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AND RELATED DISEASES

## Case report

# Intellectual disability and bariatric surgery: a case study on optimization and outcome

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The 2008 AACE/ASMBS/TOS guidelines for bariatric surgery identify a lack of comprehension of risks, benefits, expected outcomes, alternatives, and lifestyle changes required with bariatric surgery as a contraindication [1] and the updated 2013 guidelines focus on the need for informed consent [2]. Such contraindications were also noted, in part, by the National Institutes of Health consensus statement on weight loss surgery >20 years ago stating that candidates should be “well-informed and motivated” [3]. Given that those with intellectual and/or developmental disabilities may have difficulty achieving these goals, many programs do not consider such patients surgical candidates. In a survey of present practices, 81.6% of programs consider severe intellectual disability (Intelligence Quotient [IQ] < 50) to be a definite contraindication and 13.6% consider it a possible contraindication [4]. Mild to moderate disability (IQ between 70 and 50) is considered a definite contraindication by 45.7% of programs and a possible contraindication for an additional 46.9% of respondents. Only 6.2% of bariatric surgery centers do not think of this level of disability as any type of contraindication [4]. In contrast, individuals with intellectual disabilities are more likely to be obese than control populations and more likely to have related co-morbidities, such as type 2 diabetes mellitus, hypertension, hyperlipidemia, coronary heart disease, chronic obstructive pulmonary disease, and osteoarthritis [5]. Thus, a subset of individuals who may be of greater need of weight loss surgery may also be less likely to receive it.

Cognitive function has increasingly become a focus of research in bariatric surgery, including cognitive deficits associated with severe obesity [6–7], the benefit of weight surgery on cognitive function [8], and the impact of cognitive deficits on adherence [9–10]. Obese individuals are known to demonstrate poorer attention, executive function, and memory relative to normal weight controls [6–7]. Clinically significant cognitive impairment is present in up to 23% of patients, with 40% demonstrating more subtle deficits [8]. Cognitive function has been directly associated with weight loss outcomes after bariatric surgery. Data from the Longitudinal Assessment of Bariatric Surgery showed that preoperative performance on memory and executive functioning tasks predicted 12 and 24 month postoperative body mass index (BMI) [9]. Given these recent studies linking cognition to outcomes, reticence to consider patients with intellectual disabilities may increase and fewer programs may consider such patients candidates. The case study below presents the outcome of a patient with long-standing borderline intellectual functioning, the optimization for surgery, and outcomes for 4.5 years postsurgery.

## Case study

At the time of evaluation in the fall of 2007, Ms. L was a 31-year-old white female presenting for bariatric surgery. Her weight was 119.5 kg with a BMI = 47.9 kg/m<sup>2</sup>. The patient’s medical history included: obstructive sleep apnea, headaches, reflux, hyperlipidemia, asthma, unspecified seizure disorder, and osteoarthritis. The patient expressed motivation for surgery so that she could improve her

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breathing but was unable to describe the surgical options, risks or benefits although she had attended a 2 hour seminar 2 days before her appointment. Ms. L felt that orientation went too fast and she reported that she had a difficult time with reading due to a “severe learning disability.” During the semistructured clinical interview, the patient met DSM-IV-TR [11] criteria for Binge Eating Disorder, eating such large amounts 2–3 x/week that she would experience nonvolitional vomiting. Ms. L’s psychiatric history was positive for past diagnoses of Attention Deficit Disorder, Bipolar Disorder, and Depression. She had one past inpatient psychiatric hospitalization at age 17 for depression and delusional thinking following the death of a family member. She was prescribed Depakote for her seizure disorder that was also helpful in stabilizing her mood and saw a counselor weekly at a local mental health agency. Records from these providers were obtained.

Rapport with Ms. L was difficult and she was very agitated and anxious throughout the interview. Her affect appeared labile, ranging from tearfulness to anger, particularly when learning of the length of the presurgical process. Given her reported learning difficulties, problems with memory and concentration and presentation, she was referred to Neuropsychology to better characterize her cognition and capacity to consent.

