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The Art and Science of Post–Bariatric Plastic Surgery

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Preface

Obesity has reached epidemic proportions and is increasing worldwide. The increasing prevalence of obesity has resulted in increased interest and success with surgical treatments. Of all available methods, bariatric surgery has proved to be the most effective long–term treatment for obesity by its ability to provide sustained weight loss as well as amelioration of obesity–related comorbidities. Bariatric surgery is the current standard treatment for severe obesity. A variety of procedures are currently performed, which provide durable and rapid weight loss through malabsorption, restriction, or a combination of the two. Laparoscopic bariatric surgery, in particular, allows faster recovery and improvement in quality of life while avoiding the wound and abdominal wall complications associated with open procedures. The significant amelioration of obesity–associated comorbidities has been demonstrated. Laparoscopic techniques in bariatric surgery provide patients with decreased morbidity and faster recovery, with an equivalent amount of weight loss. Weight loss is dramatic and progressive until a plateau is reached. As a result of this success, patients who undergo dramatic weight loss also have large amounts of excess skin. This has resulted in an increased need for body contouring operations. Once the rate of weight loss has reached a plateau at about 12 to 18 months post–operatively, many of these patients become candidates for body contouring surgery and other aesthetic operations. As such, patients often seek the services of a plastic surgeon to remove the excess lax skin and improve the ptosis associated with such massive weight loss. This overview on post–bariatric plastic surgery focuses on selection of patients, operative techniques, post–operative management, and complications. Body contouring helps with skin removal after major weight loss:

this surgery improves the tone of underlying tissue and removes excess fat and skin. Skin that has been stretched over long periods shows reduced elasticity, and massive weight loss is often accompanied by a corresponding amount of excess skin. Many patients who undergo bariatric surgery develop such severe physical impairments that they require corrective plastic surgery. Indeed, most patients express a wish for plastic surgery after weight–loss surgery. Excess skin can cause various complaints, including intertriginous ulcerations and infections of the skin folds and navel, unpleasant odours, back and neck problems, aches and pains associated with work, exercise and intimacy, skin lesions due to chafing, difficulty finding clothes that fit and disparity between appearance and age. The abdominal area causes the most problems, followed by the chest and the thighs. Excess skin can therefore become a new source of stigma, social isolation and reduced quality of life for these patients. This book concentrates on the technique, which is explained and illustrated in detail, providing step–by–step instructions on how to perform state–of–the–art surgical techniques in this complex field. It supplies surgeons with all the information necessary to successfully accomplish a surgical approach to treat post–bariatric patients.

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Introduction

Over the past decade, body contouring after weight loss has become a growing field for the plastic surgeons. Worldwide, the rise of obesity and the consequent successful bariatric surgery procedures, had result in a variety of body contour deformities to be included in the practice of plastic surgery. The subspecialty of body contouring encompasses not only massive weight loss patients after bariatric surgery but also patients with specific anatomical contour deformities related to pregnancy, aging, or weight reduction from dieting and exercise. A major drawback of massive weight loss is the important skin relaxation that occurs and it makes patients feel uncomfortable, unhygienic, and in need for further improvement. Loose skin makes some patients feel worst than when they were heavy. Post–weight loss surgery (PWLS) represents thus the culmination of their weight loss journey. Procedures to be considered and in continue sophistication include operations like lower body lifts, back, thigh, arms, neck and body lifts; the final body contour in most cases is the result of a staged approach when it is done in the safest manner. Patient evaluation with comorbidities, concerns, expectations is the necessary step to the correct selection of surgery for PWLS.

Overview on obesity

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Body mass index (BMI) is the most common and most widely used tool to quantify obesity, and it is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m^2). An individual is considered obese if their BMI is greater than

30 kg/m², with a further classification into 3 grades of obesity (Grade I 30–34.9, Grade II 35–39.9, Grade III (morbid obesity) >40).

Worldwide obesity has nearly tripled since 1975: in 2016, more than 1.9 billion adults, 18 years and older, were overweight; of these over 650 million were obese meaning that 39% of adults aged 18 years and over were overweight in 2016, and 13% were obese. Data obtained from The US Department of Health and Human Services in January 2000 showed that the number of US adults who were considered obese increased from 23% to 33.8% creating thus a significant public health alarm and a relevant financial burden in our society due to the costs of obesity related to comorbidities and to the costs of obesity care itself.

According to the American Society for Metabolic and Bariatric Surgery (ASMBS), patients elected as candidates for bariatric surgery are divided in 2 groups:

a) Patients with a BMI greater than 40 kg/m² or more without coexisting medical problems for whom surgery would not be associated with increased risk;
b) Patients with a BMI greater than 35 kg/m² or more with one or more obesity–related comorbidities.

