
BACKGROUND
Decisions between medical and surgical management of Crohn's disease (CD) incorporate risk assessments for potential complications of each therapy. Analytic morphomics is a novel method of image analysis providing quantifiable measurements of body tissue composition, characterizing body fat more comprehensively than body mass index alone. The aim of this study was to determine the risk factors associated with postoperative complications in CD, incorporating fat composition analysis using analytic morphomics.

METHODS
We performed a retrospective review of adults undergoing bowel resection for CD between 2004 and 2011 at a single center. Computed tomography obtained within 30 days prior to surgery underwent morphomic analysis for fat characterization. Postoperative infectious complications were defined as the need for a postoperative abdominal drain, intravenous antibiotics, or reoperation within 30 days. Bivariate and multivariate analyses using logistic regression were used to generate a prediction model of infectious complications.

RESULTS
A total of 269 subjects met selection criteria; 27% incurred postoperative infectious complications. Bivariate analysis showed hemoglobin, albumin, surgical urgency, high-dose prednisone use, and subcutaneous-to-visceral fat volume distribution as predictors of complications. Body mass index, anti-tumor necrosis factor alpha therapies, and immunomodulator use were not predictors of complication. Multivariate modeling demonstrated a c-statistic of 0.77 and a negative predictive value of 81.1% with surgical urgency (odds ratio = 2.78; 95% confidence interval, 1.46-6.02; P = 0.004), subcutaneous-to-visceral fat distribution (odds ratio = 2.01; 95% confidence interval, 1.20-3.19; P = 0.006), and hemoglobin (odds ratio = 0.69; 95% confidence interval, 0.55-0.85; P = 0.001) as predictors of infectious complication.

CONCLUSIONS
Fat subtype and distribution are predictive of postoperative infectious complications after bowel resection for CD. Analytic morphomics provides additional body composition detail not captured by body mass index.