The neuropsychological evaluation was pertinent for the following reasons: The patient’s developmental history was notable for the fact that at about 1 year of age Ms. L developed a high fever. The patient’s mother stated that she began having seizures at about that time. Ms. L lived alone and received Social Security disability income. Her mother assisted her with paying bills, but the patient was able to manage her money independently and was her own payee. The patient’s Mother and landlord provided some moderate supervision. Ms. L was able to graduate high school with special education, but had never worked.

Ms. L obtained a Full Scale IQ score of 72, which placed her overall functioning in the borderline range. Her verbal IQ was 68 (extremely low) and her performance IQ was 80 (low average). The intellectual profile suggested borderline range functioning with a relative weakness in the patient’s verbal intellectual skills. She also completed some achievement testing, all of her academic abilities fell at about the 4th grade level. The remainder of the neuropsychological evaluation displayed deficits in language and memory functions. The evaluation concluded that her presentation was consistent with diffuse cognitive dysfunction likely reflective of her developmental neurologic problems and seizure disorder. The neuropsychologist recommended that the team utilize multiple repetitions of information, present information in a format that was appropriate for her level of intellectual/reading ability with frequent review of information in order for her to learn and retain this information. It was also noted that monitoring for impulsive decision making and diet compliance postsurgically would be

important. Finally, it was noted that this would require a fairly extensive support network on behalf of the patient.

Given the complexity of the case, the multidisciplinary team (surgeon, psychologist, dietician, bariatric medicine and nursing) met to discuss the case in December 2007. The patient’s insurance provider required a 9 month medically supervised diet and the team determined that the patient may be considered a candidate if she could show adherence with diet, benefit from individual treatment for her binge eating, and if she could exhibit the capacity to consent after 9 months of education. Initially Ms. L was resistant to the plan and had great difficulty understanding the difference between our requirements and those of her insurer. Although gains in knowledge required frequent reinforcement and recommendations needed to be concrete, Ms. L was able to fully consent to the procedure, correctly describing the surgery, its risks and benefits, and post-operative plan after 9 nutrition visits and 5 visits with the psychologist. She also was able to largely adhere to the preoperative dietary recommendations, losing 3.2 kg and discontinuing carbonated beverages, using a liquid meal replacement, taking recommended multivitamins, implementing a physical activity program and separating eating and drinking. She was somewhat delayed by her insurer but completed RYGB in March 2009.

At her 1-week postop visit, Ms. L described a postsurgery recovery without complications, noting only minimal pain and resolving nausea. The patient immediately began a walking routine. Notably, the patient was adherent with diet even when mother said it would be okay to transition to other foods. Per the treatment team plan, the patient met with nutrition and psychology monthly for the first year rather than usual quarterly visits. Like the preoperative diet, the patient was slower to learn new information and needed repeated trials, but a graduated plan with new information presented in an easily understandable manner with small goals added monthly led to a high level of adherence with the postoperative regimen and considerable weight loss (see Figs. 1 and 2). The patient was also highly adherent with physical activity recommendations, joining a local YMCA and working individually with a trainer. After 1 year, she increased her physical activity by joining 2 sports programs through the Special Olympics.

At 2 years post-RYGB, Ms. L achieved 74% excess weight loss and a nadir weight of 75.9 kg (BMI = 30.64 kg/m<sup>2</sup>). At that time she was exercising 360 minutes/week, meeting fluid and protein goals, was adherent with vitamins, and avoiding carbonated beverages. Given her adherence and success, it was recommended that she be seen twice a year to continue with monitoring her progress and reinforcing her knowledge. During these visits, she would often need 1 or 2 behaviors/goals reset but was motivated to attend these visits and adjust her goals. After 4.5 years, the patient has maintained the majority of her weight loss, fluctuating between 76–79 kg. Her most recent weight was

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