Chapter 9
Patient Selection

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Duodenal switch is one of the most powerful bariatric procedures we have, despite this, it only represents 2% of the total bariatric procedures performed worldwide [1]. It was described in the late 1980s-early 1990s by Hess [2] and Marceau [3] as an evolution of the biliopancreatic diversion (BPD) in order to deal with its side effects. BPD had shown excellent weight loss results but some severe side effects as marginal ulceration, excessive diarrhea, and malnutrition.

The first papers about duodenal switch (DS) were focused on technical facts and the rationale for vertical gastrectomy and the length of the limbs, but they did not discuss too much about patient selection [3–5]. Nowadays, there is overall consensus about the benefits of this procedure in heavier patients, but special indication in super-obesity. The greater benefits in terms of comorbidity improvement compared to other procedures are also well known [6, 7]. Finally, it is important to remark that even if it is a safe procedure, as other hypo-absorptive surgeries, DS is not indicated for all potential candidates, because factors like social conditions, incomes, access to supplementation, and good follow-up have to be taken also into account.

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9.1 Potential Candidates for Duodenal Switch

DS is one of the most powerful bariatric tools we have. It combines the restriction of a sleeve gastrectomy with the malabsorption of a distal intestinal bypass. The most common constructions of the bowel limbs consider a total alimentary limb of 250–300 cm, with a 75–100 cm common channel. Some original descriptions also took into consideration percentages of the total limb length, leaving a 50% of total alimentary limb where 10% of the bowel was left as common channel.

In an overall view, DS is considered for the same population as other bariatric procedures:

- BMI > 40 kg/m^2 or BMI > 35 kg/m^2 plus other medical condition related to obesity
- Failed non-operative treatments for weight loss
- Mental health clearance
- No contraindications for surgery

Super-obese patients (SOP) are usually considered the best candidates for hypoabsorptive procedures. Restrictive procedures may have limited effect on this population. DS has important advantages to BPD and distal Roux-n-Y gastric bypass (RYGB) as it is a less ulcerogenic procedure and because vertical gastrectomy allows better food tolerance. The earlier descriptions of the duodenal switch already show good and sustained weight loss results in this population.

Risstad et al. [8] presented in 2015 a randomized controlled trial comparing DS vs RYGB y patients with BMI 50–60 kg/m^2. They found after 5 years of follow-up that DS achieved sustained greater weight loss, plus greater improvement in lipid profile. Quality of life did not differ between both procedures, but DS was associated with more surgical, nutritional, and gastrointestinal adverse effects. There are also some other comparative studies that show similar results.

The Clinical Guidelines cosponsored by American Association of Clinical Endocrinologists/American College of Endocrinology, The Obesity Society, American Society for Metabolic & Bariatric Surgery, Obesity Medicine Association, and American Society of Anesthesiologists in its last review from 2019 [9] consider DS as an effective procedure for patients with very high BMI.

However, BMI 50 kg/m^2 does not represent a frontier line to indicate or not indicate DS. Patients with lower BMI may also benefit from this powerful tool. The metabolic benefits of this procedure have been widely published [10–12], so it may also be indicated in patients with BMI 40–50 kg/m^2 with strong metabolic comorbid conditions.

9.2 Selection Algorithms

Buchwald presented a very interesting patient selection algorithm in 2002 [13]. Even though this paper may have severe limitations, it describes the aim of the potential candidate for duodenal switch. This algorithm considers 6 items: body mass index (BMI), age, gender, race, body habitus, and comorbidities. Following this algorithm, the more complex the patient, the more suitable he may be to a DS.

Himpens has also presented some algorithms with the same rationale. The Himpens Obesity Severity Score follows the same rules from the Buchwald's algorithm but referring to other factors established the severity of the disease. Some years ago, the same author published his personal long-term experience with the DS [7]. In this publication, it is referred to a personal algorithm about his personal selection protocol. This protocol reflected that DS was considered for metabolic patients, without GERD, and with binge eating.

