

# Bariatric Procedures Unmasking Celiac Disease

**Keywords:** Celiac disease; Bariatric surgery

## Abstract

Celiac disease is being recognized more frequently but often remains undiagnosed. Celiac disease patients are increasingly obese. Major operation in patients with celiac disease may cause symptoms which lead to the diagnosis, termed "unmasking." We report three patients undergoing bariatric procedures which led to unmasking.

Three patients undergoing bariatric procedures for morbid obesity were subsequently diagnosed with celiac disease. A 42-year-old female underwent gastric bypass. Her body mass index was 77 preoperatively and open gastric bypass with a 150 cm Roux Limb was performed. At 18 months her body mass index was 51 and she had no diarrhea. A malabsorptive revision moved the Roux Limb connection to 60 cm proximal to the cecum. One year later she had a body mass index of 36 and diarrhea. Persistent diarrhea and weight loss in the following two years led to serologic diagnosis of celiac disease. On a gluten-free diet her diarrhea improved and her weight increased 6 kg. A 30-year-old female underwent gastric band. Her body mass index was 46 preoperatively. After multiple adjustments a band slip repair was performed at two years and the band was removed at four years. Body mass index was 42 at that time. Within a few months she developed early satiety, abdominal pain and distension, and hepatomegaly. Serology and histology diagnosed celiac disease and a gluten-free diet was instituted. A 36-year-old female underwent biliopancreatic diversion. Her body mass index was 48 preoperatively and decreased to 22 in two years. Persistent diarrhea led to serologic evaluation for celiac disease. She was started on a gluten-free diet and her body mass index increased to 27 at five years and 30 at ten years postoperatively.

Celiac disease should be suspected and evaluated in patients who develop suggestive symptoms after bariatric procedures, including those associated with malabsorption.

## Abbreviations

CD: Celiac Disease; GFD: Gluten-Free Diet; GBP: Gastric Bypass; BMI: Body Mass Index; PBD: Pancreatic Biliary Diversion; DH: dermatitis herpetiformis

## Introduction

Celiac disease (CD) is a disorder characterized by intestinal inflammation and villus atrophy induced by ingestion of rye, wheat and barley in genetically susceptible individuals. The prevalence of CD is approximately 0.7% [1]. The classic clinical presentation of CD is chronic diarrhea, malabsorption and weight loss; however, up to 13% of patients are overweight [2,3]. Furthermore, a gluten-free diet (GFD) helps patients regain lost weight and may also cause patients to become overweight [3-5].

CD is often silent and undiagnosed. Patients with undiagnosed CD may become symptomatic following operation. Subsequent evaluation then leads to the diagnosis, termed "unmasking" [6]. Initial reports of this phenomenon occurred following upper gastrointestinal procedures such as fundoplication and gastrectomy [6]; however, unmasking has been subsequently described following a variety of intraabdominal and extraabdominal procedures [7-14].



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There have been few reports of CD diagnosed in obese individuals after bariatric procedures [4,7,14]. We report three further patients undergoing bariatric procedures which led to unmasking of CD.

## Methods

We performed a retrospective review of 512 adult patients (>19 years of age) diagnosed with CD over a 22-year period from 1990 to 2012 at our institution [15]. We identified three patients who had the initial diagnosis of CD made following a bariatric procedure. During this period 1,884 bariatric procedures were performed at our institution.

## Results

A 42-year-old female underwent gastric bypass (GBP). Her body mass index (BMI) was 77 preoperatively and open GBP with a 150 cm Roux Limb was performed. Intestinal histology was not abnormal. Eighteen months following GBP her BMI was 51 and she had no diarrhea. A malabsorptive revision was performed, moving the Roux Limb connection to 60 cm proximal to the cecum, shortening the common channel. One year after revision, she had a BMI of 36 and had developed diarrhea. Persistent diarrhea, malabsorption of fat soluble vitamins, and weight loss (BMI 30) two years after revision led to serologic (antigliadin antibody IgA 32EU, >25 positive) diagnosis of CD. On a GFD, her diarrhea improved and her weight increased 6 kg back to a BMI of 32. Repeat intestinal biopsy at that time revealed normal histology. Eight years later she has maintained a BMI of 28.

