Bariatric surgery 2007: Where we stand? The European charter

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The prevalence of obesity is increasing world wide at an alarming rate. In 2006, the number of overweight and obese people in the world overtook the number of malnourished (1,5). Man has become sedentary, with computers, remote controls, taking elevators for even one floor, increased cars and high-calorie convenience food (4,7). The obesity epidemic "globesity" is affecting both developed and developing countries. In the European region, the prevalence (8) of obesity has increased three-fold in the past two decades, with one-half of adults and one-fifth of children overweight. Of these, one-third are obese, and the numbers are rapidly increasing. In the European region, obesity currently affects 150,000,000 adults and 15,000,000 children. The co-morbidities and adverse effects on quality of life are devastating and causes 1,000,000 deaths annually. The prevalence of childhood obesity is now ten times higher than it was in 1970. On any given day, 30% of US children visit a fast-food restaurant. Canadian children now expand one-quarter of the energy that their counterparts did 40 years ago(10). Obesity is responsible for 6% of the health care expenditure in the European region, and the indirect costs (including absenteeism, loss of productivity and income) are two times higher than this (4).

The energy imbalance in the population is a result of the dramatic reduction in physical activity and the changing dietary patterns with increased consumption of energy-dense nutrient-poor food (containing high proportions of saturated and total fat salt and sugar(8).

In November 2006, the "European charter on Counteracting Obesity" guidelines were adopted. The European strategy is an exemplary step. Global Strategy on Diet, Physical Activity and Health must be enacted. Ensuring availability of healthier foods (including fruits and vegetables), reduction of sugars added to products, safer roads to enable cycling and walking, improve street lighting, promoting use of stairs, reduced TV viewing, labeling of food contents, smaller portions, health snacks in schools, control of advertising, are part of the strategy(11). However, stigmatization of obese people should be avoided at any age. The European charter record bariatric surgery as the only available treatment for patients with severe obesity (BMI>35 Kg/m3). Bariatric surgery was recognized as being associated with significant metabolic benefits, especially reduction in the incidence of type-2 diabetes. Obesity surgery has been reported expensive and carries a 0.5% mortality, and it was stated that the development of any bariatric surgery requires adequately trained, multidisciplinary teams to operate and provide long-term support. The momentous "Intendisciplinary European Guidelines for Surgery for Severe (Morbid) Obesity" are presented (6). Recent long-term studies show that there is a substantial reduction in mortality after bariatric surgery, as well as decreased risk of developing new health related co-morbidities, decreased health-care utilization and decreased direct health care costs(1,3).

Indications for Bariatric surgery:

Patients aged 18-60 years:

1- with BMI >40 kg/m2;
2- with BMI 35-40 kg/m2 with co-morbidity in which surgically-induced weight loss is expected to improve the disorder (eg. metabolic disorders, cardio-respiratory disease, severe joint disease, obesity-related severe psychological problems).
3- BMI criterion may be current BMI or a documented previous BMI of this severity. Note that:
   a- weight loss as a result of intensified treatment prior to surgery (patients that reach a body weight below the required BMI for surgery) is NOT a contraindication for the planned bariatric surgery;

b- bariatric surgery is indicated in patients who exhibited a substantial weight loss in a conservative treatment program but started to regain weight. In order to be considered for surgery, patients must have failed to lose weight or to maintain long-term weight loss, despite appropriate non-surgical medical care. Patients must have shown compliance with medical appointments.

Bariatric surgery in the adolescent:

Bariatric surgery in children and adolescents could be considered in centers which have extensive experience with such treatment in adults and are able to offer a true multi-disciplinary approach that involves paediatric skills relating to surgery, dietetics and psychological management.

In adolescents with severe obesity, bariatric surgery can be considered if the patient:

1- has a BMI >40 (or 99.5th percentile for respective age) and at least one co-morbidity;
2- has failed at least 6-12 months of organized weight-reducing attempts in a specialized centre;
3- shows skeletal and developmental maturity;
4- is able to commit to comprehensive medical and psychological evaluation before and after surgery;
5- is willing to participate in a postoperative multi-disciplinary treatment program;
6- can access surgery in a unit with specialist pae-diatric support (nursing, anaesthesia, psychology, postoperative care). Bariatric surgery can be considered in genetic syndromes, such as Prader-Willi syndrome, only after careful consideration of an expert medical, paediatric and surgical team.

Bariatric surgery above age 60:

The indication for bariatric surgery above age 60 years should be considered on an individual basis. Proof of a favourable risk:benefit ratio must be demonstrated in elderly or ill patients, before surgery is contemplated in such individuals. In elderly patients, the primary objective of surgery is to improve QoL, even though surgery may be unlikely to increase life-span.

