




Obesity Management Task Force of the European Association for the Study of Obesity Released “Practical Recommendations for the Post-Bariatric Surgery Medical Management”

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Abstract

Bariatric patients may face specific clinical problems after surgery, and multidisciplinary long-term follow-up is usually provided in specialized centers. However, physicians, obstetricians, dieticians, nurses, clinical pharmacists, midwives, and physical therapists not specifically trained in bariatric medicine may encounter post-bariatric patients with specific problems in their professional activity. This creates a growing need for dissemination of first level knowledge in the management of bariatric patients. Therefore, the Obesity Management Task Force (OMTF) of the European Association for the Study of Obesity (EASO) decided to produce and disseminate a document containing practical recommendations for the management of post-bariatric patients. The list of practical recommendations included in the EASO/OMTF document is reported in this brief communication.

Keywords European guidelines · Obesity management · Bariatric surgery · Nutrition · Diabetes mellitus · Sleep apnea · Hypertension · Pregnancy · Psychological aspects · Weight maintenance

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Introduction

Bariatric surgery is today the most effective long-term therapy for the management of patients with severe obesity and its use is recommended by the most relevant guidelines of the management of obesity in adults [1, 2]. Therefore, the total number of bariatric procedures performed worldwide has increased steadily in recent years [3].

On the other hand, bariatric patients may face new specific multifaceted clinical problems after surgery. Eating habits need to adapt to the new gastrointestinal physiology and nutritional deficits may arise according to the type of bariatric procedure. Management of obesity-associated disease needs to be modulated according to weight loss and the possibility of changes in pharmacokinetic drugs was taken into account. Specific problems may arise in women during pregnancy and the patients may experience some psychological difficulties in adapting to the profound changes in eating behavior and body image. Finally, weight regain can occur and should be prevented and managed.

Multidisciplinary long-term follow-up is recommended after bariatric surgery and the provision of an adequate program is mandatory for bariatric centers [2]. However, giving the accumulating numbers of bariatric patients, follow-up needs to be at least in part transferred to primary care over time. Moreover, physicians, obstetricians, dietitians, nurses, clinical pharmacists, midwives, and physical therapists not specifically trained in bariatric medicine may encounter post-bariatric patients with specific problems in their professional activity. Referral to a bariatric center is often necessary and should be possible, but there is a growing need for dissemination of first level knowledge in the management of bariatric patients.

Considering these very practical problems and the real world situation, the Obesity Management Task Force (OMTF) of the European Association for the Study of Obesity (EASO) decided to produce and disseminate a document containing practical recommendations for the management of patients post-bariatric surgery. The document has been recently published in *Obesity Facts*, the official journal of EASO [4]. The OMTF of EASO tried to summarize the basic knowledge that is required by health care professionals in order to provide first level adequate clinical care to post-bariatric patients. Information about nutritional management, micronutrient supplementation, management of comorbidities, pharmacotherapy, pregnancy, psychological aspects, and weight regain prevention and management were derived from current evidences and existing guidelines. A list of short clinical practical recommendations has been extracted from the full text together with the levels of evidence and grades of these recommendations. The grading system utilized was the same as previously used in guidelines released by EASO [2] (Table 1).

The list of practical recommendations included in the paper is reported in the present short communication. The rationale and evidence informing any recommendation can be found in the full paper [4].

List of Practical Recommendations

Nutritional Management

Bariatric patients should receive periodic counseling by a registered dietitian about long-term dietary modifications. The focus of dietary counseling should be the adaptation of patients eating behavior to the surgical procedure and the general qualitative aspects of a healthy nutrient dense diet (Level of Evidence 1; Grade of Recommendation A).

Nutritional counseling should address the problem of protein intake, particularly in the first months after surgery. A minimal protein intake of 60 g/d and up to 1.5 g/kg ideal body weight per day should be targeted. The use of liquid protein supplements (30 g/d) can facilitate adequate protein intake in the first period after surgery (Level of Evidence 4; Grade of Recommendation D).

Nutritional manipulation should be the first-line treatment for the control of dumping syndrome. Medical therapy with octreotide should be considered in patients who fail to be controlled with dietary modifications (Level of Evidence 1; Grade of Recommendation A).

Physical Activity

Regular physical activity should be encouraged after bariatric surgery, starting after recovery from surgery. Patients should be advised to incorporate moderate aerobic physical activity to include a minimum of 150 min per week and goal of 300 min per week, including strength training two to three times per week (Level of Evidence 1; Grade of Recommendation A).

Micronutrient Supplementation

Long-term mineral and multivitamin supplementation should be prescribed to every patient after bariatric surgery according to the procedure. Periodic laboratory surveillance for nutritional deficiencies is recommended and supplementation should be individualized accordingly, with patients with demonstrated micronutrient deficiencies treated with the respective micronutrient (Level of Evidence 3; Grade of Recommendation D).

Oral or parenteral thiamine supplementation should be promptly started in every patient suffering from persistent vomiting severe enough to interfere with regular nutrition, even in the absence or before confirmatory laboratory data (Level of Evidence 4; Grade of Recommendation D).

