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New trends in Post Bariatric Surgery Abdominoplasty

Essay

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INTRODUCTION

As the result of bariatric surgery becoming increasingly successful, the demand for abdominoplasty following significant weight loss is rapidly growing. Those who have lost weight are often unpleasantly surprised with having folds of tissue and loose skin that may be present [1].

Plastic surgery has been recently described as being a "new frontier" as surgery for abdominoplasty is sought by the patients who have lost significant amount of weight. The growing incidence of obesity, which is now a recognized problem worldwide, has in turn led to increase in the number of people losing weight. While a percentage of obese people are able to lose weight on their own through diet and exercise, the number of bariatric surgeries performed in yearly bases has exploded [2].

Many people are not sufficiently prepared for how they will look after massive weight loss and are unpleasantly surprised that they are dissatisfied with their appearance. They present with complaints including some or all of the following; excess rolls of skin and tissue on the back, flanks, and hips, sagging abdomen with possible "hanging apron", abdominal wall laxity, folds along the lateral chest, Drooping buttocks, Mons pubis ptosis and skin laxity of the thighs [3].

Abdominoplasty can be sought for several reasons. In addition to being aesthetically unpleasant hanging and flappy,

skin rolls can be very difficult to keep clean and dry. Intertriginous dermatitis may be present, no matter how precise the individual's personal hygiene. Many individuals report that clothing that fits well is still impossible because parts of body still disproportionate. Persisting back pain may be attributed to the pull from redundant abdominal tissues [4].

Patients who have acquired an increased life expectancy and a new outlook on life begin to feel the need for aesthetic improvements in their appearance, to overcome feelings of inferiority, and to be able to become normal functioning members of society. In order to achieve this, it is essential that they undergo a series of one or more reconstructive surgical procedures [5].

AIM OF THE WORK

To review the new trends in abdominoplasty procedures post bariatric surgery and to obtain the best possible results after surgery in terms of aesthetic results, patient satisfaction and complications.

Chapter (1):

THE EPIDEMIOLOGY OF OBESITY

Obesity has reached epidemic proportions throughout the globe, and this has also impacted people of the Arabic-speaking countries, especially those in higher-income, oil-producing countries. The prevalence of obesity in children and adolescents ranges from 5% to 14% in males and from 3% to 18% in females. There is a significant increase in the incidence of obesity with a prevalence of 2%–55% in adult females and 1%–30% in adult males. Changes in food consumption, socioeconomic and demographic factors, physical activity, and multiple pregnancies may be important factors that contribute to the increased prevalence of obesity engulfing the Arabic-speaking countries.

An important factor contributing to obesity is the imbalance between energy intake and energy expenditure. The WHO (World Health Organization) defines obesity as a BMI (body mass index) of 30 kg/m^2 or more and considers obesity as a visible but neglected health issue that has only received recognition during the last 15 years[6]. The prevalence of obesity has risen in both developed and under-developed countries and has been particularly problematic in children[7] . Excess weight is the sixth most important risk factor for worldwide disease burden[8] and is associated with diabetes mellitus[9] , hypertension

[10], cerebral and cardiovascular diseases[11], various cancers[12] and sleep-disordered breathing[13].

There is an increased concern about obesity and its associated illnesses in the Arabic-speaking countries (East Mediterranean, Arabian peninsula, and northern Africa) and the factors which may be associated with it, including changes in social and cultural environments, education, physical activity, diet and nutrition, and difference in income and time expenditure[14-17].

The prevalence of obesity has increased at an alarming rate during the last three decades, and this appears to be more pronounced in women. The prevalence of obesity parallels increased industrial development, which in the Arabian Gulf is related to the significant growths in incomes resulting from the rich deposits of oil reserves and the resultant impact on rapid urbanization and improved living conditions. Figure 1 shows the prevalence of obesity in the Arabic-speaking countries according to 2010 WHO estimates. For Kuwait, 30% of males and 55% of females over the age of 15 were classified as obese, making Kuwait the country with the highest prevalence of obesity in the Arabic-speaking countries[18].

