

Prospective Analysis of the Resolution of Asthma After Laparoscopic Gastric Bypass Patients

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INTRODUCTION

A dose dependent relationship between obesity and asthma has been reported in several epidemiologic studies. It has been proposed that interventions targeting obesity may reduce the incidence of asthma. Given that weight reduction surgery remains the only successful therapy that provides the morbidly obese with significant and sustained weight loss, this study seeks to evaluate the effect of surgical weight loss on asthma status.

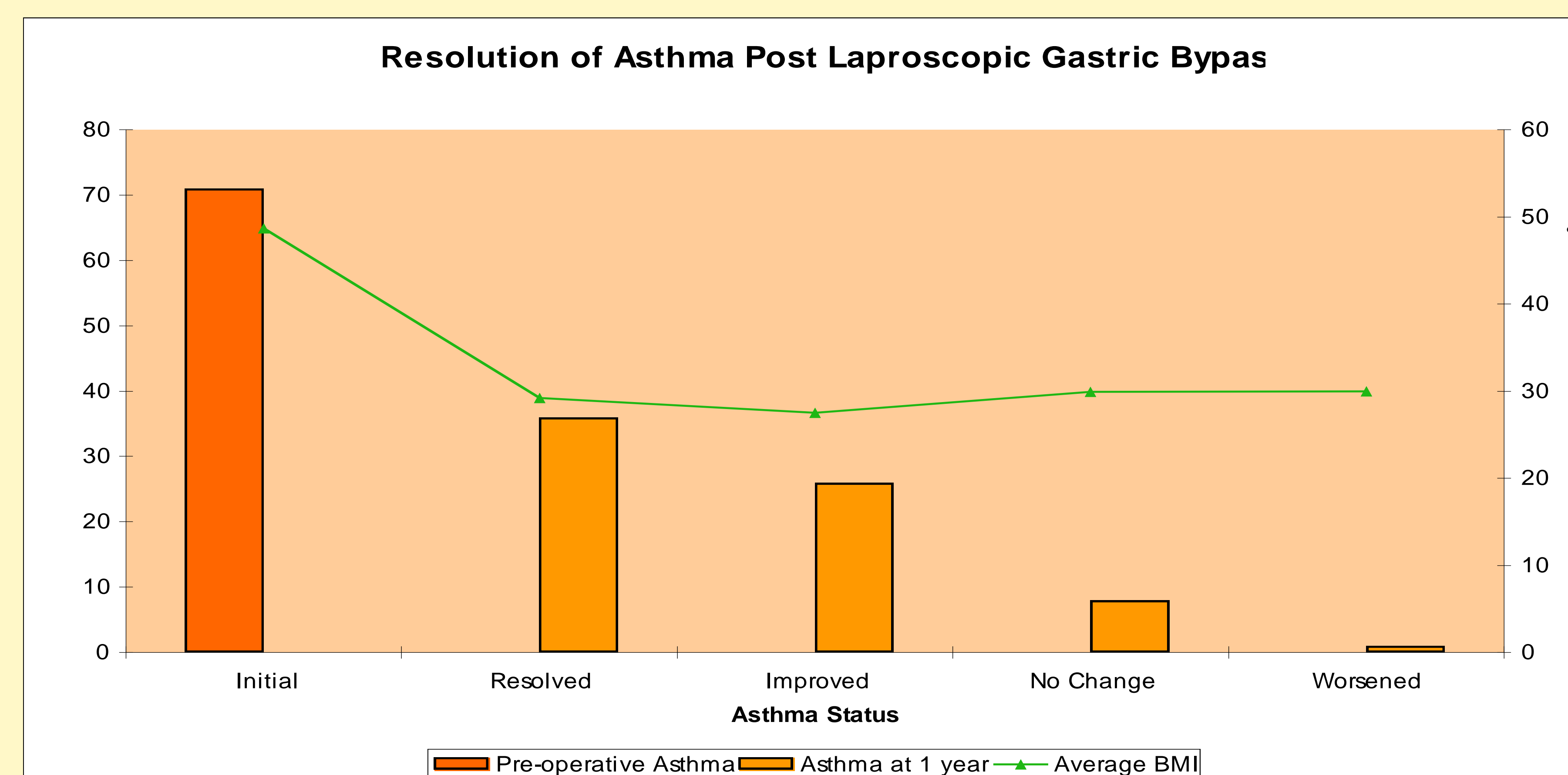
METHODS

We analyzed data on 356 patients who underwent laparoscopic Roux-en-Y gastric bypass at our institution between August 2001 and February of 2006. Asthma status was self-reported at the initial standardized pre-operative evaluation process and reassessed one-year after the surgery for resolution, improvement, no change, or worsening.

RESULTS

All operations were completed laparoscopically. There was no postoperative or perioperative mortality. Of the 356 patients in our bariatric cohort, 106 reported asthma pre-operatively. Of those 106 patients with asthma, 71 attended their one year follow-up and were eligible for analysis. Within the group of 71 patients with complete data 36 patients reported resolution (50.7%), 26 reported improvement (36.6%), 8 reported no change (11.2%) and 1 reported worsening (1.5%). Excluding asthma patients with incomplete data, the prevalence of asthma within the cohort dropped from 22.1% to 10.9% ($p=0.003$). A subset analysis was performed to evaluate resolution of asthma in patients with and without Gastroesophageal Reflux Disease (GERD). In the 71 patients with asthma, 50 reported a history of GERD and of those 26 reported resolution of asthma (52%), 18 reported improvement (36%), 5 reported no change (10%), and 1 reported worsening (2%). Twenty-one asthma patients denied a history of GERD and of those 10 reported resolution (48%), 8 reported improvement (38%), 3 reported no change in their asthma status (14%), and none reported worsening. Analysis showed no significant difference in the asthma outcomes between patients with a history of GERD and those without ($p=0.868$).

| Variable | Pre-operative Asthma | Asthma Patients 1 Year Post-RYGB |
