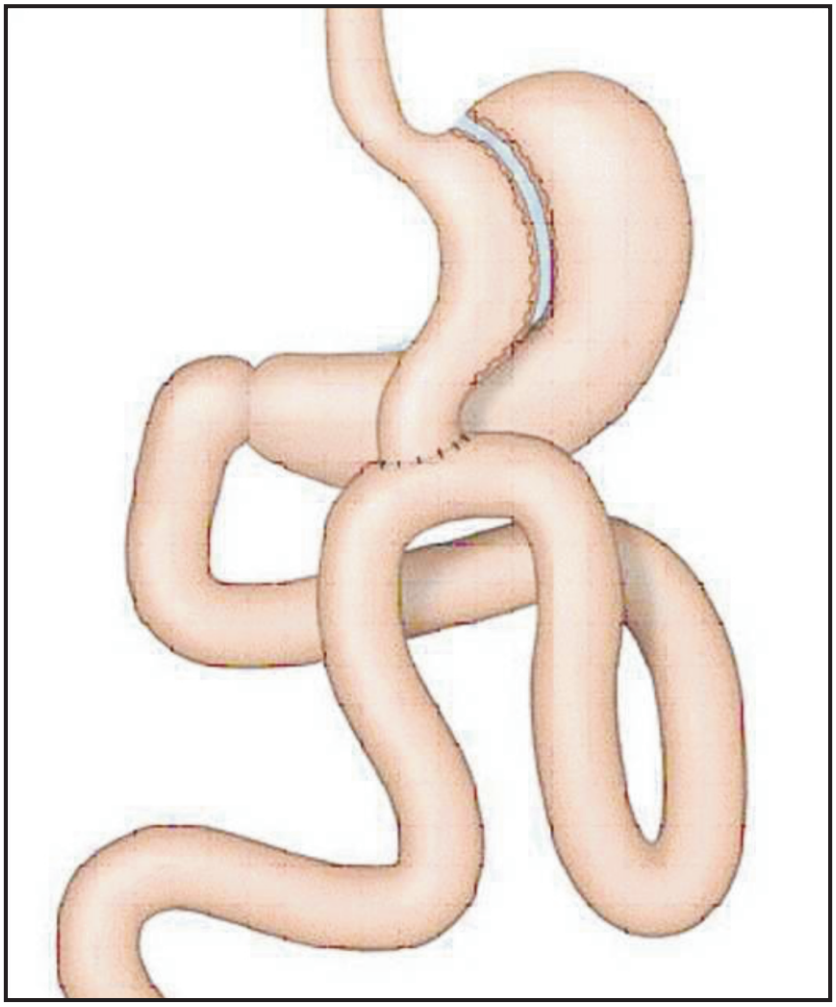

Figure 1: Diagrammatic representation of the MGB (by Robert Rutledge)

Creation of the Gastric Pouch

The lesser curvature of the stomach is identified at the junction of the body and antrum. The stomach is initially stapler-divided at a right-angle to the lesser curvature, distal to the incisura (distal to the crow's foot). A 28–40 Fr bougie is passed by the anaesthetist, and the stomach is stapler- divided upwards parallel to the lesser curvature. With approach to the gastro-esophageal (GE) junction, the surgeon divides the stomach lateral to the angle of His; the cardia in the MGB is explicitly avoided and not dissected (unlike in the SG operation).

Creation of the 200-cm Malabsorptive Jejunal Bypass

Attention is turned to the left gutter, and the omentum is retracted medially to identify the ligament of Treitz. The bowel is run to ~200 cm distal to Treitz' ligament. At this site, the distal tip of the gastric sleeve is anastomosed antecolic end-to-side to the jejunum.

In the presence of a hiatal hernia, no effort is made to address this at the time of MGB. Experience has shown that MGB is very effective in resolving GE reflux disease (GERD). This is thought to be related to traction which the GJ anastomosis provides on the gastric pouch, which reduces the cardia within the abdomen, plus resolution of the patient's obesity. We thus have a gastric conduit and a fat/carbohydrate malabsorptive procedure. The pouch in the MGB shows little dilation because there is no outlet narrowing by a stoma or pylorus.

Modifications of the Technique

Some (but not all) MGB surgeons vary the length of the bypass. In super-obese (or very tall) patients, the GJ is performed >250 cm distal to Treitz' ligament. Tacchino's group from Italy has performed >600 MGBs; Greco reported that recently they have modified the MGB by leaving a larger gastric pouch and constructing the GJ 300 cm proximal to the ileocecal valve (i.e. leaving a 300-cm common channel). Most of the surgeons agreed that the GJ must be placed at least 200-300 cm proximal to the ileocecal valve, to maintain adequate nutrition. Flores from Mexico presented the Spanish technique of Profs. Caballero and Carbajo, where an antireflux valve is constructed on the afferent side of the GJ; sutures are placed between the sleeve and afferent limb to inhibit reflux. Survey of the attendees revealed that >80% use the Rutledge method and measurements, 10% the Carbajo antireflux method, and 5% the Tacchino 300-cm common limb.

If ever necessary, the MGB can be modified for inadequate or excess weight loss by moving the anastomosis distally or proximally as a brief, simple procedure. Bhanderi of India constructs a longer sleeve, almost to pylorus. Prasad of India performs the MGB using robotics.