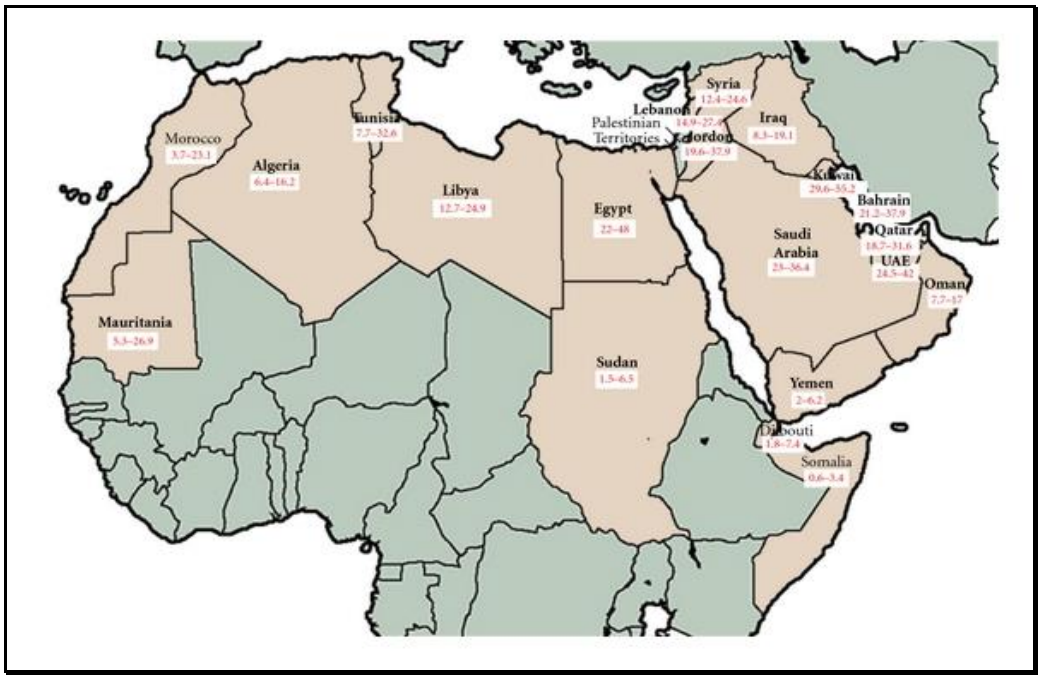

Fig. (1): Prevalence of obesity in Arabian countries in adult males and females, respectively, aged between 15 and 100 years, WHO estimates, 2010.

Childhood obesity generally persists during adulthood; approximately one-third (26% male-41% female) of obese Arabic-speaking preschool children and half (42% male-63% female) of obese school-age children were also obese at adulthood according to a survey of data collected between 1970 and 1992 [19]. This suggests that screening for obesity at an early age may help to predict, and perhaps control, obesity later in life. One such screening tool is "adiposity rebound" which is defined as the age at which there is a rapid growth in body fat. Using this tool, one could predict whether an early adiposity rebound would lead to being overweight early in adulthood[(20,21)]. Importantly, childhood obesity carries a greater

risk of developing CVD (coronary vascular disease), hypertension, type 2 diabetes mellitus, respiratory diseases, and some cancers. There is a significant correlation between BMI and metabolic syndrome in children and adolescents[22]. Childhood obesity is also associated with increased psychosocial impact and reduced quality of life, for example, decreased self-esteem and physical functioning for children while their parents may undergo emotional distress due to the chronic concerns about their children's health [23].

The rapid development over the last 20 years in the Arab world has brought significant prosperity and easier life-styles in terms of transport, access to cheap migrant labor, proliferation of Western style fast food, and as elsewhere, greater opportunities for sedentary lifestyles. These reasons created an "obesogenic environment" around the Arabic-speaking countries.

The morbidities associated with obesity, including diabetes, heart disease, some cancers and arthritis, reduce the patient quality of life and contribute to escalating medical costs [24].

Beyond an equation, obesity is a complex mixture of psychological, enviromental, social, cultural, geographic and genetic influences. Obesity seems to be an equal opportunity disease, with little discrimination regarding age, ethinicity, or

gender. The clinical definition of obesity is a body mass index > or equal 30 **(Table 1)** [24].

Table (1): Classification of obesity.

	BMI	Classification
Non obese	<18	Underweight
	18.5-24.9	Normal
	25-29.9	Overweight
Obese	30-34.9	Class l obesity
	35-39.9	Class ll obesity
	40-49.9	Class lll Obesity
Morbidly/Severely	>50	Super obese

The prevalence has also increased across all educational levels and is higher for persons with less education [25].

There are many treatments available for weight loss including diet, exercise and behavioral therapy. To date, the results of pharmacological intervention have been disappointing. Once considered a "last resort" bariatric surgery procedures have undergone great improvement and are now safer and more effective than before. Current guidelines recommend bariatric surgery in those with a body mass index of 40 or higher and for people with index of 35 who have significant comorbidities. As excessive weight is lost, lipid disorders improved in 70 percent, diabetes improved in 76.8 percent of patients, hypertension improved in 78.5 percent of patients and obstructive sleep apnea improved in 85.7 of patients[26].