Table 1 Levels of evidence, grades of recommendation, and good practice points [2]

Levels of evidence		
1	1 ++	High-quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias
	1 +	Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias
	1 –	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
2	2 ++	High-quality systematic reviews of case-control or cohort or studies
	2 +	High-quality case-control or cohort studies with a very low risk of confounding, bias, or chance and a high probability that the relationship is casual
	2 –	Well-conducted case control or cohort studies with a low risk of confounding, bias, or chance and a moderate probability that the relationship is casual
3		Non-analytic studies, e.g., case reports, case series
4		Expert opinion
Grades of recommendation		
A		At least one meta-analysis, systematic review, or RCT rated as 1 ++, and directly applicable to the target population; or a systematic review of RCTs or a body of evidence consisting principally of studies rated as 1 +, directly applicable to the target population, and demonstrating overall consistency of results
B		A body of evidence including studies rated as 2 ++, directly applicable to the target population, and demonstrating overall consistency of results; or extrapolated evidence from studies rated as 1 ++, or 1 +
C		A body of evidence including studies rated as 2 +, directly applicable to the target population, and demonstrating overall consistency of results; or extrapolated evidence from studies rated as 2 ++
D		Evidence level 3 or 4; or extrapolated evidence from studies rated as 2 +
Good practice points		
RBP		Recommended best practice based on the clinical experience of the guideline development group

Management of Comorbidities: Type 2 Diabetes

Bariatric surgery has profound effects on type 2 diabetes and can lead to prompt modifications and adjustments of medical therapy (Level of Evidence 1; Grade of Recommendation A).

Metabolic control should be optimized in preparation for a bariatric procedure. HbA1c levels of 6.5–7%, fasting glucose levels < 110 mg/dl, and 2 h post-load glucose < 140 mg/dl should be targeted. In patients with long-lasting diabetes, diabetes complications, and poor glucose control, HbA1c levels < 8% are considered acceptable (Level of Evidence 2; Grade of Recommendation C).

Glitazones, glinides, and dipeptidyl-dipeptidase 4 inhibitors (DDP4i) should be discontinued 24 h before surgery with a reduction of basal insulin dosage to 0.3 units/kg. Metformin should be discontinued on the day of surgery (Level of Evidence 3; Grade of Recommendation D).

On the day of surgery, glucose levels should be targeted at < 140 mg/dl and short acting insulin should be used according to a correction factor of one unit of insulin for every 40 mg/dl above the level of 140 mg/dl (Level of Evidence 3; Grade of Recommendation D).

In hospital, target glucose values should be 140–180 mg/dl, and if values are > 180 mg/dl in two consecutive tests, basal

insulin at a dose of 0.1 units/kg should be prescribed (Level of Evidence 3; Grade of Recommendation D).

Metformin can be reassumed from the third day after surgery providing that renal function has been controlled at a dosage of 850 mg, one to two times daily. After gastric bypass surgery, biological availability of metformin increases by 50%, and therefore reduced dosages should be prescribed (Level of Evidence 3; Grade of Recommendation D).

In the first 7–10 days after surgery, treatment should be directed toward fasting glucose values and patients should be instructed to test sugar at least twice a day fast in the morning (target values 100–120 mg/dl) and during the day (less than 180 mg/dl 2 h after a meal) (Level of Evidence 3; Grade of Recommendation D).

In the first 7–10 days after surgery, use of sulfonylureas and medications that increase the risk of hypoglycemia should be avoided (Level of Evidence 3; Grade of Recommendation D).

For patients still requiring insulin during their post-operative hospital staying, basal insulin should be continued at discharge, with strict glucose monitoring and tapering of insulin units for avoidance of hypoglycemia (Level of Evidence 3; Grade of Recommendation D).

In cases of complicated glucose control in the early post-operative phase, consultation with an endocrinologist/

diabetologist should be considered (Level of Evidence 3; Grade of Recommendation D).

After the early post-operative period, standard diabetes guidelines should be followed for the management of patients still requiring pharmacologic anti-diabetic treatment after bariatric surgery (Level of Evidence 4; Grade of Recommendation D).

Management of Comorbidities: Obstructive Sleep Apnea

Patients with obstructive sleep apnea should continue CPAP or BiPAP therapy immediately after surgery and for 3–6 months post-surgery. Thereafter, patients should be reviewed by the respiratory physician in order to determine whether the BiPAP/CPAP pressures need to be adjusted and if a new sleep-respiratory assessment should be undertaken (Level of Evidence 4; Grade of Recommendation D).

Management of Comorbidities: Dyslipidemia

Lipid-lowering medications should not be stopped after surgery unless clearly indicated. Patients with dyslipidemia and on lipid-modifying medications should have lipid profiles and cardiovascular risk status reassessed periodically (Level of Evidence 4; Grade of Recommendation D).

Management of Comorbidities: Hypertension

In the first week after surgery, blood pressure tends to go down and should be monitored actively, with prompt adjustment of blood pressure medications to the new therapeutic needs. Avoidance of diuretics may be suggested in this phase for the high risk of dehydration (Level of Evidence 4; Grade of Recommendation D).

