

Laparoscopic Sleeve Gastrectomy vs Laparoscopic Roux-en-Y Gastric Bypass Surgery in Obese and Morbidly Obese Patients

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ABSTRACT

The review article deals with the comparison between the procedures of laparoscopic sleeve gastrectomy (LSG) vs laparoscopic Roux-en-Y gastric bypass (LRYGB) in the morbidly obese/obese patient subset. Given that the bariatric surgery deals not only with the weight loss of the patient, but also the accompanying myriad systemic and metabolic manifestations, this comparison was made to look into any prominent differences in the outcome of patients including postoperative sequelae. The studies were taken from reputed institutes across the world that were sourced from Medline and Cochrane Central and PubMed, which compared these two procedures on their patient groups and also followed up to a maximum period of 5 years for improvement on overall health parameters. The two procedures have shown fairly comparable results with regard to improvement in metabolic and hormonal parameters and LRYGB as better than LSG in long-term excessive weight loss in the follow-up phase of up to 5 years.

Keywords: Excessive weight loss, Laparoscopic Roux-en-Y gastric bypass, Laparoscopic sleeve gastrectomy, Morbid obesity.

How to cite this article: Alva S. Laparoscopic Sleeve Gastrectomy vs Laparoscopic Roux-en-Y Gastric Bypass Surgery in Obese and Morbidly Obese Patients. *World J Lap Surg* 2017;10(3):129-132.

Source of support: Nil

Conflict of interest: Nil

INTRODUCTION

Over the last three decades, the prevalence of obesity and morbid obesity has steadily increased in populations across the world, affecting all age groups from pediatric to geriatric. The widespread prevalence of obesity has its implications as it gives rise to several comorbidities in the patient, affecting all the organ systems. The conditions more commonly encountered in this patient category range from Type II diabetes mellitus, hypertension, asthma, obstructive sleep apnea, to degenerative bone diseases and Infertility issues. The wide ramifications on the overall quality-of-life of the patient irrespective of gender and age make morbid obesity and obesity a challenge to be

dealt with on a mammoth footing. In the current scenario, bariatric surgery is the only effective means of long-term weight loss in the morbidly obese and also to reduce and/or remove the concomitant comorbidities arising as a result of the grossly elevated body mass index (BMI).

Given that the patient's BMI is > 40 or BMI is >35, but with comorbidities, and patient is found to be compliant with nutritional advice and is psychologically competent to withstand and understand this process of weight loss, various surgical options are presented to give the best possible outcome to the patient.

In this article, we will review LSG vs LRYGB as a surgical procedure offered to patients, their outcomes in the various studies, and also their effect on the comorbidities of the patients. Laparoscopic sleeve gastrectomy is a restrictive component surgery, whereas LRYGB entails both a restrictive and malabsorptive component. The following studies have been conducted in reputed hospitals and medical universities across the world.

AIM

The aim of this article is to compare LSG vs LRYGB surgery and evaluate if there is any difference in the patient weight loss and/or reduction in comorbidities or if there is prevalence of any increased postoperative sequelae following any one of the procedures.

MATERIALS AND METHODS

The studies included in the review article include ten randomized controlled trials and nonrandomized prospective and retrospective studies and meta-analysis taken from reputed institutes across the world, published during the period from 2010 to 2017. Research material for the review article was sourced from Medline, PubMed, and Cochrane central.

OBSERVATION

The observations are presented in Table 1.¹⁻⁴⁰

DISCUSSION

This review article covered the above 10 articles (prospective, retrospective randomized controlled trials, and meta-analysis) after short listing them from extensive

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Table 1: Comparative studies