|-------------------------------------|----------------------|----------------------------------|
| Number of Patients Reporting Asthma | 71 | 35 |
| Mean BMI (kg/m ²) | 48.7 | 30.8 |
| Weight Loss in One Year (%) | - | 69.8 |
| Resolved or Improved (%) | - | 87 |



DISCUSSION

Obesity is a growing epidemic in the United States and accounts for roughly 7 % of US health care expenditures(1,2,3,4). Many epidemiologic studies have observed the concomitant increase in both obesity and asthma and cross-sectional, as well as longitudinal studies have documented the link between these two chronic disorders. The prevalence of obesity in asthmatics is significantly higher than in adults from the general population (5). Clinical trials in weight reduction via lifestyle modification have shown modest success in terms of improvement of asthma symptoms and health status. In one study an 11% reduction in weight was associated with a 7.6%improvement in FEV1 (4). However, medical treatment for severe obesity is largely ineffective (6) resulting in premature morbidity and mortality in majority of morbidly obese individuals (7). This, in combination with the fact that asthma pharmacotherapy in obese patients is often suboptimal, supports the association between uncontrolled asthma and obesity (8) contributing to more than 14 billion dollars of healthcare usage every year (9). Surgery has been shown to be the only available treatment modality that provides severely obese patients with significant and sustained weight loss (10,11,12,13,14). It is our observation that the dramatic weight loss achieved with RYGB (37.5% in one year) is associated with improvement of comorbid asthma symptoms and is a treatment option that should be considered in the morbidly obese. We look forward to further analysis of follow-up pulmonary function testing and adjustments in medication regiments.

CONCLUSION

Bariatric surgery patients previously diagnosed with asthma showed significant improvement in their asthma symptoms one year after surgery. Our results confirm those of previous studies suggesting that obesity is strongly associated with asthma. Furthermore, our results showed that the improvement in asthma was irrespective of the patient's GERD status. Gastric bypass induced weight loss significantly reduced the prevalence of asthma in a morbidly obese population.

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