ELSEVIER

CrossMark

Surgery for Obesity and Related Diseases 11 (2015) 987–990

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

Laparoscopic sleeve gastrectomy leads the U.S. utilization of bariatric surgery at academic medical centers

J. Esteban Varela, M.D., F.A.C.S., F.A.S.M.B.S., Ninh T. Nguyen, M.D., F.A.C.S., F.A.S.M.B.S.*

Department of Surgery, Irvine Medical Center of University of California, Orange, California

Received October 9, 2014; accepted February 8, 2015

Abstract

Background: Analysis of a recent single state bariatric surgery registry revealed that laparoscopic sleeve gastrectomy was the most common bariatric procedure starting in 2012. The objective of this study was to examine the trend in utilization of laparoscopic sleeve gastrectomy performed at academic medical centers in the United States.

Methods: Using ICD-9 diagnosis and procedure codes, clinical data obtained from the University HealthSystem Consortium database for all bariatric procedures performed for the treatment of severe obesity between October 1, 2011, and June 30, 2014. Quarterly trends in utilization for the 4 most commonly performed bariatric operations were examined, and comparisons between procedures were performed.

Results: A total of 54,953 bariatric procedures were performed. Utilization of laparoscopic sleeve gastrectomy increased from 23.7% of all bariatric procedures during the fourth quarter of 2011 to 60.7% during the second quarter of 2014 while laparoscopic gastric bypass decreased from 62.2% to 37.0%, respectively. Utilization of laparoscopic sleeve gastrectomy surpassed that of laparoscopic gastric bypass in the second quarter of 2013 (50.6% versus 45.8%). During the same time period, utilization of open gastric bypass fell from 6.6% to 1.5%, and the use of laparoscopic adjustable gastric banding decreased from 7.5% to .8%.

Conclusions: Within the context of U.S. academic medical centers, there has been a significant increase in the utilization of laparoscopic sleeve gastrectomy, which has surpassed laparoscopic gastric bypass utilization since 2013. Laparoscopic sleeve gastrectomy is now the most commonly performed bariatric procedure at the national level within academic centers. (Surg Obes Relat Dis 2015;11:987–990.)

Keywords: Bariatric surgery; Severe obesity; Laparoscopic sleeve gastrectomy; Laparascopic gastric bypass; Laparoscopic adjustable gastric banding

Introduction

A recent analysis of bariatric surgery practices in the state of Michigan revealed that laparoscopic sleeve gastrectomy was the most commonly performed bariatric procedure [1]. Laparoscopic Roux-en-Y gastric bypass (LRYGB) had been the most commonly performed bariatric operation in the U.S. over the last decade [2,3]. Using the University HealthSystem Consortium (UHC) database, we previously reported a change in the bariatric surgery makeup within academic medical centers with a rapid increase in the utilization of laparoscopic sleeve gastrectomy in 2012 [4]. This increase primarily affected the utilization of laparoscopic adjustable gastric banding. Before the development of the sleeve gastrectomy, we previously reported an increase in utilization of laparoscopic adjustable gastric banding from 2004 to 2007 [5].

The information contained in this article was based on the clinical database provided by the University HealthSystem Consortium.

*Correspondence: Ninh T. Nguyen, M.D., Department of Surgery, 333 City Building West, Suite 850, Orange, CA 92868, USA.

E-mail: ninhn@uci.edu

http://dx.doi.org/10.1016/j.soard.2015.02.008

Laparoscopic gastric banding has been associated with lower perioperative morbidity but a modest weight loss at both short- and medium-term follow-up compared to laparoscopic gastric bypass [6–8].

Laparoscopic sleeve gastrectomy was first reported as a 2-stage procedure for high-risk patients undergoing laparoscopic gastric bypass [9,10]. Recent studies have shown that laparoscopic sleeve gastrectomy is an effective stand-alone procedure, resulting in weight loss somewhere between that of gastric banding and gastric bypass [11–13]. Furthermore, a recent meta-analysis revealed that the weight loss achieved with laparoscopic sleeve gastrectomy was comparable to that of laparoscopic gastric bypass at 5 years [14]. The American Society for Metabolic and Bariatric Surgery (ASMBS) has also recognized sleeve gastrectomy as an acceptable primary bariatric procedure [15]. The purpose of this study was to provide an update on the national trends in utilization of laparoscopic sleeve gastrectomy compared to other commonly performed bariatric procedures within U.S. academic medical centers.

