Chapter

Introductory Chapter: Bariatric Surgery - Not Alone on This Long Road

Nieves Saiz-Sapena and Juan Miguel Oviedo

1. The actual burden of obesity

Obesity has become one of the leading problems worldwide and not only in first-world societies. Its prevalence rose steadily for seven decades, slowing down in the last ten years, especially in first-world countries, due to better prevention and treatment. Nevertheless, there are more overweight than underweight people in every region except sub-Saharan (but South Africa) and southeast Asian countries. Prevalence of obesity (BMI > 30%) is led by United States (38% population), Saudi Arabia (35%), Turkey, Egypt, Libya, and Canada (31–32%), and Australia (30%). In Europe, it affects 20–30% of the population, with the highest prevalence in the United Kingdom (29.5% population), followed by Hungary, Czechia, Lithuania, Greece, Bulgaria, Croatia, Spain, Ireland, Ukraine, Germany, Russia, and Poland (25.6%) [1–3].

Fat is an advancement in the evolution of the species as it allows for standing periods with no access to food and helps keep the body heat. But the convenient amount of adipose tissue has its limits, as too many fatty deposits are problematic for the skeleton, heart, pancreas, most inner organs and systems and a higher incidence of certain types of cancer [4–7]. Since the dawn of humanity, those problems have existed and are undoubtedly well-known during the roman empire decadence period [8]. It was already a problem in medieval times, but nowadays, it has reached the size of a pandemic. One of the more fundamental reasons is easy access to fast food and the consumption of high carbohydrate diets, sugar-sweetened beverages, and a more sedentary lifestyle. It is also true that access to any food is easier than ever, but some individuals cannot easily control their appetite. No one will deny the combination of availability of high caloric content food plus little caloric expenditure, but controlling their surge for food ingestion is not straightforward [9]. We all have known friends who had to be on a diet since early childhood because they were eating comparatively little, yet they kept putting on weight.

This book attempts to introduce the reader to the complex world of the treatment of obesity from a multidisciplinary point of view, from the non-surgical approach to modern surgical techniques, considering the broad spectrum of areas that may be affected in those patients.

2. The non-surgical approach

Education since childhood about the value of healthy eating is, for many, the golden bullet. But as doctors, we know that even so for a few will not be enough [10, 11]. What to do then? We cannot stand still seeing how their global health and

quality of life deteriorate as they gain weight. So, modification of living style and adoption of healthy habits is taken as a real sacrifice. Then the next magic solution: bariatric surgery.

A "healthy living lifestyle" is often perceived as tedious, frustrating, tiring, too strict, not very social... but all these take us to two of the most critical issues in obesity. The first one is the psychological alteration these patients have. What was first? Did obesity lead to psychological damage? Or the other way round, is there a psychological foundation basis for obesity? In any case, psychological, dietary, and physical assessment, support, and treatment are necessary.

The second issue is the genetic propensity towards obesity. Adipose tissue works as an organ, with its own metabolic rules. And sometimes, not even the strongest-minded person can overcome it. However, the knowledge of pathophysiology has helped to individualise the treatments.

Then the next "magic solution": bariatric surgery. Preparation for such an event needs teamwork: dietitian, physiotherapist, psychologist, respiratory physician, endocrinologist, and even sometimes a personal trainer will help the patient journey to a new healthier life. Nevertheless, patients must follow a strict diet before the operation and change their minds about eating [12]. This necessary change in eating habits is, undoubtedly, the keystone for long term success. Therefore, there is an absolute need for the non-surgical approach to the bariatric patient.

3. Bariatric surgery

In the last 50 years, surgery and anaesthesia have developed exponentially compared to the previous centuries. Moreover, laparoscopy and anaesthesia-related devices and monitors have increased the safety and efficacy of surgical procedures. However, there is a 42 year time lapse from the first jejunum-ileal bypass of Kremen in 1951 [13] to the first laparoscopic bypass of Wittgrove in 1994 [14]. By then, restrictive procedures were being also introduced in bariatrics.

We all remember the adjustable gastric band in the eighties [15], which became a popular laparoscopic bariatric surgery in the nineties. Initially, patients lost weight but soon adapted to eat less and ate higher calory content [16, 17]. But, unfortunately, the band itself was also a source of many other problems like infections [18], migration [19], erosion [20] and even, on rare occasions to gastric perforation [21]. As a result, conversion to other bariatric surgical procedures has not been uncommon [22].

