



Original article

Alcohol and other substance use after bariatric surgery: prospective evidence from a U.S. multicenter cohort study

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Abstract

Background: Empirical evidence suggests Roux-en-Y gastric bypass (RYGB) increases risk of developing alcohol use disorder (AUD). However, prospective assessment of substance use disorders (SUD) after bariatric surgery is limited.

Objective: To report SUD-related outcomes after RYGB and laparoscopic adjustable gastric banding (LAGB). To identify factors associated with incident SUD-related outcomes.

Setting: 10 U.S. hospitals

Methods: The Longitudinal Assessment of Bariatric Surgery-2 is an observational cohort study. Participants self-reported past-year AUD symptoms (determined by the Alcohol Use Disorders Identification Test), illicit drug use (cocaine, hallucinogens, inhalants, phencyclidine, amphetamines,

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or marijuana), and SUD treatment (counseling or hospitalization for alcohol or drugs) presurgery and annually postsurgery for up to 7 years through January 2015.

Results: Of 2348 participants who underwent RYGB or LAGB, 2003 completed baseline and follow-up assessments (79.2% women, baseline median age: 47 years, median body mass index 45.6). The year-5 cumulative incidence of postsurgery onset AUD symptoms, illicit drug use, and SUD treatment were 20.8% (95% CI: 18.5–23.3), 7.5% (95% CI: 6.1–9.1), and 3.5% (95% CI: 2.6–4.8), respectively, post-RYGB, and 11.3% (95% CI: 8.5–14.9), 4.9% (95% CI: 3.1–7.6), and .9% (95% CI: .4–2.5) post-LAGB. Undergoing RYGB versus LAGB was associated with higher risk of incident AUD symptoms (adjusted hazard ratio or AHR = 2.08 [95% CI: 1.51–2.85]), illicit drug use (AHR = 1.76 [95% CI: 1.07–2.90]) and SUD treatment (AHR = 3.56 [95% CI: 1.26–10.07]).

Conclusions: Undergoing RYGB versus LAGB was associated with twice the risk of incident AUD symptoms. One-fifth of participants reported incident AUD symptoms within 5 years post-RYGB. AUD education, screening, evaluation, and treatment referral should be incorporated in pre- and postoperative care. (Surg Obes Relat Dis 2017;■:00–00.) © 2017 American Society for Bariatric Surgery. Published by Elsevier Inc. All rights reserved.

Keywords: Roux-en-Y gastric bypass; Gastric band; Obese; Substance use; Disorder; Addiction; Abuse; Treatment

Bariatric surgery is the most effective treatment for severe obesity, resulting in substantial and durable weight reduction, and improvement in or remission of obesity-related co-morbidities [1]. However, evidence is mounting that Roux-en-Y gastric bypass (RYGB) increases the risk of developing an alcohol use disorder (AUD) [2–5]. Pharmacokinetic studies provide evidence that RYGB, but not laparoscopic adjustable gastric band (LAGB), is associated with higher peak blood alcohol concentration, which is reached more quickly compared with presurgery status or nonsurgical controls [2,5]. Additionally, rodent models suggest that RYGB increases alcohol reward sensitivity via a neurobiological mechanism, independent of changes in alcohol absorption [2,5]. Hypothesized pathways include changes to the ghrelin system and altered genetic expression in regions of the brain associated with reward circuitry [2,5].

Studies utilizing medical records have documented overrepresentation of prior bariatric surgery, or specifically RYGB, among adults in substance use disorder (SUD) treatment programs [2,5,6]. However, findings from longitudinal studies of AUD-related outcomes before and after bariatric surgery are inconsistent [3–5], and few studies have long-term follow-up or evaluation of nonalcohol SUD [3,4], such that we have little understanding of whether the risk of AUD or nonalcohol SUD changes over time and the proportion of postsurgical patients that are ultimately affected. Recent literature reviews of AUD or SUD and bariatric surgery concluded there is a need for large, prospective, longitudinal studies that extend beyond 2 years, separate alcohol from other drug use, use standardized assessments, account for type of bariatric surgical procedure and identify risk factors for development of postsurgery AUD [3–5]. This study expands our prior work [7] and addresses these gaps in the literature by evaluating alcohol consumption, AUD symptoms, illicit drug use, and SUD treatment for 7 years after RYGB and LAGB, and

identifying factors associated with incident SUD-related outcomes.

Materials and methods

Design and patients

The Longitudinal Assessment of Bariatric Surgery-2 (LABS-2) study is a prospective observational cohort study of patients at least 18 years old undergoing a first bariatric surgical procedure as clinical care by participating surgeons at ten hospitals from 6 clinical centers throughout the United States [8]. LABS-2 had a target sample size of 2400 participants based on anticipated loss to follow-up of $\leq 25\%$ and the desire to detect small effect sizes (e.g., odds ratios of at least 2.0 for categorical outcomes) with 90% power. Patients were recruited by clinical research investigators and their research coordinators between February 2006 and February 2009. The institutional review board at each center approved the protocol, and participants gave written informed consent. The study is registered at ClinicalTrials.gov (NCT00465829).

Baseline assessments were conducted by research staff independent of clinical care after clearance for surgery [9]. Criteria for surgery eligibility differed by site and may have included screening for psychiatric disorders, including SUD [10,11]. Participants were informed that their responses were confidential, although informed consent specified that investigators could take steps to prevent serious harm. When participants reported having at least 5 drinks on a typical drinking day or illicit drug use, a safety protocol was triggered to assess the need for referral. Annual follow-up assessments were conducted within 6 months of the surgery anniversary date for 7 years or until January 31, 2015, whichever came first. Participants included in this report completed SUD-related measures at baseline and at least

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