Methods

Database

The UHC database is an administrative, clinical, and financial database that provides benchmark measures on the utilization of healthcare resources for comparative data analysis between academic institutions. The UHC database is a collection of patient-level discharge abstract data from academic health centers and affiliate community hospitals. It contains discharge information on inpatient hospital stays. Approval for the use of the UHC patient-level data in this study was obtained from our Institutional Review Board and the UHC.

One of the benefits of the UHC clinical database is the risk-adjusted data for comparing institutions. In addition, the Refined Diagnosis Related Group (RDRG) methodology is used to assign a level of severity of illness by grouping patients based on the severity and complexity of their secondary diagnoses (co-morbidities and complications). The severity classes for grouping patients are minor, moderate, major, or extreme severity.

Data analysis

We analyzed the UHC database for discharge data on all patients who underwent laparoscopic sleeve gastrectomy, laparoscopic and open Roux-en-Y gastric bypass, and laparoscopic adjustable gastric banding for the treatment of severe obesity. These procedures were identified using the appropriate diagnosis and procedural codes as specified by the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM). The principal ICD-9 diagnosis codes for obesity and severe obesity were utilized (278.01 and 278.00, respectively). The principal ICD-9 procedure code for laparoscopic adjustable gastric banding was 44.95; laparoscopic gastric bypass was 44.38; open gastric bypass was 44.31 and 44.39, respectively; and laparoscopic sleeve gastrectomy was 43.82. The procedures for obesity MS-DRG code (201) and risk-adjustment models were also used. Of note, the ICD-9 code for laparoscopic sleeve gastrectomy became available in the fourth quarter (Q4) of 2011.

Statistical analysis

Between Q4-2011 and Q2-2014, we analyzed the quarterly distribution of laparoscopic sleeve gastrectomy, laparoscopic and open gastric bypass, and laparoscopic adjustable gastric banding. We also compared patient characteristics (age, gender, race, and severity class) between patients who underwent laparoscopic sleeve gastrectomy versus laparoscopic and open gastric bypass and adjustable gastric banding. Proportional differences were analyzed by χ^2 tests. Statistical analysis was performed using SPSS statistical software, version 12.0 (SPSS Inc., Chicago, IL). A P value of $<.05$ was considered significant.

Results

A total of 54,953 patients underwent bariatric surgery for the treatment of severe obesity at U.S. academic medical centers between October 1, 2011, and June 30, 2014. Quarterly distribution of bariatric procedures performed during the study period is shown in Fig. 1. Utilization of laparoscopic sleeve gastrectomy increased from 23.7% of all bariatric procedures in Q4-2011 to 60.7% in Q2-2014. Laparoscopic gastric bypass use reduced from 62.2% to 37.0% in that time period. Utilization of laparoscopic sleeve gastrectomy surpassed that of laparoscopic gastric bypass during Q2-2013 (50.6% versus 45.8%). During the study period, the use of open gastric bypass decreased from 6.6% to 1.5%, and laparoscopic adjustable gastric banding mirrored that of open gastric bypass and decreased from 7.5% to .8%. During the last 5 quarters (Q2-2013 to Q2-2014), laparoscopic sleeve gastrectomy utilization exceeded that of laparoscopic gastric bypass (60.7% for sleeve versus 37.0% for bypass in Q2-2014).

Demographic data for patients who underwent bariatric surgery in this time period is presented in Table 1. A higher proportion of patients >50 years of age who underwent laparoscopic adjustable gastric banding had a minor severity of illness compared to patients who underwent laparoscopic sleeve gastrectomy.

Discussion

This study examined the procedural trends of bariatric surgery at the national level using a large administrative database of academic medical centers. The main findings of