

ASMBS Guidelines/Statements

ASMBS position statement on alcohol use before and after bariatric surgery

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Preamble

The following position statement is issued by the American Society for Metabolic and Bariatric Surgery (ASMBS) for the purpose of enhancing quality of care in bariatric surgery. In this statement, suggestions for management are presented that are derived from available knowledge, peer-reviewed scientific literature, and expert opinion. This was accomplished by performing a systematic review of currently available literature regarding alcohol consumption (both pre- and postoperatively) and subsequent alcohol metabolism in patients undergoing bariatric surgery. The intent of issuing such a statement is to provide objective information regarding alcohol use and metabolism in the bariatric patient population. The statement may be revised in the future should additional evidence become available.

The Issue

Recent studies have shown that some individuals are at risk for developing new-onset alcohol use disorder (AUD) after bariatric surgery or for relapsing into AUD after a period of abstinence or good control, especially after gastric bypass. There is significant debate regarding the prevalence of lifetime and current AUD in patients undergoing bariatric surgery and the effect of bariatric surgery on alcohol metabolism. This position statement is intended to provide a current review of the literature regarding alcohol use

before and after bariatric surgery, including the pharmacokinetic effect of surgery on alcohol metabolism.

The data

The scope of the problem

Individuals seeking obesity treatment report more psychopathology than obese individuals in the community [1]. The lifetime prevalence of substance abuse disorders may be higher among obese patients seeking bariatric surgery compared with obese patients in the community (32.6% versus 14.6%) [2,3]. However, very few patients (1.7%) meet diagnostic criteria for substance abuse disorder, including AUD, at the time of the initial psychosocial evaluation as defined by the 4th Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) [2]. Notably, DSM-IV previously described 2 distinct alcohol disorders: alcohol abuse and alcohol dependence; the most recent DSM-5 integrates these 2 into a single alcohol use disorder (AUD) with mild, moderate, and severe subclassifications (Table 1) [4].

The existing studies do not present a uniform picture regarding the overall prevalence of lifetime or current AUD in patients seeking bariatric surgery. The vast majority of the existing literature is retrospective, with small sample sizes, lack of control groups, and low response rates. There are also varying definitions of alcohol disorders (“high-risk” versus “misuse” versus “abuse/dependence”) in the bariatric surgery literature.

In 2008, a questionnaire-based study was performed to assess the prevalence of alcohol abuse and alcohol

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Table 1
Comparison between DSM-4 and DSM-5

DSM-4 In the past year have you:		DSM-5 In the past year have you:		
Any 1 = ALCOHOL ABUSE	Found that drinking—or being sick from drinking—often interfered with taking care of your home or family? Or caused job troubles? Or school problems?	1	Had times when you ended up drinking more, or longer, than you intended?	The presence of at least 2 of these symptoms indicates an alcohol use disorder (AUD). The severity of the AUD is defined as:
	More than once gotten into situations while or after drinking that increased your chances of getting hurt (such as driving, swimming, using machinery, walking in a dangerous area, or having unsafe sex)?	2	More than once wanted to cut down or stop drinking, or tried to, but couldn't?	
	More than once gotten arrested, been held at a police station, or had other legal problems because of your drinking? [*]	3	Spent a lot of time drinking? Or being sick or getting over other aftereffects?	
	Continued to drink even though it was causing trouble with your family or friends?	4	Wanted a drink so badly you couldn't think of anything else? [†]	
Any 3 = ALCOHOL DEPENDENCE	Had to drink much more than you once did to get the effect you want? Or found that your usual number of drinks had much less effect than before?	5	Found that drinking—or being sick from drinking—often interfered with taking care of your home or family? Or caused job troubles? Or school problems?	Mild: The presence of 2 to 3 symptoms
	Found that when the effects of alcohol were wearing off, you had withdrawal symptoms, such as trouble sleeping, shakiness, restlessness, nausea, sweating, a racing heart, or a seizure? Or sensed things that were not there?	6	Continued to drink even though it was causing trouble with your family or friends?	Moderate: The presence of 4 to 5 symptoms
	Had times when you ended up drinking more, or longer, than you intended?	7	Given up or cut back on activities that were important or interesting to you, or gave you pleasure, to drink?	Severe: The presence of 6 or more symptoms
	More than once wanted to cut down or stop drinking, or tried to, but couldn't?	8	More than once gotten into situations while or after drinking that increased your chances of getting hurt (such as driving, swimming, using machinery, walking in a dangerous area, or having unsafe sex)?	
	Spent a lot of time drinking? Or being sick or getting over other after-effects?	9	Continued to drink even though it was making you feel depressed or anxious or adding to another health problem? Or after having had a memory blackout?	
	Given up or cut back on activities that were important or interesting to you, or gave you pleasure, to drink?	10	Had to drink much more than you once did to get the effect you want? Or found that your usual number of drinks had much less effect than before?	
	Continued to drink even though it was making you feel depressed or anxious or adding to another health problem? Or after having had a memory blackout?	11	Found that when the effects of alcohol were wearing off, you had withdrawal symptoms, such as trouble sleeping, shakiness, restlessness, nausea, sweating, a racing heart, or a seizure? Or sensed things that were not there?	

