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Clinics in Bariatric & Metabolic Surgery



Praveen Raj Palanivelu

Associate Authors
Siddhartha Bhattacharya
S Saravana Kumar

Foreword
Henry Buchwald

JAYPEE

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SECTION 2

CASE CAPSULES

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CHAPTER 2

Indications for Bariatric Surgery

A 26-year-old lady presented to the bariatric clinic for advice regarding weight loss. She has a body mass index (BMI) of 45 with no comorbidities. Her both parents are obese and her mother is a diabetic. She has attempted weight loss with diet and exercise but she has failed to maintain her diet, and she is not regular with exercise. She is interested in discussing the option of bariatric surgery.

How to evaluate this patient?

Many patients often give a history of dietary attempts and failure with the same. It is important to know the complete dietary history and also the diet during weight loss attempts. This will help us understand whether a right dietary program was initiated, the motivation levels of the patient, etc. Many patients are of the understanding that eating lesser than usual proportions is what a dietary program means.

It is also important to know whether the patient is a vegetarian or a nonvegetarian. We also need to recognize the composition of the diet concerning proteins, fats, and carbohydrates. This will help us understand the preferences of the patient, allergies if any, food intolerances, etc. to design a diet for lifestyle modifications for weight loss and also in the postbariatric setting. This has to be done by a dietician trained in weight loss management. It is also essential to assess the obesity-related comorbidities.

How best to evaluate a patient's diet patte?

As mentioned above, it is to be restressed that a thorough evaluation needs to be done by a dietician trained in weight loss management. The assessment will include a detailed history of weight gain, family history, weight gain in relation to pregnancy, weight loss history, perceived weight loss goals, eating habits, tobacco and alcohol use, and food intake recall. Many questionnaires are available for this. However, most are complex to be used on an outpatient basis. We have compiled a simplified questionnaire on these aspects which can be used in the clinical setting. You can refer Annexure 1 for the same. It is also important to rule out eating disorders.

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What are the different eating disorders that need to be ruled out?

Binge eating disorder (BED): It is defined as recurrent binge eating episodes in the absence of inappropriate weight control behaviors (e.g., purging). BED is the most common (2–5%) eating disorder in the general population. To diagnose a patient with BED, he/she must have binging episodes at least once a week for a minimum period of 3 months. The prevalence of BED in bariatric surgery patients is close to 20%. There are multiple questionnaires available to assess eating disorders including the Eating Disorder Examination-Questionnaire (EDE-Q), Eating Inventory (EI) and Binge eating scale, etc. (Annexure 2). Binge eating may be associated with poorer weight loss outcomes after bariatric surgery, although, the evidence to support this is controversial.

Night eating syndrome (NES): Night eating syndrome is characterized by morning anorexia, evening hyperphagia, sleep difficulty, and recurrent awakening from sleep to eat. It is often associated with depression and low self-esteem. NEQ questionnaire (Annexure 3) can be used to measure the severity of NES.

Grazing: It is defined as eating smaller quantities of food continuously throughout the day along with a feeling of loss of control. It is seen in 30–60% of bariatric surgery candidates.

Sweet eating: This behavior also contributes to obesity. It is often a coping mechanism to allay emotional distress.

From a bariatric surgical standpoint, grazing and sweet eating, also referred to as soft calorie syndrome is critical as it can negate the restrictive effect of most bariatric surgical procedures.

Is there a role of psychological evaluation in this patient?

All patients who are bariatric surgery candidates must undergo a psychological evaluation by a psychologist who is a full-time member of the bariatric multidisciplinary team. The role of the psychologist is to assess the patient for the following:

- Ability to give consent
- Patient's weight history and weight loss goals
- Patient's expectation regarding weight loss and knowledge of weight loss measures and bariatric surgery
- Patient's social support system
- Mental health (psychiatric diseases and past treatment history)
- History of alcohol and drug abuse
- Abnormal eating behaviors
- Compliance with previous weight loss measures
- Coping style and stress management
- Recent psychological stressors.

