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BRIEF COMMUNICATION

Dilated Gastric Pouch Resizing for Weight Loss Failure After One Anastomosis Gastric Bypass

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Abstract

Some patients may experience inadequate weight loss or weight regain due to gastric pouch dilation after one anastomosis gastric bypass (OAGB). Dilated gastric pouch resizing (GPR) associated with correction of eating behavior was suggested as an option in the management of these patients. Retrospective analysis of 17 consecutives patients who underwent a GPR between 2007 and 2017 was undertaken. At revision, the mean body mass index (BMI) and percentage of total weight loss (%TWL) were 41.5 ± 11 kg/m^2 and 15 ± 10, respectively. Overall morbidity rate was 6.7% (n = 1). Two years after revision, the mean BMI and %TWL were 34.1 ± 5 kg/m^2 and 31 ± 13, respectively. GPR appeared to be a satisfactory option resulting in mid-term secondary weight loss in well selected patients at the expense of non-negligible morbidity rate.

Keywords One anastomosis gastric bypass · Weight loss failure · Revisional surgery · Gastric pouch resizing

Introduction

One anastomosis gastric bypass (OAGB) is a relatively recent procedure and seems promising in view of satisfactory results in terms of weight loss, improvement of comorbidities, and low morbidity [1]. However, some patients may experience inadequate weight loss or weight regain [1]. This problem is multifactorial and has already been analyzed in other malabsorptive procedures such as Roux-en-Y gastric bypass (RYGB) [2–4]. Gastric pouch dilation and gastrojejunal anastomosis enlargement have been designated as factors responsible for this failure as well as the non-compliance by the patient with diet and lifestyle measures [2, 5, 6]. Gastric pouch resizing (GPR) and gastrojejunal anastomosis repairs were suggested as therapeutic option in the treatment of inadequate weight loss after Roux-en-Y gastric bypass [4, 7]. To our knowledge, there is no published data concerning the management of the inadequate weight loss or weight regain after OAGB. In this study, we analyzed the feasibility, safety, and efficiency of GPR for insufficient weight loss or regain after OAGB.

Methods

A retrospective review of the prospective database of all consecutive patients with history of GPR after OAGB between January 2007 and December 2017 was undertaken.

Insufficient weight loss was defined as insufficient percentage of excess weight loss (%EWL) 2 years after surgery (< 50%). Weight regain was defined as > 25% EWL regain compared with minimal weight after OAGB or when a patient met the criteria for bariatric surgery again.

Prior to surgery, all patients underwent a medico-nutritional assessment by a multidisciplinary team and followed for at least 6 months to ensure the absence of eating disorders. CT scan and endoscopy were performed all patients.

The gastric pouch was considered dilated when radiologic and endoscopic criteria were met: gastric pouch was considered dilated when the width was > 4 cm measured on CT scan after ingestion of radio-opaque product (Fig. 1), dilation was confirmed when easy retrovision was possible during endoscopy.

Surgical procedure was performed laparoscopically (Fig. 2). At first, the biliopancreatic limb was measured to make sure the length was correct, and then, gastric pouch was completely released from adherences with exposure of

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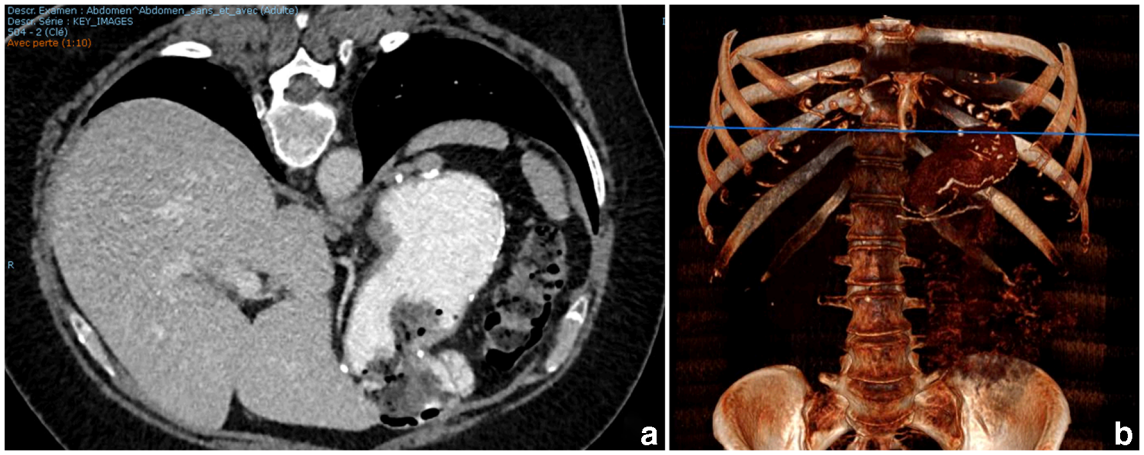

Fig. 1 **a** Dilated gastric pouch (7 cm) filled with the contrast medium on CT scan. **b** 3D reconstruction on CT scan of dilated gastric pouch

the left pillar of the diaphragm. After gastric pouch calibration (32Fr) on lesser curvature, the excision of the excess gastric tissue was performed using a linear stapler. Suture integrity was verified using a methylene blue test. Length and width of the resected gastric tissue were measured. Patients were fed on the first day after surgery. All patients were reviewed at 1, 6, 12, 18, and 24 months and then yearly.

