Obesity (body mass index [BMI] ≥ 30) affects over a third of all women in the United States (CDC, 2009). Some of the well-recognized comorbidities of obesity include type 2 diabetes, hypertension, hyperlipidemia, coronary artery disease, stroke and obstructive sleep apnea. In addition, there are health risks of obesity specific to women, including increased risk of endometrial cancer, breast cancer, polycystic ovarian disease, infertility, pregnancy complications and pelvic floor disorders. Obese women, independent of age and parity, as compared to lean women are twice as likely to have a pelvic floor disorder. The physiologic mechanisms for obesity causing pelvic floor dysfunction are multifactorial, but it is largely believed that obesity produces a chronic increase in abdominal pressure that stresses the structural and neurologic integrity of the pelvic floor. Weight loss, therefore, should lessen symptoms of pelvic floor dysfunction. It has also been speculated that weight loss efforts lead to a decrease in sodium consumption, which decreases 24-hour urinary volume and thereby reduces urinary incontinence.

In this issue of the Journal of Reproductive Medicine, Vella et al. report the findings of a survey designed to evaluate the impact of rapid weight loss from bariatric surgery on urinary symptoms and related quality of life measures in morbidly obese women (BMI ≥ 40). The survey collected demographic data, obstetric and gynecologic history, weight prior to and after bariatric surgery, use of anticholinergics prior to and after surgery, and assessed changes in symptoms of urinary incontinence and related quality of life measures through use of validated questionnaires (Urinary Distress Inventory [UDI]-6 and Incontinence Impact Questionnaire [IIQ]-7). All women who underwent bariatric surgery at Temple University Hospital between January 2004 and March 2006 received a survey (126 of 238 women responded). All subjects had 1 or more urinary symptoms at baseline: approximately 50% had symptoms of stress incontinence, 32% had frequency, and 25% had urge incontinence; 26% of women felt frustrated and emotionally distressed by their urinary symptoms at baseline. The mean BMI prior to surgery was 47.5 and after surgery was 31.0, with an average weight loss of 50 kg. Results of the UDI-6 demonstrated a significant decrease in symptoms of urinary frequency, stress incontinence and leakage after weight loss from bariatric surgery. There was a trend toward a decrease in urge incontinence, but the results were not statistically significant. Results of the IIQ-7 revealed a significant improvement in all quality of life measures. The need for anticholinergics declined significantly, from 8% prior to surgery to 2% after surgery. Overall the results of this study suggest that weight loss produced by bariatric surgery can improve the symptoms of urinary incontinence and its related quality of life measures in morbidly obese women.

Improvement in urinary incontinence after bariatric surgery has been shown by others. Burgio et al., using similar methods, found a reduction in the prevalence of urinary incontinence from 66.7% presurgery to 37.0% 12 months postsurgery after a mean 18 point reduction in BMI. A recent study by Wasserberg et al. found a decline in urinary incontinence prevalence from 71% to 39% after a 17-point reduction in BMI. However, nonsurgical weight loss of 5–10% can produce a significant decrease in urinary continence as well. In a recent randomized trial of 338 overweight and obese women, Subak found that an 8% weight loss through behavioral intervention produced a 47% reduction in urinary incontinence as compared to a 28% reduction in patients who received weight loss and urinary incontinence education alone.

Given the effectiveness of weight loss in reducing urinary incontinence regardless of the means (surgical or nonsurgical), should weight loss be recommended as part of a comprehensive program for the treatment of urinary incontinence in overweight and obese women? Surgical methods of weight loss include (1) malabsorptive procedures such as the Roux-en-Y gastric bypass and biliopancreatic diversion with duodenal switch, (2) restrictive procedures such as gastric banding and vertical gastropasty (also known as sleeve gastrectomy), or (3) a combination of the 2 (Figure 1). A large meta-analysis from the Journal of the American Medical As-