A 30-year-old female underwent placement of a gastric band. Her BMI was 46 preoperatively. After multiple adjustments a band slip repair was performed two years later. The band was eventually removed at four years after placement. BMI was 42 at that time. Within a few months she developed early satiety, abdominal pain and distension and hepatomegaly. Serology (tissue transglutaminase IgA 74 U/ml (normal <30) and IgA 343 mg/dL) and histology (villous blunting) led to a diagnosis of CD. A GFD was instituted and her symptoms improved. Her BMI was 43 one year later.

A 36-year-old female underwent pancreaticobiliary diversion (BPD) at an outside institution. Her BMI was 48 preoperatively. Her BMI decreased to 22 over the next year. This extreme weight loss combined with her persistent, severe diarrhea led to serologic (negative antigliadin antibody IgA (3 U/ml) and IgG (0.9 U/ml)

and tissue transglutaminase (0 U/ml), but positive IgA endomysial antibody of 226 U/ml) evaluation for CD. She was considered at least gluten intolerant and was started on a GFD. Her BMI increased to 27 at five years and 30 at ten years postoperatively.

## Discussion

The increasing prevalence of obesity among patients with CD has several implications for the bariatric surgeon. Some authors have suggested routine screening of patients for CD prior to bariatric procedures [4,16]. The presence of CD might influence the choice of operation. A GFD might lead to weight gain and negate desired postoperative weight loss. The current report highlights the importance of CD as a potential cause of malabsorption following bariatric procedures.

The prevalence of CD in morbidly obese individuals appears to be similar to that in the general population. Cuenca-Abente et al. [16] performed routine, preoperative endoscopy on 400 bariatric patients and detected CD in five (1.25%). Four were clinically silent. All had villous atrophy with serologic confirmation of CD. They recommended routine preoperative endoscopy in patients undergoing evaluation for bariatric surgery. Alternatively, De'Angelis et al. [4] recommend routine serologic screening on bariatric patients with endoscopy performed as indicated. We have not been screening routinely for CD. Two of our three patients identified with CD postoperatively underwent procedures at our institution during a period when almost 2000 bariatric procedures were performed.

Given the preoperative diagnosis of CD, Cuenca-Abente et al. [16] chose to perform sleeve gastrectomy in these patients rather than GBP. This would avoid malabsorption and maintain an intact gastrointestinal tract for surveillance. GBP and BPD, as performed in two patients in the patient study make diagnosis more challenging.

Weight gain after initiation of a GFD is a potential problem [17]. All three of our patients maintained or regained weight on a GFD. One patient remained morbidly obese.

With the present patient cohort and the three previously reported patients, CD has now been diagnosed after a full range of bariatric procedures. The initial reports of CD developing after bariatric procedures were two patients who were diagnosed following jejunoileal bypass. One was diagnosed when severe malabsorption developed nine months later [14]. The other was diagnosed when villous atrophy was identified in an operative specimen [7]. A third report was of a patient diagnosed five years following gastric bypass as part of familial screening [4]. All gained weight on a GFD. All three of our patients became symptomatic postoperatively, which led to evaluation for CD.

Interestingly, two other patients undergoing bariatric procedures have been reported to have developed dermatitis herpetiformis (DH) postoperatively [18,19]. DH and CD are both manifestations of gluten-sensitive enteropathy [18]. They are associated with HLA, IgA antitissue and anti-epidermal transglutaminase antibody and blunting of the intestinal villi [20]. DH occurs in 5% of CD patients, but the majority of DH patients do not have associated intestinal symptoms [18]. One patient was diagnosed two years after mini-gastric bypass after a one-year history of intermittent itching, excoriation, hyperpigmentation and symmetrically grouped

papulovesicles on exterior surfaces. The diagnosis was confirmed by serology and skin biopsy. GFD resolved the lesions. The other patient developed pruritic eruptions and plaques one and a half years after gastric stapling. The diagnosis was confirmed by skin biopsy and serology. The cutaneous lesions resolved on a GFD.

In conclusion, celiac disease and related disorders should be suspected and evaluated in patients who develop suggestive symptoms after bariatric procedures. This includes procedures commonly associated with malabsorption.

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