9.3 Contraindications for Duodenal Switch

Contraindications for DS may be considered the same for all bariatric procedures:

- Pregnancy
- Severe psychiatric illness
- Eating disorders
- Patient-related contraindications to undergo surgery (cardiovascular risk, anesthetic risk)
- Substance misuse (alcoholism)
- Severe coagulopathies

We may also add contraindications for sleeve gastrectomy as severe reflux (esophagitis greater than B) or big hiatal hernias; and contraindications for hypoabsorptive procedures:

- Inflammatory bowel disease
- Immunosuppressant therapies
- Hypo-absorptive syndromes
- Familial polyposis colonic disease
- Colonic resections
- Fecal incontinence

Some of these contraindications should be considered relative contraindications, and a tailored approach is mandatory in those cases.

The main specific contraindication for DS is related to its potential side effects. As a hypo-absorptive procedure, with high risk for protein malnutrition and a significant association with micronutrient deficiencies, DS patients will have to follow a strict supplementation program [14, 15]. Some of these supplementations may be expensive and patients need to be conscious preoperatively. Patient adherence to the follow-up program by the multidisciplinary team is crucial to avoid long-term side effects. Even though it is difficult to predict how the patients will behave after surgery, it is important to try to detect those who may fail postoperative consultations.

In this procedure social conditions and incomes may also play a role as a potential contraindication for DS. Patients with poor incomes with difficult access to supplementation, or they may be reluctant to continue the follow-up program, should not be considered for DS.

9.4 Duodenal Switch as a Staged Procedure

DS is considered one of the most complex bariatric procedures technically speaking, as it includes sleeve gastrectomy, dissection and section of the first portion of the duodenum, and two anastomoses. It is commonly indicated to higher BMI patients, so it is a difficult combination to deal with. From the paper of Regan and Gagner in 2003 [16] staging the bariatric surgery in those complex patients is a strategy to take into account.

Staged DS is thought to convert a high-risk procedure into two low-moderate risk procedures. Sleeve gastrectomy is challenging in these patients, but the dissection of the duodenum and the duodeno-ileal anastomosis may be very difficult (heavy and short mesenteries, high volume liver). After a strong weight loss, the procedure is quite straightforward.

There are some papers [6, 17–19] that demonstrate that DS is not charged with extra morbidity or mortality in patients with BMI up to 60 kg/m^2, so the real benefit for this staged strategy might be for BMI over 60 kg/m^2. Second stage allows at the end the same weight loss as a primary procedure. This second stage can be scheduled 12 to 24 months after surgery, but the ideal time interval has not been defined.

On the other hand, there are also some patients initially planned for staged procedures that continue losing weight and do not require a second stage [20]. They represent around 10–15% of the primary sleeve gastrectomies.

9.5 Duodenal Switch as a Rescue for Failed Primary Procedure

DS has also been described as an indication to rescue a failed primary procedure [21]. SG, RYGB, and single anastomosis DS (SADI-S) can be converted into DS.

SG to DS is a straightforward procedure. Failed SG, especially when SG had not been properly indicated, can be rescued by converting into DS. It is important to perform an adequate preoperative workup. GERD has to be excluded prior to going to the operating room, as it cannot be clearly stated if it may be related to overweight or to sequelae of the SG. On the other hand, it is also important to evaluate potential dilation of the gastroplasty as the restrictive component may also be restored.

Failed RYGB can also be converted into DS [22, 23]. It has been stated that conversion into DS is the most effective solution for a failed RYGB, but it is also the most challenging. Conversion from RYGB to DS is a complex procedure that can be performed in one or two stages. We may find several series of cases in the literature but high morbidity but with good weight loss results.

Finally, SADI-S can be converted into DS just by adding a Roux anastomosis. This is the most effective solution in case of bile reflux after SADI-S, but it has also been proposed to fail weight loss. There is just a little evidence about the potential benefit from this conversion.

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