

System of Obesity Surgery: overview

Adelaide Circle of Care, Flinders Private Hospital/Flinders University of South Australia,
South Australia, Australia

Lilian Kow

Obesity is a disease in which fat has accumulated to the point where health is impaired. It is a rapidly growing problem not only in the western society but also more recently in the Asia Pacific region. Worldwide, the incidence of morbid obesity has doubled, and about 300 million people are now considered obese.

Obesity surgery started more than 50 years ago. Tremendous advances have been observed in this practice of surgery. New techniques, new procedures, minimally invasive access and improvements in preoperative management have transformed the system of obesity surgery into a subspecialty of its own. To date, there is no effective diet or drug therapy available to treat the morbidly obese. On the other hand, bariatric surgery has been proven to be effective, providing marked and lasting weight loss, ranging from 47.5% to 70.1% of excess body weight. These results are achieved in relative safety, with operative mortality equal or less than that for other major operative procedures (about 0.5%). The weight loss outcome, results in dramatic improvement on the co-morbid conditions of morbid obesity.

The major medical co-morbid conditions can be divided into those where reversal or improvement has been proven such as type 2 diabetes, hyperlipidaemia, hypertension, obstructive sleep apnea, etc and those where reversal or improvement are reasonable and presumed such as cardiac and peripheral vascular disease, incidence of thrombophlebitis and pulmonary emboli and various carcinomas.

The ameliorating effects of bariatric surgery are not limited to medical co-morbidities. Socially, quality of life is vastly improved, as are body image, personal hygiene, and sexual activity. Many of the economic deprivations of the morbidly obese are reversed after marked weight

loss due to increased employment opportunities advancement potential, and level of income. The sum total of these co-morbidity benefits is an increase in longevity.

Role of incretins in metabolic surgery-induced remission of type 2 diabetes.

Chikashi Shibata, Takeshi Naitoh, Fumie Ikezawa, Hirofumi Imoto, Masayuki Kakyo, Makoto Kinouchi, Naoki Tanaka, Iwao Sasaki.

Department of Surgery, Tohoku University School of Medicine, Sendai, Japan.

Two hypotheses are proposed as a mechanism for remission of type 2 diabetes (T2DM) in metabolic surgery; one is foregut hypothesis associated with the exclusion of the duodenojejunum from the nutrient exposure, while another one is hindgut hypothesis associated with the rapid exposure of the ileum to the bile and nutrients. These hypotheses are tested using rat models of T2DM, including Goto-Kakizaki rats and obese Zucker rats. Two most representative procedures of metabolic surgery in rats are ileal interposition (II) and duodenojejunal bypass (DJB). II is considered as a model for hindgut hypothesis, whereas DJB as a model for foregut and partly hindgut hypothesis. These 2 procedures improve glucose metabolism, and there are no differences in T2DM remission effects between 2 procedures. Incretins including GIP and GLP-1 are assumed to play an important role in remission of T2DM in these procedures. Most studies reported that II does not affect fasted plasma GLP-1 levels but increases those after glucose or meal administration. Effects of II on the fasted and postprandial plasma GIP levels are still controversial. The effects of DJB on plasma GLP-1 and GIP levels are also controversial, and mechanisms independent of incretin are assumed in DJB-induced remission of T2DM. Clinically, ileal interposition with sleeve gastrectomy (II-SG) and ileal interposition with diverted sleeve gastrectomy (II-DSG) are being attempted. More than 90% of patients achieved adequate glycemic control (HbA1C<7%). Plasma levels of GLP-1, GIP, and PYY significantly increased, while plasma levels of ghrelin significantly decreased, after II-SG and II-DSG in the fasted and postprandial states. These results indicate the important role of incretins in metabolic surgery-induced remission of T2DM, but mechanisms other than incretins are also likely.

From the Aspect of Mental health

Tetsuya Nakazato

Yotsuya Medical Cube

Morbid obesity is a not only physically but also psycho-socially complicated disease. It is important to focus on the environment of the patients. For example, familial relationships, friendships, work relationships and other relationship.

Surgical treatments for morbid obesity have started in our institution since June 2006. The objective of the treatment is to improve quality of life (QOL). For improvement of QOL, physical, psychological, and social supports are important through pre- and post-treatment. Our multidisciplinary team consists of doctors, nurses, nutritionist, and social worker. This multidisciplinary approach is necessary to achieve highly effective treatment for obesity. To defeat the complexity of obesity, approach from different aspects is important. The key to success lies in a multidisciplinary team to empower the patients.

As the profession of social worker is to establish interaction between patients and their environments, The roles of the social worker in bariatric surgical team start from the first intake of all clients, conducting support groups, making an assessment of psycho-social problems and counseling.

The term "Mental illness" encompasses a wide variety of problems. The presence of psychiatric disorders is not an absolute contraindication to weight loss surgery.

The lecture will be regarding behavioral and psychological factors in the assessment and the treatment of bariatric surgery patients.

From the aspect of Nutrition; Formula diet

Atsuhito Saiki

Center of Diabetes, Endocrine and Metabolism, Toho University Sakura Medical Center

Formula diet is a powdered preparation and is composed of high-protein, low-carbohydrate, low-fat, vitamins and minerals. Formula diet is safe, convenience and effective in weight loss for treatment of obesity. However, the nutritional efficacy is not fully explored.

We compared the effects of partial use of formula diet (MicroDiet®; 170kcal/pack, protein 21.5g/pack, fat 2.4g/pack, carbohydrate 16.5g/pack) and conventional subcaloric diet on weight reduction, body fat distribution and related metabolic variables in obese patients with type 2 diabetes for 24 weeks. In formula diet group, weight reduction, visceral fat reduction, decrease in systolic blood pressure, HbA1c, triglyceride and increase in HDL-C was greater than in conventional diet group. Interestingly, improvements in visceral fat, HbA1c, triglyceride and HDL-C per reduced body weight were higher in formula diet group. These findings have given us a hypothesis that formula diet has specific nutritional effect, which is independent of calorie restriction. To clarify the hypothesis, we investigated the effects of formula diet on visceral fat, metabolic parameters and adipokines expression in Zucker diabetic fatty rats (low-calorie diet; 56kcal/g, P:F:C=25:15:60, formula diet (MicroDiet®); 56kcal/g, P:F:C=50:14:36). The changes in body weight were not different between groups, however in formula diet group, decrease in visceral fat volume and improvement in triglyceride and HDL-C were greater. Adiponectin, LPL, PGC-1 α and PPAR γ mRNA/protein expression in visceral fat tissue were higher in formula diet group. On the other hand, formula diet also led to greater reduction of liver fat content in Zucker rat.

Formula diet may be useful for prevention of malnutrition and long-term weight gain after bariatric surgery. Furthermore, the potent effect on liver fat reduction is also useful before surgery, because enlarged fatty liver in obesity compromises surgical access to gastroesophageal junction. Pre- and post-operative formula diet may be a key nutritional option when bariatric surgery is performed.