Adapted from: National Institute on Alcohol Abuse and Alcoholism. Alcohol Use Disorder: A Comparison Between DSM-IV and DSM-5. NIH Publication 13-7999; July 2015. Available at: <http://pubs.niaaa.nih.gov/publications/dsmfactsheet/dsmfact.pdf>. Last accessed October 27, 2015.

^{*}Not included in DSM-5.
[†]New addition for DSM-5.

dependence in a sample of bariatric surgery patients [5]. This study, consisting of 70 questionnaires (reflecting a 28% response rate), found that 7.1% of patients had alcohol abuse or dependence before the surgery, which was unchanged postoperatively. They also found that a small number of individuals increase use after surgery. Overall, they concluded that <3% of individuals who undergo bariatric surgery will develop an alcohol dependence problem.

A retrospective review of a large electronic database was performed at a comprehensive substance abuse treatment facility to estimate the prevalence of bariatric surgery history among substance abuse treatment admissions [6]. This study revealed that approximately 2%–6% of substance abuse admissions (including drugs and alcohol) were positive for bariatric surgery history. The bariatric patients reported consuming more drinks than the nonbariatric patients. The authors concluded that a bariatric surgery history may be overrepresented in substance abuse programs.

King et al. evaluated a prospective cohort (Longitudinal Assessment of Bariatric Surgery – LABS-2) of 2458 adults undergoing bariatric surgery to determine the prevalence of preoperative and postoperative symptoms of AUD. They observed that the prevalence of AUD symptoms did not differ significantly from 1 year before to 1 year after bariatric surgery (7.6% versus 7.3%; $P = .98$) but was significantly higher in the second postoperative year (9.6%; $P = .01$). They found that patients with preoperative regular alcohol consumption (≥ 2 drinks/week), AUD symptoms, recreational drug use, smokers, less social support, male gender, and those undergoing gastric bypass had a higher risk of postoperative AUD symptoms [7]. Of note, the increased risk did not occur until after the first postoperative year.

A retrospective review of 51 individuals who underwent weight loss surgery was performed to determine the prevalence of current and lifetime AUD, based on the Structured Clinical Interview for DSM-IV [8]. They found that the prevalence of lifetime AUD was 35.3% ($n = 18$)—comparable to the general population. Although the magnitude of weight loss was not associated with the development of AUD, individuals with lifetime history of AUD may be at increased risk for relapse ($P < .05$). They also found that patients undergoing gastric bypass were significantly more likely to develop a current AUD compared with those undergoing gastric banding (21% versus 0%; $P < .05$).

