ELSEVIER

Surgery for Obesity and Related Diseases ▮ (2017) 00–00

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

Completion rates in a preoperative surgical weight loss program by tobacco use status

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Received December 13, 2016; revised January 20, 2017; accepted February 6, 2017

Abstract

Background: Weight loss surgery (WLS) is an effective treatment for obesity and its associated conditions, but given the known benefits of preoperative tobacco abstinence on reducing postoperative complications, many WLS programs require tobacco abstention before surgery.
Objectives: To evaluate the association between tobacco use and WLS program completion.
Setting: A 548-bed university hospital in Pennsylvania with a nationally accredited comprehensive WLS program.
Methods: A retrospective chart review was conducted to identify patients enrolled in a preoperative WLS program from January 1, 2013 to April 3, 2015. Participants were categorized as nontobacco users (NTU) or current tobacco users (CTU) based on self-report at assessment. Tobacco users were required to quit before scheduling surgery and abstinence was verified using serum cotinine (<7 ng/mL).
Results: A total 620 patients enrolled in the preoperative program; 16.7% were tobacco users, 89% of whom were cigarette smokers. A total of 57.4% (n = 356) completed the program overall and there was a significant difference in completion by tobacco use status (62.4% NTU completed versus 32.7% CTU, $P < .001$). Among those who dropped out, 54% did so after attending 2 visits. In addition to not using tobacco, female gender, white race, and no prior psychiatric treatment were significant predictors of program completion (all P values $< .02$).
Conclusion: Current tobacco users dropped out of the preoperative program at almost twice the rate of nontobacco users. Weight loss surgery programs should offer evidence-based tobacco cessation interventions to improve access to care for obesity treatment. (Surg Obes Relat Dis 2017;▮:00–00.)

Keywords: Surgical weight loss; Tobacco cessation; Obesity

Tobacco use and obesity are independently associated with poor health outcomes and are the 2 leading causes of death and disability in the United States [1]. Tobacco use negatively impacts nearly every organ of the body, causing increased risk for heart disease, cancer and chronic obstructive pulmonary disease [2]. Currently 21.3% of American adults use tobacco with the vast majority being cigarette smokers [3]. Obesity is associated with a number of comorbidities and increased health risks such as diabetes,

This study was not funded by any source. JF, SV, and JY are primarily funded by the National Institute on Drug Abuse of the National Institutes of Health. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. JF has done paid consulting for pharmaceutical companies involved in producing smoking cessation medications, including GSK, Pfizer, Novartis, J&J, and Cypress Bioscience. AR, SV, and JY have no disclosures related to this publication.

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http://dx.doi.org/10.1016/j.soard.2017.02.004
1550-7289/

heart disease, osteoarthritis, obstructive sleep apnea, and some cancers [4]. A total of 35.1% of American adults are obese [5].

Among cigarette smokers, an estimated 26.3% also have obesity [6] and though obesity and smoking independently contribute to an elevated risk for mortality [7,8], their co-occurrence further increases mortality risk [9,10]. Weight loss surgery (WLS) is the most effective and durable treatment for obesity and significantly improves or resolves a number of serious medical conditions such as diabetes, hyperlipidemia, hypertension, and obstructive sleep apnea [11,12].

Patients often present to WLS programs with multiple co-morbidities, which makes addressing modifiable risk factors before surgery an important area of focus during the preoperative period. Cigarette smoking in particular has consistently been identified as a predictor for postoperative complications such as infection, prolonged intubation, pneumonia, longer length of stay, and ischemia-related effects [13–15], hence smoking cessation is clearly beneficial.

Unfortunately, as with weight loss, quitting tobacco use is not an easy task and is dependent on the intensity of treatment. For instance, whereas receiving "usual care" consisting of brief advice to quit, an estimated 9% of smokers who initiate a "quit attempt" actually succeed in remaining tobacco-free a year later, compared with 35% who remain tobacco-free while receiving intensive treatment and a medication [16,17]. That a large proportion of smokers do not succeed in quitting raises the question of whether those seeking WLS in programs that require preoperative cessation may not succeed in achieving obesity treatment because they cannot quit. The purpose of this study is to evaluate the association between tobacco use and WLS program completion.

Methods

This study is a retrospective chart review of adults aged 18+ who entered the WLS program from January 1, 2013 to April 3, 2015. Standard clinical practice guidelines and additional hospital program criteria were used to determine initial surgical qualification.

WLS clinical practice guidelines recommend surgery for patients who have made prior attempts to lose weight using behavioral or medication interventions, have a body mass index (BMI) $\geq$35 with other co-morbidities, or have a BMI $\geq$40 with or without co-morbidities. Additional hospital program criteria include quitting tobacco use (confirmed with serum cotinine), and attending preoperative visits with a multidisciplinary team (nurse, registered dietician, psychologist). Patients are also asked to engage with the program by making some progress toward lifestyle modification in preparation for surgery (e.g., positive dietary modifications, some weight loss, and increased physical activity). The semistructured program includes 6 monthly sessions over a 6-month period, or 2 monthly sessions over a 3-month period, though this process is flexible. Fewer or additional sessions may be necessary to meet insurance requirements or to allow patients time to make progress toward behavioral and lifestyle modifications. Patients starting the program attend an informational session where program requirements are explained already, including informing tobacco users that they will be required to provide biochemically validated tobacco abstinence. Interested patients then complete and submit a self-reported intake questionnaire, which is reviewed by the program team and patients who qualify are scheduled for their initial program visit.

Study inclusion criteria

This analysis begins at the point where patients are scheduled for their initial visit. All those scheduled (attenders and nonattenders) were included in the analysis with the exception of those who were $<$18 years old (n = 11) and those with missing tobacco use status (n = 3).

Baseline self-reported intake questionnaire

All baseline information was extracted from the participants' self-reported intake questionnaires including basic demographic information (age, race, education level), height and weight, and the number and type of prescribed medications. A history of psychological treatment was assessed using the following 2 questions: "Are you currently being treated for a psychological disorder?" (yes/no) and "Have you ever been treated for a psychological disorder?" (yes/no). Participants responding "yes" to either question were considered to have received psychological treatment. Prior suicide attempts were assessed by asking, "Have you ever attempted suicide?" (yes/no). Alcohol use was assessed with the following questions "Do you drink alcoholic beverages?" (yes/no) and if yes, "How many drinks per week?"

Tobacco use status. Tobacco use status was determined by self-report on the intake form using the questions "Do you smoke?" (yes/no) and "Do you use chewing tobacco?" (yes/no). Participants who said "no" to both questions were considered nontobacco users (NTU). Participants who said "yes" to either of these questions were considered current tobacco users (CTU). If participants indicated that they had been a former tobacco user, they were coded as NTU. Patients who smoked were also asked how many packs per day they smoked. The number of cigarettes smoked per day (CPD) was calculated by multiplying the packs per day by 20 (the number of cigarettes in a standard pack).

Program progression and program completion

Days in the program was calculated using the number of days between the date the participant was scheduled for