Name of principal author and institute	Year of publishing	Year study was conducted	Study group	Operative outcome	Follow-up	Conclusion
Pablo Vidal et al (Hospital del Mar Institut d'Investigacions Mèdiques, Barcelona, Spain)	November 2012	January 2004–October 2011	249 patients between 18 and 60 years. Of these 135 patients underwent LRYGB and 114 patients underwent LSG	Operative time higher for LRYGB. Long-term weight at end of 4 years better for LRYGB	Median follow-up period of 24 months. Weight loss at end of 12 months similar	Both LRYGB and LSG have good outcomes in weight loss and resolution of comorbidity. Better long-term weight loss for LRYGB
Yong Zhang et al, Center of Minimally Invasive Surgery, Nankai, Hospital of Tianjin Medical University, China	May 2014	January 2007–July 2008	64 patients randomly assigned to either LRYGB or LSG	Weight loss better in LRYGB except in first postoperative year	Followed up for period of 5 years postoperative till 2013	Weight loss maintenance in LRYGB better. Resolution of comorbidities same in both
Chengda Zhang et al Peking Union Medical College, Chinese Academy of Medical Sciences, Beijing, People's Republic of China	June 2014	Database collected from inception to September 2013 from CNKI, Embase, and PubMed	Among all 16 included studies, 1 was randomized controlled trial and 15 were nonrandomized (11 parallel controlled trials, 4 retrospective observational studies)	LRYGB had longer operative time and technically more complicated but reversible. LSG not reversible	Follow-up of 2 years in postoperative period	Weight loss better with LRYGB at 2 year follow-up, but resolution of type II DM similar in both LSG and LRYGB
Rodrigo Koproovski Menguer et al Diabetes and Obesity Education and Research Center and Obesity Treatment Center of Hospital Santa Casa de Misericórdia de Porto Alegre, Brazil	February 2017	Between 2010 and 2013	102 patients diagnosed with metabolic syndrome (63 undergoing LRYGB and 39 undergoing LSG)	Postoperative hospital stay longer in LRYGB group	Excessive weight loss (EWL) better in LRYGB at end of 1 year compared with LSG	Both LRYGB and LSG promote significant remission rate in metabolic syndrome over 12 months. EWL better in LRYGB
Maher El Chaar Division of Bariatric and Minimally Invasive Surgery, St Luke's University Hospital and Health Network(USA)	August 2014	Retrospective analysis of data conducted between January 2009 and December 2012	Total of 885 patients. 547 patients underwent LRYGB (61.8%) and 338 underwent LSG (38.2 %)	Postoperative readmission rates for LRYGB higher for complaints of dehydration and pain control	Follow-up at 6, 12, and 24 months. At 24 months, the %EWL lesser in patients of LSG vs patients of LRYGB	In the short term, LSG has better safety profile than LRYGB but at 2-year follow-up and more, LRYGB has better excess weight loss than LSG
Rinki Murphy Michael W C. Booth et al Faculty of Medical and Health Sciences, University of Auckland, Auckland, New Zealand	August 2017	October 2011–October 2015 RCT	114 patients were randomized at time of surgery, 56 to SR-LRYGB and 58 to LSG	Postoperative complications marginally greater in LRYGB group	One-year follow-up and smaller sample size limiting factors to detect modest differences. 5-year follow-up planned	Significantly greater weight loss and greater improvements in lipids after SR-LRYGB at 1-year follow-up. LRYGB and LSG are similarly effective in achieving diabetes remission

(Cont'd...)

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	Leyba et al ⁴ Torre Médica Terras Plaza, Caracas, Venezuela	July 2014	January 2008–December 2008	117 patients of whom 75 were assigned to LRYGB and 42 to LSG	Operative time marginally higher for LRYGB group	One-year follow-up and 5 year-follow-up done	Excess weight loss better with LRYGB and comorbidity resolution similar efficacy at end of 1 year. But at 5 years, similar excess weight loss in both groups. More complications in LSG group at 5 years
	Albeladi B et al ¹⁷ Department of Digestive and Bariatric Surgery, TOURS University Hospital (Hôpital Trousseau), Tour, France	September 2013	January 2008–June 2011	36 LRYGB and 34 LSG	Operative time longer in LRYGB	Follow-up at 6, 12, and 18 months done. Weight loss better in LRYGB at 18 months	Both LRYGB and LSG safe procedures for weight loss and resolution of comorbidities at 18 months
	Lim et al Department of General Surgery, Naval Medical Center San Diego, San Diego, California	March 2014	Retrospective review from 2005 to 2011	226 patients assigned to LRYGB and 208 to LSG	Operative time longer for LRYGB than LSG	Yearly follow-up for up to 5-year period	Similar long-term weight loss between LRYGB and LSG. No difference in two procedures in EWL after 2 years postsurgery
	Jeremei Thereaux et al Ambroise Pare University Hospital, France	December 2014	January 2004–January 2013	74 patients underwent LSG and 285 patients underwent LRYGB	No adverse postoperative outcome in either group	Follow-up period of 1 year	LRYGB provides better weight loss and resolution to diabetes than LSG

online literature search from Medline, PubMed, and Cochrane central. The article was to see if the popular procedure of LRYGB was better than or comparable to LSG. Laparoscopic Roux-en-Y gastric bypass is a more complex operative procedure, which entails longer operative time compared with LSG and, in some studies, comparatively longer hospital stay. The incidence of postoperative complications has not been much in both study groups since surgeons who have achieved a good learning curve in bariatric surgery have done the above studies. The studies detailed above show that with LRYGB, there is a sustained excessive weight loss even on prolonged follow-up compared with LSG. On a limited follow-up, both LSG and LRYGB show similar excessive weight loss and resolution of comorbidities. The need of long-term follow-up is emphasized and also to ensure that patients are not lost to follow-up to ensure data collection.

CONCLUSION

The LRYGB shows better excessive weight loss on long-term follow-up compared with LSG. Resolution of comorbidities in both procedures has similar efficacy. More studies which have 5-year and longer follow-up will be useful in this regard.

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