Baseline weight and BMI (kg/m^2) were defined as weight and BMI before any bariatric surgery. Maximal excess weight loss (%EWL) was defined as the sum of %EWL after OAGB and GPR. Maximal percentage of total weight loss (%TWL) was defined as the sum of %TWL after OAGB and GPR.

Categorical data are presented as percentages, whereas continuous variables are presented as means and standard deviations.

Results

Patients and Procedure Characteristics

Among 1585 patients who underwent OAGB, 78 (5%) presented weight loss failure. Among these patients, 17 secondarily underwent GPR. All procedures were performed laparoscopically. There were 15 females (88%). The mean age was 42 ± 10 years. Five patients (29%) had history of gastric banding before OAGB. The mean delay between OAGB and revisional surgery was 67 ± 36.3 months. Fourteen patients (82%) underwent GPR for weight regain and three patients (18%) for weight loss failure. The average length of the biliopancreatic limb was 180 ± 20 cm. Mean width of gastric pouch was 7 ± 1 cm. The average operative time was 45 ± 15 min. The mean width and length of resected gastric tissue were 2.5 ± 1 cm and 11 ± 2 cm, respectively.

Postoperative Morbidity

There was no mortality. Overall morbidity rate was 6.7% (n = 1). One patient presented partial splenic infarction due to segmental spleen artery section during dissection of the gastric pouch and did not require reoperation. The average hospital stay was 3.5 ± 1.5 days. There was no late morbidity observed after revisional surgery.

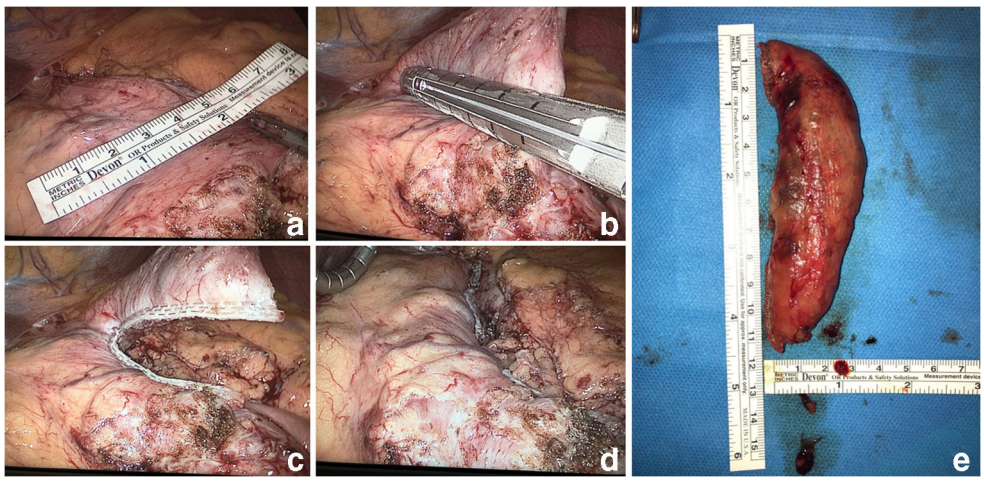

Fig. 2 **a** Dilated gastric pouch (laparoscopic view). **b**, **c** Beginning of excess gastric tissue resection. **d** Resized gastric pouch. **e** Removed gastric tissue

Weight Loss

Mean weight and BMI were 137.6 ± 18.6 kg and 48.9 ± 8.5 kg/m^2 before OAGB. Data concerning BMI and %EWL changes after gastric pouch resizing over two years of follow-up are shown in Table 1. After OAGB, the average lowest weight, BMI, and %EWL were 96 ± 21 kg, 34.1 ± 7.7 kg/m^2, and 63 ± 15, respectively. At the time of the GPR, the mean weight, BMI, %TWL, and %EWL were 116.7 ± 21 kg, 41.5 ± 11.5 kg/m^2, 15 ± 10, and 36 ± 21, respectively. Two years after revisional surgery, the average weight, BMI, %TWL, and %EWL were 95 ± 22 kg, 33.5 ± 6 kg/m^2, 31 ± 13, and 69 ± 21.