In another study, questionnaires were given to 155 patients preoperatively and then again at 1, 3, 6, 12, and 24 months after surgery (100 bypass and 55 band patients) to assess substance abuse [9]. Patients reported significant increases in the alcohol use frequency 24 months after surgery (from 2.3% baseline to 3.1% at 2 years; $P < .001$). Patients who underwent gastric bypass surgery reported significant increase in the frequency of alcohol use from baseline to 24 months after surgery ($P = .01$). However, the response rate for the survey was 24% at 24-month follow-up.

More recently, Wee et al. conducted annual interviews in 541 bariatric surgery patients, including high-risk alcohol use based on a modified version of the Alcohol Use Disorders Identification Test-Consumption [10]. Retention rates at 1 and 2 years were 69% and 63%, respectively. At 1 year, 13% reported high-risk drinking compared with 17% at baseline ($P = .10$). At 2 years, 13% reported high-risk drinking compared with 15% baseline ($P = .39$). At 1 and 2 years, 7% and 6% of patients, respectively, reported new high-risk drinking. However, at both time points, more than half of those who reported high-risk drinking at baseline no longer did so. A larger proportion of gastric bypass patients (71%) reported amelioration in high-risk drinking than gastric banding (48%) at year 1; however, this difference was not statistically significant ($P = .07$). At year 2, this difference dissipated (50% versus 57%). They concluded that although 7% of patients reported new high-risk alcohol use 1 year after bariatric surgery, more than half who reported high-risk alcohol use before surgery discontinued high-risk drinking.

The prospective, controlled Swedish Obese Subjects (SOS) study followed 2010 bariatric surgery patients (68% vertical banded gastroplasty, 19% gastric banding, 13% gastric bypass) and 2037 matched controls to investigate whether bariatric surgery is associated with alcohol problems over the long term (8–22 years) [11]. They found that most patients (93% of the surgery group and 96% of the control group) reported “low risk” alcohol consumption, based on World Health Organization definitions. They found that compared with controls, the gastric bypass and gastroplasty patients had an increased risk of alcohol abuse diagnoses (adjusted hazard ratios [HR] of 4.97 ($P < .001$) and 2.23 ($P = .001$), respectively). Similar to other studies, they found that male sex (HR 1.86; $P = .013$), baseline smoking (HR 2.76; $P < .001$), and baseline alcohol consumption (per 10 g/d HR 1.80; $P < .001$) were independently related to an increased likelihood of alcohol abuse diagnoses after surgery.

Another study from Sweden consisting of 11,115 bariatric surgery patients (37% gastric bypass, 63% restrictive procedures) found that at a mean follow-up of 8.6 years, postoperatively, patients undergoing gastric bypass had 2-fold increased risk of inpatient care for alcohol abuse compared with those who underwent restrictive surgery (HR 2.3; 95%CI 1.7–3.2) [12].

Pharmacokinetic changes after bariatric surgery

In a 2007 study, a web-based questionnaire was designed to identify postoperative changes in alcohol use and effects [13]. This study, consisting of 318 self-selected, postoperative bariatric patients (94% females; 97% gastric bypass), revealed that 83% of patients consumed alcohol either occasionally or regularly. Most bariatric patients (84%) who consumed at least one alcoholic beverage weekly claimed that they were

more sensitive to the effects of alcohol postoperatively compared with preoperatively. Patients reported a noticeable change in the effects of alcohol after gastric bypass specifically, with 29% stating that the effects of alcohol persisted for a longer period of time compared with preoperatively. However, many (52%) claimed that the effects of alcohol lasted for a shorter time than preoperatively. Some patients (28%) reported difficulties in controlling alcohol intake after gastric bypass surgery.

Studies have shown accelerated alcohol absorption (shorter time to reach maximum concentration), higher maximum alcohol concentration, and longer time to eliminate alcohol after gastric bypass surgery in men and women [14–16]. One physiologic explanation may be that rapid emptying of liquids from the gastric pouch inherent in gastric bypass surgery may accelerate absorption of alcohol in the jejunum [17]. Another explanation may be that bypassing the stomach, a main source of alcohol dehydrogenase, facilitates rapid absorption [18].