Contra-indications specific to bariatricsurgery:

1- Absence of periods of identifiable medical management;
2- A patient who is unable to participate in prolonged medical follow-up;
3- Non-stabilized psychotic disorders, severe depression and personality disorders, unless specifically advised by a psychiatrist experienced in obesity;
4- Alcohol abuse and/or drug dependencies;
5- Diseases threatening life in the short-term;
6- Patients who are unable to care for themselves and have no long-term family or social support that will warrant such care.

Preoperative evaluation of the patient:

A decision to offer surgery should follow a comprehensive interdisciplinary assessment. The core team providing such assessment should optimally consist of the following specialists, experienced in obesity management and bariatric surgery:

- Physician
- Surgeon
- Anaesthetist
- Psychologist or psychiatrist
- Nutritionist and/or dietitian
- Nurse practitioner / social worker

Patients indicated for bariatric surgery should undergo routine preoperative assessment as for any other major abdominal surgery. Preoperative management should include:

- Assessment of general health and nutritional status (see below);
- Explanation of the dietary changes that are required after surgery;
- Optimizing treatment of co-morbidities to reduce the risks of the surgical procedure;
- Assessment of patient motivation and willingness to adhere to follow-up programs;
- Ensuring that the patient is fully informed of the benefits, consequences and risks of the surgical options and the necessity of life-long follow-up;
- Ensuring that the patient understands the potential (limited) outcomes of surgery;
- Ensuring that the patient can give truly informed consent including a statement on risks of the surgery and acceptance of behaviour modification of lifestyle and of follow-up.

In addition to the routine preoperative assessment as for any other major abdominal surgery, the patient may undergo further assessment (depending on the planned bariatric operation and the patient s clinical status):

- Sleep apnoea syndrome and pulmonary function;
- Metabolic and endocrine disorders;
- Gastro-oesophageal disorders (Helicobacter);
- Body composition (densitometric assessment);
- Bone density;
- Indirect calorimetry.

Overview of surgical techniques:

Definition:

- Food limitation (restrictive) operations
- Vertical banded gastroplasty (VBG)
- Gastric sleeve resection
- Gastric banding

- Adjustable (AGB)
- Non-adjustable

- Gastric bypass (GBP)

- Proximal
- Long-limb

- Operations limiting absorption of nutrients and energy

Biliopancreatic diversion (BPD)

Combined operations

Biliopancreatic diversion with duodenal switch (BPD-DS)

Distal gastric bypass (common limb <100 cm).

Laparoscopic technique should be considered as the first treatment choice in bariatric surgery, unless specific contraindications to a laparoscopic operation are present.

Assigning a patient to a particular bariatric procedure:

At this moment, there are no sufficient evidence-based data to suggest how to assign a patient to any particular bariatric procedure. Among others, pre-operative factors that could influence the choice of the type of operation are:

- BMI
- Age
- Gender
- Body fat distribution
- Type 2 diabetes mellitus
- Dyslipidaemia
- Binge eating disorders (BED)
- Low IQ
- Significant hiatal hernia
- Gastro-oesophageal reflux disease
- Patient's expectations/realistic goals The expected average weight loss and weight maintenance increases with the following procedures: AGB, VBG, GBP, BPD-DS, BPD. On the contrary, the surgical complexity and potential surgical and long-term metabolic risks of procedures decrease in reverse order.

The procedures should be performed in interdisciplinary obesity management centres with appropriately trained staff and adequate equipment (see below). In all situations, the bariatric surgeon's experience is a key issue. It is not advisable to practice bariatric techniques on an occasional basis.

If the patient is expected to benefit more from a particular procedure not available in a specific centre, he/she should be referred to a centre/surgeon with adequate bariatric experience in that procedure. As a result of successful bariatric treatment, further treatment (such as plastic / reconstructive surgery) may be required.

Follow-up:

Morbid obesity is a life-long disease. The treating physician, together with the treating surgeon, are responsible for the treatment of co-morbidities before the operation and for the follow-up after the operation. Complementary follow-up pathways (surgery and medical) should be provided to all patients, ideally in part through interdisciplinary joint clinics. The surgeon is responsible for all possible short- and long-term events directly related to the operation. The medical physician will be responsible for the long-term post-surgery follow-up and management of the obesity and obesity-related diseases and operation-related non-surgical consequences. Treatment outcome is significantly dependent, among other factors, on patient compliance with long-term follow-up.

During the rapid weight loss, special care must be taken for:

- Possible deficiencies, such as vitamin, protein, other micronutrients;
- Adjustments of medical treatment of the obesity-related morbidities, such as diabetes, hypertension, etc.

All patients after bariatric procedures require regular life-long qualified surveillance. Patients must have access to a 24-hour emergency service provided by the operating centre. The patient must take life-long responsibility for adhering to the follow-up rules.