Continued surveillance of blood pressure is needed after surgery, because of the high risk of recurrence over time. Treatment of hypertension in the long-term should adhere to current general guidelines, possibly avoiding anti-hypertensive medications with a known unfavorable effect on body weight. In the patients in whom hypertension have resolved, continued surveillance should be guided by recommended screening guidelines for the specific age group (Level of Evidence 4; Grade of Recommendation D).

Pharmacotherapy After Bariatric Surgery

The potential effects and consequences that any bariatric procedure may have on absorption and action of medications should be carefully considered before surgery, especially for medications where changes in blood levels may have critical effects on patients' conditions or can cause significant adverse events (Level of Evidence 3; Grade of Recommendation C).

After surgery, plasma drug levels should be checked more frequently for those drugs requiring periodic plasma level control (Level of Evidence 3; Grade of Recommendation C).

If possible, liquid oral dosage forms should be used instead of solid dosage forms for at least 2 months after surgery (Level of Evidence 4; Grade of Recommendation D).

Non-steroidal anti-inflammatory drugs (NSAIDs), corticosteroids, and other drugs that may cause gastric damage should be avoided (Level of Evidence 3; Grade of Recommendation D).

Oral contraceptives should be replaced by non-oral contraceptives due to reduced efficacy after gastric bypass and biliopancreatic diversion (Level of Evidence 3; Grade of Recommendation D).

Pregnancy After Bariatric Surgery

Pregnancy is not recommended in the first 12–18 months following bariatric surgery so that the fetus is not affected by rapid maternal weight loss and so that the women can achieve her weight-loss goals (Level of Evidence 3; Grade of Recommendation D).

Antenatal care should be offered at a specialized center with experience in pregnancy management following bariatric surgery, via a specialist multidisciplinary antenatal care team (Level of Evidence 4; Grade of Recommendation D).

Micronutrient supplementation should be provided to all women who are pregnant following bariatric surgery, in the form of a prenatal multivitamin preparation, B12 injections, and oral calcium supplements (Level of Evidence 3; Grade of Recommendation D).

Screening for gestational diabetes should be offered; however, the conventional oral glucose tolerance test should be avoided. Serial capillary glucose monitoring should be used as an alternative (Level of Evidence 4; Grade of Recommendation D).

Women presenting with abdominal pain in pregnancy should be offered urgent expert assessment, particularly for complications related to the primary bariatric surgical procedure (Level of Evidence 3; Grade of Recommendation D).

Psychological Aspects

A perioperative psychological evaluation of patients prior to bariatric surgery is highly recommended. Nonetheless, there may be under-recognition or under-treatment of mental illness before and after surgery (Level of Evidence 3; Grade of Recommendation D).

Pre-surgical distress could worsen whenever the results of the surgery do not meet the patients' expectations or have not led to the hoped improvements in quality of life. Such distress might be associated with manifested depression and

potentially suicidality (Level of Evidence 2; Grade of Recommendation C).

Regardless of the alcohol history of the severely obese individual, all bariatric surgery-seeking candidates should be educated on the potential detrimental effects of this intervention, especially in the case of RYGB, in order to minimize the risk of alcohol misuse post-operatively (Level of Evidence 2; Grade of Recommendation C).

The development of treatment programs focusing on both psychosocial factors and eating behaviors as well as weight loss is essential for a successful lifelong support (Level of Evidence 4; Grade of Recommendation D).

Weight Regain Prevention and Management

Weight regain after bariatric surgery is a result of hormonal and metabolic alterations, surgical failure, nutritional non-adherence, mental health issues, and physical inactivity (Level of Evidence 3; Grade of Recommendation D).

Enforcing and sustaining healthy lifestyle facilitates weight regain prevention (Level of Evidence 3; Grade of Recommendation D).

Adding anti-obesity drugs and/or re-do operations may halt weight regain or create further weight loss when applied at optimal timing (Level of Evidence 3; Grade of Recommendation D).

Conclusion

Bariatric surgery is today the most effective long-term therapy for the management of patients with severe and/or complicated obesity. Bariatric surgery is in general safe and effective, but it can cause new clinical problems and it is associated with specific diagnostic, preventive, and therapeutic needs. A post-bariatric multidisciplinary follow-up program should be an integral part of the clinical pathway at centers delivering bariatric surgery and it should be offered to patients requiring it [2]. However, giving the growing number of post-bariatric

patients, an increasing part of the follow-up, particularly after the early period after surgery, should be also transferred to the primary care physicians, obesity specialists, obstetricians, dietitians, nurses, midwives, and physical therapists not primarily engaged in bariatric program. In order to deliver appropriate and effective care to the post-bariatric patient, health care professionals will need to acquire special knowledge and skills regarding the management of patients following bariatric surgery. It remains clear that referral to a bariatric multidisciplinary center, preferably the one performing the original procedure, should be considered in case of more complex clinical situations.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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