But with the new century also new choices came. Reducing the significant stomach curve to create a gastric sleeve with a smaller capacity was an innovative advancement. Gagner published the first experience with sleeve gastrectomy as a stand-alone procedure in 2008 [23]. It has been the solution that has helped many maintain weight within reason [24]. At this moment, it is the most common bariatric surgery type, with very low morbidity and mortality rates, making it very safe not only as a stand-alone procedure but also as the first procedure for super-obese patients. But it demands that the patient collaborates and does not do as in the gastric band: eating less but more times and with food with a high calory content [25]. The removal of the part of the stomach that segregate ghrelin helps controlling appetite, which is seen as one of the significant advantages of the procedure from the psychological point of view.

4. The post-surgical individual care

But both psychologists and nutritionists will have the most critical role at this stage. Regardless of the type of surgery, all patients need to change their habits to

healthier ones, including diet, exercise, and life. In addition, family, friends, workplace, and sometimes even home need to adapt or collaborate to create a favourable and positively stimulating environment, addressed to a new life.

Changing eating habits is complicated, as homemade food needs to be increased, but sometimes there is little time. Another drawback is that some patients (most commonly those who underwent malabsorptive procedures) present iron [26] or vitamin B_{12} absorption problems [27], which might need surveillance and dietary supplementation in this respect [28].

5. Other challenges

Despite all efforts, sometimes surgery fails, and there is the weight regain. It is more common in the case of restrictive procedures, as sleeve gastrectomy. For those cases, new and ingenious surgical techniques were created [29, 30]. The basic concept is that reducing the length of the small intestine will proportionally reduce nutrient absorption [31]. Therefore, even if the patient overeats, it will not put on weight. But, sadly, the absorption of vital elements like vitamins will also be jeopardised, and these patients will need close, continuous medical surveillance and chronic dietary supplements [32–34].

Another serious challenge has been the anaesthetic and the surgical procedure themselves.

The anaesthetic itself is full of scary moments [35]. Intubating these thick necks are not that easy, especially when also arthrosis appears with age. Getting good venous and arterial lines can prove exasperating. The lung and heart functions are already at their limits, only to mention a few challenges [36, 37]. Nevertheless, the whole endocrine system is altered because of adipose tissue, with its way of behaving in metabolism terms, and we can carry on.

As far as surgery is concerned, the introduction of endoscopic techniques in the nineties made it possible to reduce surgical aggression regarding access to the anatomical structure to be treated, be it the stomach or the small intestine [38]. But with this advancement, another challenge arose. Insufflating CO_2 inside the abdominal cavity to get space for the surgical manoeuvres increases the abdominal pressure, pushing the diaphragm, thus increasing intrathoracic pressures [39]. Another challenge for the anaesthesiologist is the juggling to keep the venous return and the cardiac output within reasonable functional limits [40].

The final challenge is the patient. First, because lifestyle changes need to be maintained, the team must support the patient, but the patient must cooperate in the months following and the rest of their life. Second, the scars of the whole process will be there, showing up in the form of skin laxity, which will require, on many occasions, plastic surgery intervention, which will, in turn, will also leave its scars.

6. Conclusion

Hence, this book attempts to be a global thought on obesity and its treatment before, during and after the surgery itself, and, most importantly, in the following months and years [41]. After all, nothing is less disheartening than seeing how relentlessly some patients put back some if not all the weight lost after the bariatric surgery because long term eating habits prove to be as essential as stomach or small intestine reduction [42, 43].

Nevertheless, other essential aspects of treatment need attention before and after bariatric surgery, such as physiotherapy, micronutrient deficiencies, and psychological attention. And yet, this is not all. Many will need repeated plastic surgical procedures to recover a body image they can feel proud of, and finding a new job or a promotion in the present or a new sentimental relationship are final aspects to consider [44–47].

To conclude, obesity is much more than just a high body mass index. It entails lousy eating habits, many coming from a faulty family raising, a change in mentality about what eating must mean to keep a healthy body and understanding that others are not going to be of help through a bariatric surgery if the patient him or herself do not take an active part in the process. Bariatric surgery is a long way, but neither the patient nor the surgeon is alone. Our role as doctors in the process is tiny, and we are members of a team that will have to be around this process for long and watch for any aspect that can be improved through our help and care.

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