Minimal requirements for follow-up after food limitation operations:

The patient should be provided with written information about the procedure and the exact type of received implant (if applicable), together with a description of possible serious adverse effects.

- Adjustable gastric band
  - Follow-up during the 1st year should be at least every 3 months, starting 1 month postopera-tively, until a clinically satisfactory rate of weight loss is achieved, if necessary with repeated band fills. Thereafter, follow-up should be not less than at yearly intervals;
  - Metabolic and nutritional status should be regularly monitored to prevent vitamin deficiencies and allow appropriate supplementation, as well as to monitor response to surgery and weight loss and adjust concomitant drug treatment;
  - Band adjustments should be performed
- according to the individual patient's weight loss and the type of implant;
- first inflation according to the type of band;
- as a medical/clinical decision;
- by trained medical or paramedical staff with adequate experience (such as surgeon, medical physician, nurse practitioner, dedicated radiologist);
  - Supplementation of vitamins and micronutrients should compensate for their possible reduced intake;

- VBG, non-adjustable gastric banding, and other pure gastric restrictive operations
  - Similar recommendations as for adjustable gastric banding, except there will be no band adjustments

- Gastric bypass
  - check-up after 1 month, minimal follow-up to be every 3 months the first year, every 6 months the second year, and annually thereafter;
  - Vitamin and micronutrient supplements (oral) should be routinely prescribed to compensate for their possible reduced intake and absorption;
  - Laboratory tests to evaluate the metabolic and nutritional status should be carried out annually to include fasting glucose (HbAlc in diabetics), liver function tests, renal function, vitamin B12, 25-(OH) vitamin D3, ferritin, calcium, parathyroid hormone, albumin, Hb, Mg++, zinc;
  - As a result of these tests, it may be necessary to correct deficits by parenteral administration of vitamins and micronutrients;
  - In the case of secondary lactose intolerance, replace with oral lactase;
  - In the case of early dumping syndrome, hydratation before meals is advised and the use of corn-starch supplements considered.
  - In the case of late dumping syndrome, hypoglycaemia should be considered and the patient advised accordingly.

Minimal requirements for follow-up after operations limiting absorption of nutrients:

- Biliopancreatic diversion
  - Check-up after 1 month, followed by minimal follow-up every 3 months after the operation in the first postoperative year, every 6 months in the second year, and annually thereafter;
  - Laboratory tests are necessary to evaluate the course of metabolic and nutritional status and to adapt supplementation and drug treatment accordingly;
  - Blood tests at 1,4 and 12 months, thereafter annually
- Liver function tests (GPT, GT);
- Complete blood cell count;
- Minimal nutritional parameters should be vitamin B12, 25-(OH) vitamin D3, PTH, bone alkaline phosphatase, ferritin, Ca,

albumin, transferrin, creatinine, protrombin time (PTT);

- Urine examination;
  - Life long daily vitamin and micronutrient supplementation (vitamins should be administered in a water-soluble form). Vitamins A, D, E, K;
  - Ca supplementation (preferably in Ca citrate, recommended total intake 2 grams/day);
  - Minimum advised protein intake of -90 grams per day;
  - Supplement of vitamins and micronutrients should compensate for their possible reduced intake and according to laboratory values
- In a preventive regimen, the supplementation can be administered orally;
- For correction of deficits, the supplementation should be administered parenterally, except for Ca;
  - PPI/H2 blockers for the entire first postoperative year.

In case of excess bloating, flatulence and/or foul-smelling stools, the recommended treatments are oral neomycin or metronidazole or pancreatic enzymes.

Failed treatment:

To reinforce adherence to lifestyle changes and weight loss maintenance after bariatric surgery, regular contacts and life-long follow-up with the obesity management centre are usually required. Scientific evidence reveals that a certain number of bariatric patients will fail to lose weight, or to maintain weight loss. If medically indicated and if such a patient is willing, further bariatric surgery should be undertaken.

Conclusion:

Overweight and obesity are associated with increased risks of type-2 diabetes, hypertension, cardiovascular disease, dyslipidemia, arthritis, non-alcoholic steatohepatitis, gall bladder disease, sleep-apnea syndrome and several cancers(2). Mortality increases with increasing BMI. Among severely obese young men mortality rate is 12 times that os young normal-weight men (9).

Bariatric surgery is an established and integral part of the comprehensive management of morbidly obese patients. The authors of the European Guidelines for Surgery for Severe (morbid) Obesity, trust that these guidelines will improve both medical and surgical care of morbidly obese individuals and will contribute to better outcomes and increased patient safety(2,3).

There are many areas in this field which will be the subject of future work, among such areas are the definitions of centers of excellence, the bariatric surgeon's qualifications and the acceptance of the disease/reimbursement issues.

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