The MGB is now being performed for weight regain after the SG operation. All the experts emphasized that it is very important not to construct a short gastric pouch for the MGB. The MGB pouch is the opposite of the small proximal pouch constructed in the RYGB. A small, short gastric pouch in the MGB would recreate the physiology of the old Mason loop gastric bypass and could lead to bile reflux (as was done with some of Weiner's earlier SG revisions to MGB). Presenters repeatedly emphasized the need for a long gastric pouch

Survey Findings and Discussion

A SurveyMonkey® questionnaire had been carefully answered pre-Conference and was discussed. This is a largely academic surgical group who carefully records their data, because the MGB was met with some skepticism. The Survey identified a total of 16,651 MGBs performed by the attendees. Average preoperative BMI was 46.1 ±4.1 (SD) (range 38-62). Mean operating time was 80.3 ±24.9 minutes (range 38-130). Average hospital stay was 3.2 ±1.6 days (range 1.1-6.0), and became less as the surgeon performed more MGBs. Leaks were reported in 0.03% (5 patients), which are less than the dreaded proximal leaks following the SG operation.

During surgery, the use of the methylene blue or air test decreased with experience. The use of a drain also decreased with experience. Patients were usually ambulatory a few hours after surgery.

Diabetes had resolved at 1 year in 91.4 ±4.9% (range 82-96). Persistent resolution of co-morbidities and improvement in quality of life were reported by Peraglie based on a personal experience with 1,400 MGBs, Hargroder with 1,100 MGBs, Cady with 2,500 MGBs, Chevallier with 888 MGBs, Kular with 1,200 MGBs, Musella with 1,000 MGBs, Tacchino with 600 MGBs and W.J. Lee with >1,000 MGBs.

Preoperative GE reflux was found in 15.3 ±14.2%, and postoperatively in 4.7 ±14.2%. The experts' opinion was that GERD improves after MGB. Revisional surgery has become necessary in 3.2% (0.4% for bile reflux). It was very rare that a Braun entero-enterostomy became necessary. Marginal ulcers have occurred in 1.4 ±1.8% (range 0-5), which is less than after RYGB. Interestingly, Spain and India have found almost no postoperative ulcer occurrence.

The %EWL was: 1 year 75.8, 2 years 85.0, 3 years 78.0, 4 years 75.0, 5 years 70.2, longer 70.0. Failure to lose >50% of excess weight at 5 years occurred in 14.2 ±25.1%. Operative 30-day mortality has been very low – 0.2% (33 deaths).

In the consensus survey, bowel obstruction was very rare and had occurred in 0.15 ±0.36% (range 0–1), and none was due to an internal hernia. There has been no intractable hypoglycemia.

Regarding marginal ulcer development, the MGB should not be performed in smokers, those taking salicylates, and many felt it should not be used in those taking heavy alcohol. However, Kular in India noted that patients in his area of India tend to take whisky, without problems. However, as with the RYGB, there is more rapid absorption of alcohol, which should thus be decreased.

Most of the surgeons prescribed a PPI, and all ordered supplements (multivitamins, calcium – preferably dairy, yoghurt, and Proferrin® as an iron supplement. In 5% of menstruating women, iron deficiency develops, and may require I.V. iron. The majority treat H. pylori preoperatively, and many treat it if it becomes necessary postoperatively. No case of carcinoma has been found in the gastric pouch or esophagus after MGB. Some critics have referred to a rat study where concentrated bile in the stomach led to cancer; however, J.D. Frantz in 1991 showed that bile led to hyperplasia and malignancy in the proximal 2/3 of the unique rodent stomach (which is squamous cell) and not in the glandular distal 1/3 (which corresponds to the human stomach)

Wei-Jei Lee of Taiwan described his 10-year comparison of MGB and RYGB, where long-term weight loss, resolution of diabetes and elevation of GLP-1 were slightly better after the simpler and safer MGB.

Conclusion

There was early prejudice against the MGB by surgeons who performed a longer, more difficult procedure. However, the numerous surgeons throughout the world who perform the MGB reported essentially the same results. The attendees have found the MGB to be a rapid, technically simple, safe, effective operation with an absence of leaks, a single antecolic large anastomosis in easy view, the bypassed length modifiable with the degree of BMI, durable weight loss, easily revisable by moving the anastomosis, and if ever necessary, reversable.

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LETTER TO THE EDITOR

Letter to the Editor : Bariatric Surgery Worldwide 2013 Reveals a Rise in Mini Gastric Bypass

Mervyn Deitel[1]

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I enjoyed the paper ***Bariatric Surgery Worldwide 2013*** by Angrisani et al. [1], which is an update of previous important reports by Scopinaro and by Buchwald. A new finding is the rise in mini gastric bypass to 8718 in 2013. Although not included in Fig. 2, this is more than the stated 6326 BPD/DS (shown as 7169 in Fig. 2).

At the Paris MGB Consensus Conference in 2013, 16,651 mini gastric bypass (MGBs) had been performed by the attendees [2]. Also, although the USA/Canada tally states "not available" since the ASMBS does not currently recognize this operation, there were more than 100 MGBs performed in 2013 in each of Devenport, FL, Joplin, MO, and Las Vegas, NV. In Canada, members of the Sikh community had under gone >100 MGBs in 2013 out of country (with >50 from Brampton, ON) Furthermore, in Taiwan and southern Spain some MGBs in 2013 were reported as "gastric bypass" and assigned as RYGB. Large MGB series have been reported [3-5].

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Indicating the trends in bariatric operations is a difficult but valuable task for the authors. I write this letter to point out the increase in MGB worldwide, which is note mentioned anywhere in this report [1].

Ethical Approval : The letter is not a study with human participants
There are no experiments on animals
This letter does not contain any studies on human participants or animals performed by the author.
There is not identifying informate of participants.

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NOTES