Correction to: Reoperative Bariatric Surgery: a Systematic Review of the Reasons for Surgery, Medical and Weight Loss Outcomes, and Relevant Behavioral Factors

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Due to production errors, there are numerous instances within the original article where the wrong references are cited. These errors should be corrected as follows:

On page 2708, starting 8 lines from the bottom of the right-hand column and continuing on page 2712, top of the left-hand column, should read as:

eating and lifestyle behaviors [22], difficulty in embracing the required lifestyle changes [23], and reappearance of depressive and anxious symptoms have been associated with failure of weight loss or weight regain after primary surgeries [24] (these aspects will be further developed elsewhere in this manuscript). It should be noticed that patients often present multiple reasons for receiving a reoperative surgery. Medical/anatomical factors co-occurring with behavioral problems are likely to result in weight regain or insufficient/inadequate long-term weight loss [21, 25]. In most cases, unsuccessful initial or sustained weight loss and weight regain are the most frequent reasons for reoperative bariatric surgery [19–21, 26].

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Outcomes After Reoperative Bariatric Surgery

Medical Complications After Reoperative Surgery

The mortality rate is estimated to be about 2%, showing higher values when compared to those estimated for primary procedures, which is expected to range between 0.1 and 1.1% [3, 19, 21]. Little is known about short- and long-term medical complications, such as leaks, intra-abdominal hematomas, bowel necrosis, pulmonary embolism, and even death after reoperative procedures. The literature suggests that reoperative surgeries have higher complication rates compared to primary procedures [6, 9, 27–31]. As for laparoscopic revisional surgeries, complication rates range from 0 to 39.3% and rates for conversion surgery from 0 to 47.6% [8, 21, 32].

A low risk of post-operative complications has been reported for revisional procedures of gastric banding. However, this type of procedure results in higher re-reoperation rates [10]. Gastric banding and sleeve gastrectomy present lower complication rates when compared to other types of reoperative procedures [30, 33]. In regard to malabsorptive conversion surgical procedures, complication rates reported in the literature range from 10 to 78.6% [34, 35]. Conversion to RYGB involves greater risk of complications than in patients undergoing a first-time operation [13, 28]. On the other hand, revisional RYGB has been shown to be a safe procedure with post-operative complication rates comparable to the primary RYGB [4, 19, 21, 32, 35]. Keshishian and colleagues [36] indicated that conversion to duodenal switch brings an increased risk of complications. Nevertheless, research is still limited regarding this type of conversion surgery.

In conclusion, complication rates are higher for conversion than for revisional procedures, owing to the fact that they are technically demanding surgeries [34]. Despite the high rates of medical complications associated with reoperative surgeries when compared to primary surgeries, the risk-benefit relationship favors the decision of a second surgery [13]. Nevertheless, it should be noted that the aftermath of short- and long-term complications on post-operative effects has not been extensively explored yet [29, 31].

Weight Loss After Reoperative Bariatric Surgery

Generally, conversion to RYGB after failed adjustable gastric band has superior results in achieving weight loss compared to rebanding or conversion to vertical banded gastroplasty [18, 30, 39]. Some authors sustain that revisional gastric banding does not result in more weight loss but represents a good strategy to maintain long-term weight loss [18, 37]. As expected, malabsorptive procedures as a second surgical procedure are associated with increased weight loss when compared to restrictive procedures [19, 38].

Similarly to primary surgery, a few studies have shown that most of the weight loss occurs within the first 12 months after reoperative bariatric surgery [32, 33, 39]. Nonetheless, the amount of weight loss is generally higher in primary bariatric surgery than in reoperative procedures. Still, it should be noted that reoperative surgeries result in additional weight loss and greater final weight loss [19]. For instance, conversion to gastric bypass presents a mean % excess weight loss (% EWL) ranging from 46 to 70% [19, 37, 38]. Moreover, Gobble and colleagues [33] showed that after LAGB for failed RYGBP, the mean % EWL was 20.8% and the mean total % EWL in both surgeries was 58.8%. On the other hand, Roller and colleagues suggested that patients who undergo multiple procedures tend to lose less weight as the number of procedures increases [28], probably due to the weight loss benefitted from previous surgeries [32].