Discussion

Despite continuous increase of the patients with insufficient weight loss or weight regain after bariatric procedures combining restriction and malabsorption such as RYBG and OAGB, today, limited amount of data has been published on the management of these patients [2–4, 6]. Several factors including uncorrected eating disorders, psychological troubles, and anatomical causes such as secondary dilation or initial inadequate calibration of the gastric pouch were questioned. Therapeutic management of these patients with correction of eating behavior and psychological troubles is indisputable. In this work, we report our experience of GPR for weight loss failure or weight regain after OAGB proposed to selected patients as an ultimate solution after all trouble correction.

The failure of the food restriction could be related to initial gastric pouch inadequate tailoring, due to prior gastric surgery such as gastric banding. In our previous work, one thousand consecutive OAGB were reported including 125 patients (12.5%) with a history of gastric banding [1]. Forty-nine patients (5%) presented weight loss failure. Among patients with weight loss failure, 40% had a history of gastric banding. At 5 years, the mean %EWL was 73.3 ± 27 for patients who underwent primary OAGB versus 66.2 ± 26 for patients who underwent OAGB after gastric banding. Among our patients, 5 (29%) had a history of gastric banding before OAGB. Due to this correlation, we believe that there is a causal link between history of gastric banding and weight loss failure. Revisional surgery could be difficult due to adhesions compromising the preparation of an adequate small and narrow gastric pouch leaving a large part of cardia on the posterior side. This technical difficulty can also be seen through high complication rates, 7% in the current study. One patient with prior gastric banding had splenic infarction due to splenic vessel section. Important morbidity rate observed in this work is in agreement with other studies concerning the GPR after RYGB [4].

In our patients, we observed non-negligible weight loss after revisional surgery. Average BMI decrease was 8 kg/m^2 at 2 years. Unfortunately, there is no data today to compare our results concerning the management of the patients with weight regain or failure after OAGB. However, we could draw the parallel with the literature analyzing GPR for weight regain after RYGB. These data are quite contrasted. Some describe satisfactory [2]; others report more nuanced results [5]. Thus, Borbely et al. [2] reported satisfactory long-term secondary weight loss after revisional surgery in well selected patients with gastric pouch dilation and gastrojejunal anastomosis enlargement. Median BMI was 39.1 kg/m^2 at revision and 33.8 kg/m^2 4 years after revisional surgery [2]. Similar data have been reported by Al-Bader et al. [3] in 32 patients with an average decrease of 6 BMI points (from 38.8 kg/m^2 at revision to 32.8 kg/m^2 at 14 months). More nuanced results where shown by Hamdi et al. [6] in 25 patients with an average BMI of 41 kg/m^2 at revisional surgery. Patients lost an average of 8 BMI points over 1 year to reach a mean BMI of 33 kg/m^2 [6]. Then, a significant increase in average BMI was observed from 1 to 2 years [6]. The results reported by Iannelli et al. [4] are in the same register concluding that pouch resizing was shown to be valuable option in the short term. On the other hand, Parikh et al. [5], in their report of 14 patients who underwent GPR associated with lengthening of Roux limb in some patients, obtained only 2.7 BMI point decrease and concluded that GPR for patients in weight regain after RYGB does not seem to offer a major therapeutic benefit.

To improve the restriction, other alternative solutions could be considered such as addition of gastric banding [8] or endoscopic treatment [9]. Addition of adjustable gastric banding over prior RYGB was reported by several teams with controversial conclusions. Some see it as a convincing solution [8],

Table 1 BMI, %TWL, and %EWL changes after gastric pouch resizing over two years of follow-up

	At GPR	6 months	12 months	18 months	24 months
Eligible/available (*n*)	17/17	17/16	17/15	14/12	10/8
Lost to follow-up (%)	0%	5.8%	11,6%	14.3%	20%
BMI (kg/m^2), mean ± SD	41.5 ± 11	36.6 ± 5	35 ± 4	34.1 ± 5	33.5 ± 6
%TWL, mean ± SD	15 ± 10	22 ± 7	25 ± 9	28 ± 10	31 ± 13
%EWL, mean ± SD	36 ± 21	51 ± 14	57 ± 16	63 ± 17	69 ± 21

GPR, gastric pouch resizing; *TWL*, total weight loss; *BMI*, body mass index; *EWL* excess weight loss

others as ineffective and a source of complication [10]. In a recent meta-analysis analyzing different techniques of endoscopic suturing applied in patient with weight regain after RYGB, the authors showed that gastric full thickness endoscopic suturing show the best results allowing secondarily weight loss. Thus, the average %EWL at 6 and 12 months after endoscopic revision were 23.7% and 16.9%, respectively. This rate seems to be much lower than those obtained after surgical revision whether it is the gastric banding or GPR.

The common point of all these studies including ours is the low number of patients and the retrospective nature thus limiting the scope of our results. Comparative prospective studies are needed to assess the true significance of this procedure at long-term.

Conclusion

In this study, GPR appeared to be a satisfactory option resulting in mid-term secondary weight loss in well selected patients at a cost of non-negligible morbidity rate.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval Statement For this type of study, formal consent is not required.

Informed Consent Statement Informed consent was obtained from all individual participants included in the study.

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