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Figure 1  From DeMaria E: (2007). Bariatric surgery for morbid obesity. N Engl J Med 2007;356:2176–2183. Copyright © 2007 Massachusetts Medical Society. All rights reserved.
sociation in 2004 found on average, bariatric procedures produce a BMI reduction of 10–17 points, with procedures including malabsorptive component producing most weight loss and gastric banding alone producing least weight loss.\(^{11}\) The Swedish Obese Subjects study, a large, randomized, controlled trial, showed an average weight loss of 25% 2 years postsurgery and 18% 10 years postsurgery. Malabsorptive procedures produced more weight loss on average. Controls gained 0.1% at 2 years and 1.6% at 10 years; however, no standardized weight loss intervention was implemented in the control group.\(^{12}\)

Nonsurgical interventions generally involve production of a calorie deficit through diet, behavior modification, physical activity and use of medications, if indicated. A moderate reduction (500 kcal) in daily calorie consumption coupled with an increase in physical activity generally produces a 5–10% weight loss over a 6-month period.\(^{13}\) Severe calorie restriction to 400–800 kcal per day can result in rapid weight loss but requires medical supervision. Much debate exists regarding the efficacy of the different diets used to achieve weight loss. Short-term studies (<12 months) have found widely varying answers to this question. A recently published randomized trial comparing weight loss with diets varying in fat, protein and carbohydrate composition sought to determine whether any particular diet promotes greater long-term weight loss than the others. At 2 years, regardless of the diet given, the average weight loss was 4 kg; 31–37% of the participants lost 5% of their initial body weight, 14–15% lost 10% of their initial weight, and 12% lost 20 kg or more.\(^{14}\) Over half the participants did not achieve significant weight loss. Attendance at group sessions significantly predicted weight loss at 2 years. These results underscore the difficulty of losing weight and maintaining significant weight loss through comprehensive nonsurgical methods. The Food and Drug Administration–approved drugs for weight loss include adrenergic stimulants (phentermine, diethylpropion), an anorectic selective serotonin reuptake inhibitor (sibutramine) and a triacylglycerol lipase inhibitor (Orlistat, F. Hoffmann–La Roche Ltd, Basel, Switzerland) that decreases intestinal fat absorption. The effectiveness of these medications is limited by side effects and their approval for short-term use only.\(^{15}\)

Ultimately, deciding between bariatric surgery and a nonsurgical approach to weight loss will depend on the degree of obesity, comorbidities, psychological ability to comply with the postoperative regimen and an overall assessment of risk vs. benefit for each patient. The National Institutes of Health Consensus Conference statement on Gastrointestinal Surgery for Severe Obesity recommends consideration of surgical intervention for patients with (1) BMI ≥ 40, (2) BMI ≥ 35 with high risk comorbid conditions (such cardiopulmonary disorders or severe diabetes), or (3) BMI ≥ 35 with obesity-induced physical problems that limit lifestyle.\(^{16}\) In light of improved safety and the introduction of laproscopic techniques for bariatric surgery, in 2004 the American Society for Bariatric Surgery called to extend consideration of bariatric surgery to patients with a BMI of 30–35 and at least one obesity-related comorbidity\(^{17}\) (Table I). While pelvic floor disorders and urinary symptoms are not generally listed as indications for bariatric surgery, there is no question that when the problems are severe they limit lifestyle for the women affected. Understanding weight loss methods and options for obese patients is important for those providing health care to women. Weight loss should be recommended for obese patients with pelvic floor weakness and urinary symptoms and guided by a knowledgeable practitioner. Whichever route is chosen, a commitment to promoting weight loss should be made on the part of the physician for the many health benefits and quality of life improvements it provides.

### Table 1  Approaches to Weight Loss in Obese Patients

<table>
<thead>
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<th>Approach</th>
<th>Specifics</th>
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| Nonsurgical | BMI >27 kg/m\(^2\)  
Lifestyle modification through diet, physical activity, behavioral modification  
Pharmacotherapy in conjunction with lifestyle modification |
| Surgical | BMI ≥ 40 kg/m\(^2\)  
BMI 35.0–39.9 kg/m\(^2\) + presence of a high-risk comorbid condition such as type 2 diabetes, life-threatening cardiopulmonary problems (e.g., severe sleep apnea, Pickwickian syndrome, obesity-related cardiomyopathy) or obesity-induced physical problem that limits lifestyle  
BMI 30–34.9 kg/m\(^2\) + one obesity-related comorbidity that can be cured or markedly improved by substantial and sustained weight loss* |

affords our patients dealing with obesity.

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