Hagedorn et al. compared 17 controls and 19 postgastric bypass patients after consuming 5 oz of red wine to assess the change in alcohol metabolism [15]. Alcohol breath analysis was performed every 5 minutes. They found peak alcohol breath level of .08% in the bypass patients and .05% in the control group ($P = .004$). The gastric bypass group needed 108 minutes to reach alcohol breath level of 0 versus 72 minutes in the control group ($P = .001$). However, the gastric bypass patients didn't experience more symptoms than the control group.

A prospective crossover study of 19 gastric bypass patients found that postbypass patients have significantly higher peak breath alcohol content after ingesting alcohol (5 oz. red wine) at both 3 months (.059%; $P = .0003$) and 6 months (.088%; $P = .0008$) postoperatively than matched preoperative controls (.024%) [16]. Patients also took considerably more time to return to sober at 3 months (61 minutes) and 6 months (88 minutes; $P = .01$) than preoperatively (49 minutes).

Another study examined the rate and extent of alcohol absorption in 5 female gastric bypass patients, particularly in the first 10 minutes after a moderate dose of alcohol (.3 mg/kg) [19]. This study revealed that all 5 patients reached blood alcohol levels that exceeded the legal driving limit (.08%) within 10 minutes (as a reference a "standard" drink contains ~14 g alcohol).

A study evaluating alcohol absorption before and after sleeve gastrectomy ($n = 12$) found higher postoperative blood alcohol values (2.02 g/L postoperatively versus .87 g/L preoperatively; $P = .001$) and prolonged normalization for equivalent amounts of alcohol postoperatively (at 175 minutes, blood alcohol level was 0 in preoperative patients versus .26 g/L in postoperative patients; $P = .027$) [20]. The authors concluded that alcohol absorption was considerably modified after sleeve gastrectomy with higher and

longer blood alcohol values for equivalent amounts of alcohol.

However, a more recent study evaluated alcohol metabolism longitudinally in 9 patients undergoing gastric banding and 7 patients undergoing sleeve gastrectomy [21]. In patients undergoing gastric banding, mean peak breath alcohol content (BAC) did not change significantly: .034% preoperatively versus .037% at 3 months postoperatively ($P = .873$) and .035% at 6 months postoperatively ($P = .668$). They also found an insignificant increase in time to sober from preoperative values (68 ± 11.7 min) to 3 months (78 ± 8.5 min) and 6 months (84 ± 9.4 min). In patients undergoing sleeve gastrectomy, peak BAC also did not change significantly: .031% preoperatively versus .029% at 3 months postoperatively ($P = .323$) and .033 at 6 months postoperatively ($P = .731$). They also found an insignificant increase in time to sober from preoperative values (65 ± 14.7 min) to 3 months (74 ± 18.1 min) and 6 months (76 ± 9.9 min). Combining both restrictive procedures, they found no difference in peak BAC or time to sober from preoperative values (.033%, 67.8 min, respectively) to 3 months (.032%, 77.1 min, respectively, $P = .421$) or 6 months (.035%, 81.2 min, respectively, $P = .198$). These authors concluded that sleeve and band patients do not share the same altered alcohol metabolism seen in gastric bypass patients.

Association between weight loss and alcohol use

Several studies report a correlation between alcohol consumption and increased postoperative weight loss. Dixon et al. found that patients with an intake of >100 g/week lost more weight compared with those with no alcohol intake (50.4% versus 40% excess weight loss (EWL); $P < .005$) [22]. Black et al. also reported a trend toward increased weight loss in association with alcohol abuse/dependence [23]. Separately, Heinberg et al. reported significantly increased %EWL in patients with a substance abuse history that was fully remitted for at least 1 year preoperatively at 6 months (71% versus 50%; $P < .01$) and 9 months (81% versus 56%; $P < .01$) postoperative [24].