Chapter (2):

A REVIEW OF BARIATRIC SURGERY PROCEDURES

Morbid obesity is a chronic condition that is extremely difficult to treat. In addition to the unhealthy food choices and lifestyles, effective treatment of morbid obesity is complicated by such factors as genetics and complex behavioral issues. Although diet and exercise remain the first choices in obesity therapy, they are rarely successful in achieving long term weight loss. Adequate pharmacological intervention remains elusive and even among patients who do achieve weight loss through diet and exercise and or pharmacological intervention , only a low percentage actually maintain this loss for any significant period of time [27] .

Bariatric surgery is currently the only therapy effective at achieving weight loss with significant improvement or resolution of comorbidities. The International Federation for Surgery of Obesity has confirmed the criteria for selection of patients for bariatric surgery as follows:

- BMI>40kg/m^2
- BMI 35-40 kg/m^2 with comorbid condition that can be improved by loss of excessive weight.
- Age 18 – 55 years

- Minimum 5 years morbid obesity
- Failed conservative treatment
- No psychosis or alcoholism
- Fit for surgery
- Agrees to lifelong follow up [27].

Bariatric surgery is first began in 1950s and evolved from the experiences of the general surgeons who had to remove segments of the patient`s small intestine because of disease and or necrosis. It was noted that patients who experienced "short gut syndrome" lost weight after their operations due to decreased the total absorptive surface area of the remaining intestine, which caused malabsorption of food. Different segments of the small intestine are responsible of vitamins, minerals, fats, proteins and other nutrients, thus patients with short gut syndrome often experience some types of vitamin and mineral deficiencies or diarrhea due to food not being absorbed. Early bariatric surgical procedures experimented with variations of the short gut syndrome, and although patients lost, severe side effects began to emerge that motivated surgeons to enhance and improve their technique [26].

The "14 + 4" or end to side jejunoileal bypass was described by Payne and DeWind and was very popular technique for 15 to 20 years. In this procedure, the first 35.6 cm of the jejunum was connected to the last 10.2 cm of the ileum.

Thus reducing the absorptive stream from 345 cm / 546 cm to 45.7 cm. Although the jejunoileal bypass casuses nutritional deficiencies, minerals and electrolytes imbalances and frequent diarrhea, patients succeeded in losing weight. As these patients were followed for 10 to 20 years after surgery, more serious problems began to emerge, including acute hepatic failure, cirrhosis and even death due to overgrowth of the bacteria in the bypassed small intestine and the migration into the portal circulation and beyond. Approximately 5 percent of patients died during the first postoperative year and as 30 to 50 percent of patients developed cirrhosis within 25 years of surgery. Because of these serious adverse events, jejunoileal bypass is no longer a recommended bariatric surgery procedure [28].

The next major development in malabsorptive bariatric procedures began to emerge in 1970s, Dr Nicola Scopinaro of Italy developed a procedure known as biliopancreatic diversion. It differed from jejunoileal bypass in that much less of the small intestine rendered nonfunctional, resulting in fewer liver problems.

Over time, significant modifications to the procedure have taken place. Today, this surgery involves two steps. In the first step, a limited gastrectomy is performed to reduce the stomach capacity by a third, to 118 to 148 cc. In the second part of the procedure, a long biliopancreatic or malabsorptive limb is created with a 50 cm common channel for absorption.

Complications include protein-calorie malnutrition, anemia, and bone demineralization. Recent data from Dr. scopinaro indicated that 72 percent excess body weight is maintained for 18 years, these results are the best that puplished till date. Although this largely malabsorbtive procedure help bring about significant weight loss, they place the patients at the highest risk for long term nutritional deficiencies and requires careful long term follow up. In addition, most patients will experience undesirable side effects of frequent, foul smelling stools. The biliopancreatic diversion, therefore, has not gained widespread use [29].

Dr. Edward Mason of the University of Lowa took a different approach in 1966 and developed what has become known as gastric bypass, "Roux en Y gastric bypass". In this procedure, both the size of the stomach and the outlet from the reduced stomach are restricted. This significantly reduces the amount of food the patient is able to consume. The gastric bypass utilizes a lesser degree of malabsorption, in which the new stomach pouch is connected to a section of the jejunum, bypassing the distal stomach, all of the duodenum, and some of the proximal jejunum. The earliest forms of the gastric bypass were referred to as loop gastric bypass. This was later modified because the loop aspect of the procedure allowed for severe reflux of bile into the esophagus, with subsequent irritation and ulcer formation [30].