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The psychologist may use a variety of psychological assessment tools to assess the patients preoperatively. The Weight and Lifestyle Inventory (WALI) is a questionnaire which covers all the domains mentioned above and is to be filled by the patient before the clinical interview by the psychologist. Another similar tool is the Boston Interview for Bariatric Surgery and the Cleveland Clinic Behavioural Rating System (CCBRS).

What other history is relevant in this patient?

Understanding the patient's lifestyle regarding physical activities (sports, exercises, zumba, aerobics, etc.) and sleep pattern is essential. This will help to have an understating of the overall metabolic capacity of the patient and the number of calories burnt each day. A metabolically active patient is expected to lose weight better than those with a sedentary lifestyle. Sedentary lifestyle refers to any person who walks only about 5,000–6,000 steps per day or lesser. An active person would do 7,000–8,000, and a very active person would clock over 10,000 steps per day. This can be measured using pedometry. Many gadgets (e.g. Fitbit, iWatch, smartphone applications) are available for this assessment.

Occupational history will give us relevant information regarding patient's activity levels and also the level of stress. Both these factors have a bearing on any successful attempt at weight loss.

How does sleep pattern impact obesity?

There is a strong association between reduced sleep and weight gain. This is particularly true for middle-aged perimenopausal females. There is an association between less than 7 hours sleep at night and obesity. A similar pattern of obesity has also been observed in sleep-deprived adolescents (late to bed, late to rise, etc.). Reduced sleep is associated with both increased calorie intake as well as reduced metabolic function, both contributing to obesity.

What is the first-line of management for this patient?

Since this is a young patient who has not attempted a serious monitored program, a guided lifestyle modification program would be the first-line of treatment for her. The first step in this process is to educate the individual regarding diet and weight loss and help her modify her eating patterns, physical activity, and behavior. This has to be delivered holistically by a multidisciplinary team of professionals including the dietician, psychologist, physical trainer and, sometimes, a bariatric physician. The success of lifestyle modifications is considered to be weight loss of 5–10% of initial body weight over 4–6 months. The main components of this approach are:

- *Dietary modifications:* She has to be prescribed a low-calorie diet ranging from 1,200 Kcal/day to 1,800 Kcal/day. The principle is to provide at least 500 Kcal/day less than their baseline requirement which would achieve

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an average weight loss of 0.5 kg/week. The composition of such diets is a matter of considerable debate. For an initial period, a low-fat diet rich in complex carbohydrates with an emphasis on fruits, vegetables, legumes, and whole grains can be followed. Later, the diet can be changed to a low-carbohydrate high-protein diet. The dieting pattern should be sustainable and the patient should be allowed multiple meal replacement options. There are many popular diets (e.g. GM diet, Atkins diet). However, none have been proven superior to the other. It is also to be noted with weight loss, the body undergoes a metabolic adaptation phase, wherein, weight loss plateaus even with lowered caloric intake, hence, the importance of complementing dietary modification with physical activity.

- *Physical activity:* Physical activity and dietary modifications go hand in hand for a successful weight loss program. Physical activity increases energy expenditure and thus contributes to weight loss. High-intensity workouts achieving over 80% of maximum heart rate for 30–60 minutes a day is recommended (maximum heart rate = 220 – Age). The patient should also be advised to make his/her day more active (e.g. taking a staircase, walking to the store). A proper exercise schedule should include a combination of cardio, isometric, and isotonic exercises.
- *Behavioral modifications:* Aim to teach the patients, coping mechanisms when they have the urge to overeat. It provides the patients, tools to develop strategies to deal with high-risk situations. It also helps to prevent relapse of maladaptive eating and lifestyle patterns.
- *Self-monitoring:* Self-monitoring of food intake and physical activity is one of the core principles of lifestyle modifications. The patient is advised to check his/her weight at least once a week if not daily. The patient is advised to keep food intake and exercise diary. The program supervisor can regularly assess these records and corrective measures can be suggested to the patient.

How long should lifestyle modification therapies be continued before considering bariatric surgery?