Nutritional Problems After Reoperative Bariatric Surgery

To the best of our knowledge, no study has compared primary and reoperative surgeries in terms of nutritional deficiencies. However, the risk of nutritional deficiencies has been reported in primary surgeries and it is suggested that they depend not only on the percentage of weight loss but also on the type of surgical procedure performed [19, 40].

Despite the lack of studies about the nutritional deficiencies after the reoperative bariatric surgeries, some studies have shown that nutritional deficiencies in patients undergoing revisional surgeries are similar to those reported in studies on primary bariatric procedures. These surgeries produce significant changes in the gastrointestinal anatomy and physiology, inducing a substantial change in the quantity and quality

of diet, which may result in nutritional deficiencies [40]. Increased risk of metabolic/nutritional complications occurs particularly in malabsorptive surgeries (e.g., RYGB, biliopancreatic diversion with a duodenal switch) [43], as these procedures modify the functional anatomy of the gastrointestinal tract and the absorption of nutrients. Research has suggested that approximately 20% of patients submitted to distal RYGB reoperation develop nutritional complications [19], including low levels of vitamin B₁₂, after conversion to RYGB [41], and also after conversion to biliopancreatic diversion with a duodenal switch [42]. The decrease in iron levels [41], as well as protein deficits, after conversion to RYGB has also been reported. Further research is needed to investigate if nutritional complications after reoperative surgeries are similar or increase when compared to primary interventions, particularly considering the expected accentuated weight loss and the more invasive procedures.

Behavioral and Psychosocial Variables in Reoperative Bariatric Surgery

An emerging body of research has shown that behavioral and psychosocial variables are relevant in primary bariatric surgery outcomes. However, information on behaviors or psychological aspects following reoperation is sparse, and there is no data to support their role in weight outcomes following reoperative bariatric surgeries. So far, only Kafri and colleagues [43] have compared the psycho-behavioral outcomes between patients undergoing second and primary bariatric surgery. Patients who underwent reoperation reported more non-normative eating patterns (including binge eating, loss of control eating, and grazing), vomiting, lower rates of physical activity, reduced levels of healthy eating, less weight loss, and a higher level of psychological distress [43]. Findings suggest that these patients do not adopt critical behavioral changes necessary for long-term success [23].

On page 2713, starting at the top of the right-hand column, should read as:

control over eating and weight outcomes following primary bariatric surgery. Generally, a post-operative decrease in depression and anxiety symptoms is observed [55]. However, anxiety and depression may reoccur, resulting in a greater impact on the course of weight than pre-surgery diagnoses [24]. Similarly, high impulsivity levels also seem to contribute to the reduced success of bariatric surgery [54].

Nutritional and lifestyle compliance is a critical factor in maintaining long-term weight loss [56], and research has shown that poor weight outcomes have been associated with non-compliance with post-operative nutritional requirements [2, 23]. Hence, it is important that healthcare professionals are aware of the psychological variables that may compromise the necessary behavioral modification and compliance with medical prescriptions.

Despite the importance of these aspects, there is at the present no data regarding their role after reoperative bariatric surgeries. Further studies are needed to explore altered eating behaviors in this population, and to better characterize the psychobehavioral background of reoperative bariatric surgery.

With the purpose of increasing the success rates of reoperation surgeries, a comprehensive pre-operative assessment is crucial [7]. The primary aim should focus on identifying behavioral or psychological aspects associated with failure of primary surgery, as they may compromise further weight loss and therefore should be targeted and treated [7].

The role of the multidisciplinary team is crucial, and enhancing adherence to post-operative dietary protocols and regular follow-up monitoring sessions is necessary to optimize weight outcomes [57]. Additionally, computer and internet-based interventions, or other weight management programs, can serve as complementary tools to provide the patient with an educational component and promote compliance with post bariatric surgery nutritional requirements [23, 56, 58].

In Table 1, beginning on page 2709, the last two entries in the first column should be [25] and [26]. Then, continuing on page 2710, the entries in the first column should be [27], [28], [29], [30], [31], [32], [35], [36], [34], [37], [38], [39], [41], [42], and [43].

In addition, references 22–43 are corrected as follows:

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