Another study of 80 patients undergoing gastric bypass found higher %EWL at 2 years in those who had received treatment for substance abuse in the past, before surgery (79% versus 67%; $P < .05$) [25]. They concluded that a history of substance abuse or having received treatment or self-initiated treatment for substance abuse should not be a contraindication to bariatric surgery and may actually be prognostic of favorable outcomes. Patients who have successfully ceased problematic drug or alcohol use for a sustained period of time may have better outcomes, given their history of successful, sustained behavior change in the past.

Table 2
Summary of the literature of AUD/high-risk drinking before and after bariatric surgery

Author	Year	AUD/High-risk Drinking	n	Results
Ertelt et al. [5]	2008	7.1% preoperative; 2.9% postoperative (new onset)	70	Questionnaires, 28% response
Saules et al. [6]	2010	2%–6% of admissions to substance abuse facility positive for bariatric surgery history	54 (matched)	Relative to matched controls, the alcohol dependent bariatric surgery patients consumed more drinks.
King et al. [7]	2012	7.6% preoperative; 7.3% postoperative (1 year), 9.6% postoperative (2 years)	1945	Prospective cohort study (LABS); AUD associated with male, young age, smoking, preoperative AUD, drug use, and undergoing RYGB.
Suzuki et al. [8]	2012	35.3 lifetime, 11.8% current	51	Higher current AUD in patients with lifetime AUD and in patients undergoing RYGB.
Conason et al. [9]	2013	2.3% baseline; 3.2% postoperative (2 years)	155	Higher frequency of alcohol use in RYGB patients; however, low response rate at 2 years (24%).
Wee et al. [10]	2014	1 year: 13% reported high-risk drinking versus 17% baseline ($P = .10$) 2 year: 13% reported high-risk drinking versus 15% baseline ($P = .39$)	375 (1 year); 328 (2 years)	At 1 and 2 years, 6% and 7% reported new high-risk drinking. At both time points, more than half of those who reported high-risk drinking at baseline no longer did so.
Svensson et al. [11]	2013	93% of surgery patients had alcohol consumption classified as “low-risk”	2010 (matched)	Compared with controls, RYGB patients had an increased risk of alcohol abuse/consumption.
Ostlund et al. [12]	2013	4.4%–4.7% incidence of inpatient treatment of alcohol abuse preoperative	11,115	Postoperatively: patients undergoing gastric bypass had more than double the risk (HR 2.3, 95% CI 1.7–3.2) of inpatient care for alcohol abuse compared with restrictive procedures.

Abbreviations: AUD = alcohol use disorder; CI = confidence interval; HR = hazard ratio; LABS = Longitudinal Assessment of Bariatric Surgery; RYGB = Roux-en-Y gastric bypass.

Summary and recommendations

1. There is conflicting data as to the lifetime and current prevalence of AUD in patients seeking weight loss surgery (Table 2). Most studies indicate that AUD affects a minority of bariatric surgery patients. Studies have shown that some individuals are at risk for AUD relapse or for developing new-onset AUD after weight loss surgery, especially after gastric bypass. Other studies have shown a decrease in high-risk drinking after surgery compared with baseline.
2. Based on current studies, gastric bypass surgery is associated with:
 - Accelerated alcohol absorption (shorter time to reach maximum concentration)
 - Higher maximum alcohol concentration
 - Longer time to eliminate alcohol in both men and women
 - Increased risk for development of AUD
3. The data are less clear regarding altered pharmacokinetics after sleeve gastrectomy and there is no evidence that alcohol absorption is affected by gastric banding. Given the recent increase in popularity of sleeve gastrectomy, more studies regarding the pharmacokinetic effects of sleeve gastrectomy on alcohol metabolism are needed.

4. Patients undergoing bariatric surgery should be screened and educated regarding alcohol intake both before and after surgery. Active AUD is considered a contraindication by most programs and in published guidelines [26]. Adequate screening, assessment, and preoperative preparation may help decrease the risk of AUD in bariatric surgery patients [27]. A period of sustained abstinence with treatment is indicated before weight loss surgery. A history of AUD is not a contraindication to bariatric surgery. However, patients should be made aware that AUD can occur in the long term after bariatric surgery.

Disclosures

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