Most guidelines recommend a minimum of 3–6 months of supervised intense lifestyle modification as described above before contemplating bariatric surgery.

Is there any role for pharmacotherapy in weight loss?

Obese patients who are not adequately responding to a compliant lifestyle modification program are candidates for pharmacotherapy. The goal of pharmacotherapy is to achieve 5–10% loss of initial weight over 6–12 months and/or resolution or improvement of weight-related comorbidities.

However, the contraindications include pregnancy, lactation, unstable medical disease, active severe psychiatric illness and drug-specific contra-indications.

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What are the other considerations before starting pharmacotherapy?

Before we consider drug therapy, we must ensure that the patient is not taking any drug for any medical condition which causes weight gain. If the patient is on such a drug, he must be provided with an alternative drug which does not cause weight gain. Commonly used drugs which cause weight gain are antidiabetics (insulin, thiazolidinediones, sulfonylureas), antipsychotics (clozapine, olanzapine), antidepressants (amitriptyline), steroids, β-blockers, etc. Weight neutral alternatives include antidiabetics [glucagon-like peptide-1 (GLP-1) analogs, metformin, dipeptidyl peptidase-4 inhibitors], antipsychotics (ziprasidone), antidepressant (Bupropion), etc.

What are the drugs that are available for the treatment of obesity?

Orlistat

Orlistat is a gastrointestinal lipase inhibitor. It acts by reducing dietary fat absorption. The reduction in absorption may be as much as 30%. It is usually given at a dose of 120 mg three times a day with each meal for adults. Orlistat achieves a weight loss of approximately 3% at 1 year. Common side effects are abdominal cramping, flatulence, bloating, and steatorrhea. Orlistat is contraindicated in patients with chronic malabsorption and cholestasis.

Phentermine/Diethylpropion

Phentermine causes early satiety and decreased food intake by stimulating the release of norepinephrine. This medication can be used in patients who have difficulty in controlling their appetite. It can be given at a dosage of 8 mg thrice daily or 15–37.5 mg once daily. Common adverse effects are xerostomia, insomnia, headache, palpitations, hypertension, and constipation. It is contraindicated in patients with structural heart disease, cardiac arrhythmias, unstable coronary disease, hyperthyroidism, glaucoma, panic disorder, and history of drug abuse.

Phentermine plus Topiramate

Topiramate was a drug developed for the treatment of epilepsy which also caused weight loss. Thus using it in combination with phentermine maximizes the weight loss and minimizes the adverse effects of either drug. The most common adverse effects include paresthesias, xerostomia, dizziness, constipation, and insomnia. It is contraindicated in patients with cardiovascular disease, cerebrovascular disease, and hypertension. Other contraindications are similar to phentermine alone. This is one of the most common combinations used to treat obesity, but its availability is limited to a few countries.

Lorcaserin

Lorcaserin acts by suppressing appetite and increasing satiety. It is a selective serotonin HT2C receptor agonist acting centrally at the level of the hypothalamus. The drug dosage is 10 mg twice a day. It has shown a

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weight loss of 5% of initial weight at 1 year. Common adverse effects include headache, dizziness, fatigue, nausea, xerostomia, and constipation.

Bupropion plus Naltrexone

In this combination, bupropion stimulates the pro-opiomelanocortin neurons in the hypothalamus to secrete alpha-melanocyte-stimulating hormone (α-MSH) and β-endorphin. α-MSH has an anorectic effect and β-endorphin is responsible for autoinhibitory feedback. Naltrexone blocks this feedback loop thus, increasing the duration of action of α-MSH.

Metformin

Metformin is the most commonly used antidiabetic of the biguanide group. It is also associated with a weight loss of 2.5% maintained over 10 years. It is ideal for patients who are obese with impaired glucose tolerance or early diabetes. It commonly causes diarrhea, but it has very few long-term adverse effects.