The most performed and well established weight–loss procedures include adjustable gastric banding (AGB), sleeve gastrectomy (SG), and Roux–en–Y gastric bypass (RYGB); less performed is the biliopancreatic diversion with duodenal switch (BPD–DS).

Between 1998 and 2002, there was a 450% increase in the number of bariatric procedures performed in the United States, a 144% increase in the number of American Society for Bariatric Surgery bariatric surgeons, and a 146% increase in the number of bariatric. The number of laparoscopic sleeve gastrectomies increased more than 5 times from 8.2% of all bariatric procedures in 2011 to 39.6% in 2012.

Patient selection and assessment for body contouring

The surgical judgment for selecting patients and staging procedures should be based on a full and detailed medical history, relevant blood tests, neces-

sary imaging, and specific consultations in case of comorbidities. Patient's motivation, concerns, and mostly expectations should be questioned also.

Evaluation of the following topics must be considered:

a) *Current weight, lowest weight, and highest weight* (with calculation of current BMI, lowest BMI, and highest BMI). Bariatric patients lose 70% of their excess body weight, even if significant fluctuation in weight after bariatric surgery is common. *Weight should be stable for at least 3 months before body contouring with no more than a 5–pound weight loss*.

b) *Method of weight loss*: surgical vs. nonsurgical; if surgical weight loss, type of procedure restrictive or malabsorbitive.

c) *Comorbidities.* Overweight and obesity are linked to more deaths worldwide than underweight. Globally there are more people who are obese than underweight. Obesity leads to increased incidence of heart disease, diabetes mellitus, sleep apnea, osteoarthritis, lipid abnormalities, hypertension and some cancer (including endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon); any medical conditions that are not resolved after weight loss must receive a detailed check–up. Previous DVT or coagulopathy history should carefully assessed to avoid further complications after surgery.

d) *Tobacco use*: smoking is related with delayed wound healing thus it is suggested absolute smoking cessation 4 months prior and 4 months after surgery to avoid further complications.

e) *Patient expectations*: psychosocial and psychiatric assessment are necessary since the rate of patients presenting for cosmetic surgery with some form of body dysmorphic disorder has been reported as between 5% and 15%. Mental stability is critical for withstanding the physical and emotional stressors of massive weight loss and the recovery process from staged body contouring procedures. Patient must have a clear and detailed explanation of every surgical procedure since staging is necessary. Patients should be able to understand the limits and the power of each procedure through showing skin displacement or pinch technique and mostly patients must be willing to accept extensive scars in exchange of body contouring.

f) *Nutritional history* (protein, multivitamins, and iron supplementation): nutritional deficiencies for malabsorbtion occur often in bari-

atric surgery especially after procedures like the Roux–en–Y gastric bypass. Iron deficiency is the most frequent together with deficiencies in calcium, vitamin B12, and thiamine and protein malnutrition can be multifactorial after bariatric surgery, related to delayed recovery and poor wound healing. All deficiencies must be optimized prior surgery.

g) *Pregnancy history*: before bariatric surgery especially abdominal dermolipectomy, previous pregnancies with probable recti diastasis, hernias, lower abdomen scar should be assessed; in case of further pregnancies it is recommendable to wait for surgery or to delay pregnancies.

Physical examination and procedure planning

Combining too many procedures at once has the potential for increased risks and complications: increased duration of any procedure is directly linked to prolonged physiological stress, post–operative complications as the amount of anesthesia, blood loss, and fluid shift increases. Each stage is usually limited to 6 hours to 8hours maximum duration and at 3–month intervals. In our practice, massive weight loss patients with a body mass index under 30 and a good medical status can be ideal candidates for a first–stage lower circumferential body lift together with one upper body procedure. For the second stage procedure that includes a vertical medial thigh lift and another upper body procedure at least a 3month window should be considered.

Decision making should be reached mutually between the surgeon and the patient, and should be based on realistic expectations of what could be performed safely at once. The physical examination considers many factors as skin quality and elasticity through pinch test, the prevalence of subcutaneous fat rather than the intraperitoneal fat, the presence of skin rolls, intertriginous rashes and or open wounds, the presence of existing scars, hernias or recti diastasis (in case of abdomen examination). When planning additional liposuction, skin laxity must be considered over excess of subcutaneous fat and see if liposuction during the first stage would benefit results of the second stage.

Certain combinations of procedures work well together for example: