

# Obesity as Defined by Body Mass Index Is Not a Risk Factor for Post-Operative Recurrence in Crohn's Disease

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## Introduction

Obesity is a global epidemic and a condition which can lead to development of chronic illnesses such as diabetes, cardiovascular disease, and cancer, and has also been proposed as a risk factor for development and complications of inflammatory bowel diseases (IBD) such as Crohn's disease (CD) and ulcerative colitis. In patients with CD, more than 70% require surgery due to stricturing and/or penetrating complications, and the risk for endoscopic recurrence within five years is as high as 60-90%. Obesity has not been studied extensively as a risk factor for postoperative recurrence (POR) of CD. We hypothesized that obesity as defined by BMI is a risk factor for POR.

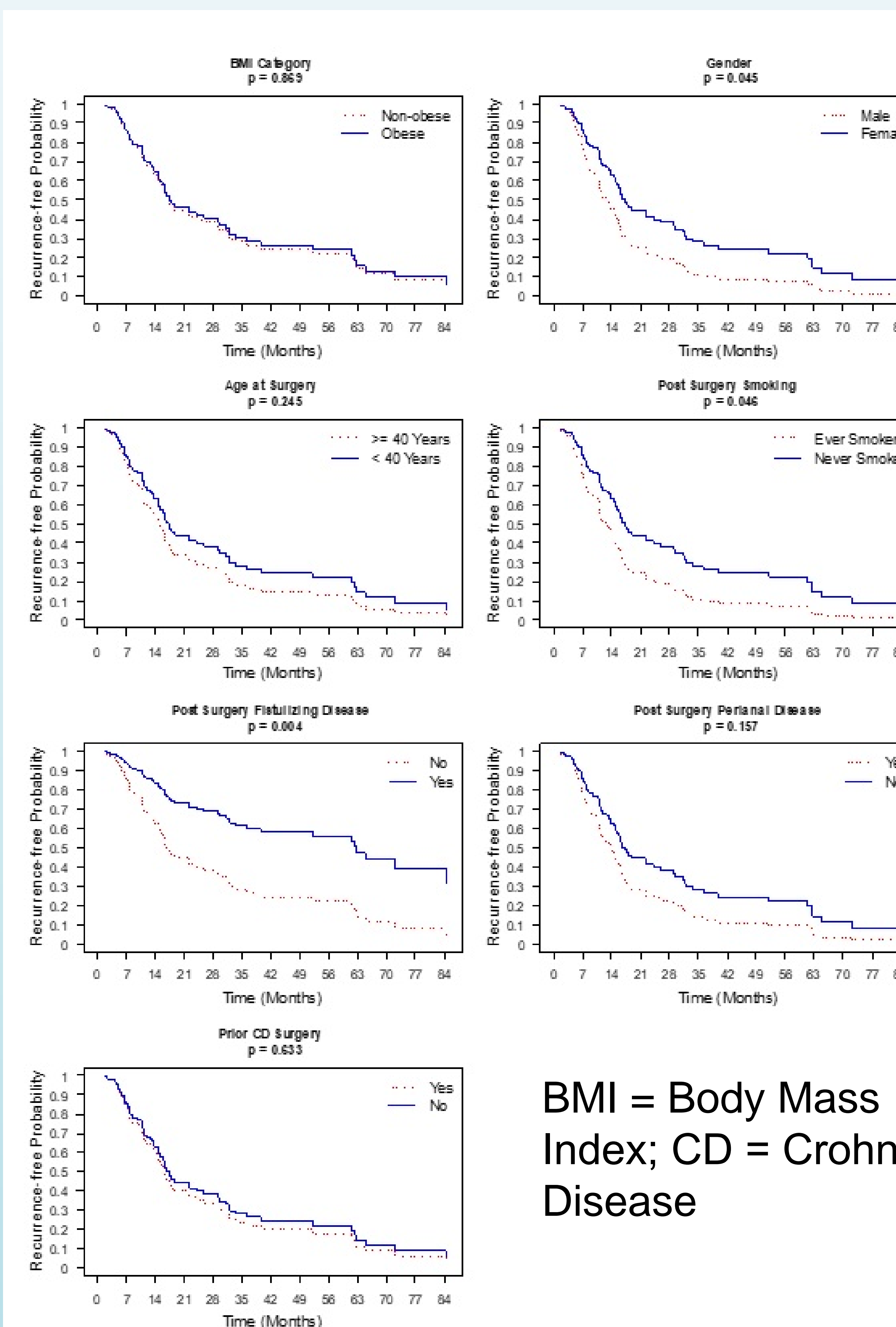
## Methods

A retrospective study was performed at a university medical center following Institutional Review Board approval, and patients who had undergone CD-related surgery from January 2008 to July 2018 were included. Patients initiated on biologic therapy postoperatively were excluded. Data on patient demographics and covariates were collected, and the presence and timing of endoscopic, surgical, and/or radiographic recurrence were recorded. A Cox proportional hazard (PH) model was fitted to model the risk of POR of CD in obese patients, controlling for patient characteristics and risk factors.

## Results

A total of 82 patients were included in the analysis, one-fifth of whom were obese (n=18, 22%). Obesity as defined by a BMI  $\geq 30$  was not an independent risk factor for the development of POR in either the unadjusted or the adjusted model.

Figure 1. Six-year postoperative adjusted recurrence-free probabilities for each variable in the model.



BMI = Body Mass Index; CD = Crohn's Disease

## Results continued

Among the other examined variables, the risk of POR among males was 70% higher than in females (HR=1.70, 95% CI: 1.01, 2.86). Patients who smoked after surgery had a significantly higher risk of POR as compared to non-smokers (HR=1.74, 95% CI: 1.01, 3.01), while the presence of prior/current fistulizing disease reduced the recurrence of CD risk by more than 60% (HR=0.39, 95% CI: 0.20, 0.73). Cox PH models using BMI either as a continuous or categorical variable yielded similar results.

## Discussion

Obesity as defined by BMI was not predictive of POR risk in our study, which may have been limited due to sample size and proportion of obese patients. The need to explore other measures of obesity in CD still exists, as identification of modifiable risk factors may help to prevent POR. Other measures of adiposity such as visceral fat area, visceral adipose tissue (VAT) and the ratio of VAT to total body fat mass have shown promise in predicting obesity-associated risks in the IBD population.