Glucagon-like peptide-1 agonists

Glucagon-like peptide-1 agonists act by mimicking the action of GLP-1 produced in the small intestine. It has an incretin effect on insulin secretion causing improved glycemic control, decreases calorie intake and weight loss. Liraglutide and exenatide are two commonly used drugs in this group. Liraglutide is approved for weight loss and is administered at a dose of 0.6–1.8 mg. The most common side effects include nausea and vomiting which tend to decrease over 7–10 days. It is contraindicated in patients with a previous history of pancreatitis and chronic renal failure.

Pramlintide

Pramlintide is an analog of amylin which is cosecreted from pancreas along with insulin. It acts by inhibiting gastric emptying and food intake.

Sodium–glucose cotransporter-2 inhibitors

Sodium–glucose cotransporter-2 (SGLT2) is expressed in the epithelial cells of the proximal convoluted tubules of the kidney and is responsible for mediating glucose reabsorption. SGLT-2 inhibitors selectively inhibit SGLT-2 and prevent the reuptake of glucose from the kidneys, thereby, reducing the blood glucose levels.

What is the success rate of pharmacotherapy and how long it should be continued?

The success of pharmacotherapy is highly variable ranging from no weight loss to highly significant weight loss averaging around 5–10 kg in morbidly obese patients. Considering the variability in weight loss, the drugs can initially be administered for an initial period of 6–12 weeks and can be continued further based on the initial outcomes. Although these drugs can be continued for many years, most clinicians administer them for 6 months with weight maintenance dependant on a healthy lifestyle.

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When to offer bariatric surgery in this patient?

Bariatric surgery can be considered if the patient fails to lose adequate weight even after a supervised and compliant attempt at lifestyle modification with or without pharmacotherapy. Failure to lose refers to loss of less than 5–10% of the present weight over a period of 6 months. Considering the BMI of this patient which is 45, she is eligible for bariatric surgery by all international surgical or medical guidelines (Annexure 4).

Why are the guidelines different for the Asians?

The guidelines are different for Asians as the pattern of obesity and its associated insulin resistance is different. The Asians have a higher fat percentage than their equivalent BMI Caucasian counterparts (known as the "Y-Y paradox), and the Asians tend toward more central obesity which is more metabolically harmful as compared to global obesity by causing a higher degree of insulin resistance as well as higher intra-abdominal pressures.

FURTHER READING

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- A simplified quick reference guide based on evidences and experience.

Praveen Raj Palanivelu MS DNB FACS PhD is a pioneering bariatric surgeon from Coimbatore, Tamil Nadu, India, with a significant scientific contribution. He is the Head of the GEM Obesity and Diabetes Surgery Center, which is one of India's largest volume bariatric surgical centers with over 3,500 bariatric surgical procedures performed in the last 16 years. He has trained over 250 bariatric surgeons through his annual training courses. He is the Editor-in-Chief of the "Bariatric Surgery Practice Guide" published by Springer in 2017. He is currently the President of the International Excellence Federation (India chapter) since 2016 and the Honorary Secretary of the Obesity Surgery Society of India (OSSI). He is been instrumental in bringing bariatric surgery under the Chief Minister's Insurance Scheme in the state of Tamil Nadu in India, a revolutionary first of its kind. It is also important to note that he is the only Doctorate (PhD) in Bariatric Surgery, probably in the whole of Asia.

Siddhartha Bhattacharya MS DNB FNB MNAMS FMAS FAIS is Consultant Bariatric Surgeon at the GEM Obesity and Diabetes Surgery Center, Chennai, Tamil Nadu, India. He has multiple publications in reputed peer-reviewed journals. He has also received the "Best Paper Award" of the Association of Minimal Access Surgeons of India for the years 2016 and 2017, and also the "Best Paper Award" of the Obesity & Metabolic Surgery Society of India for the year 2018.

S Saravana Kumar DNB FMAS is a Senior Consultant at GEM Obesity and Diabetes Surgery Center, Coimbatore, Tamil Nadu, India. He has multiple publications in indexed journals. He is a co-editor for the book, "Bariatric Surgical Practice Guide". He is actively involved in training of young surgeons in bariatric surgery. He has been invited as a faculty to numerous national and international CMEs and conferences to deliver lectures in the field of bariatric surgery.

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