Reoperation Due to Complications after Gastric Restriction Operation

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Background: In the past 4 years we performed operations on 90 patients who suffered from morbid obesity. Five different operative techniques were available, vertical banded gastroplasty (VBG), silastic ring vertical gastroplasty (SRVG), gastric banding operation, adjustable silicone gastric banding (ASGB) and biliopancreatic diversion (BPD).

Methods: Two of these operations were mainly utilized. The ASGB was done routinely. The SRVG was used particularly for patients with hiatal hernia. Only one patient, who had a deformed pylorus, underwent the BPD.

Results: Eleven patients had to be reoperated due to complications after the first operation of gastric restriction. They were divided into three groups depending on the type of complication: reoperation due to lack of compliance, due to technical failure, or due to other complications. In the last group we observed three patients with band perforation into the stomach without epigastric pain. This complication has, to our knowledge, only been described in very few cases.

Conclusion: In some patients it remained difficult to reach adequate compliance, although we kept close contact with them after the operation. We do not yet know the reasons for the band perforation observed in three patients.

Keywords: morbid obesity, gastric restriction operation, band perforation, pouch dilatation, staple-line failure

Introduction

For the morbidly obese person, having unsuccessfully tried different conservative treatments to lose weight, bariatric surgery is the only possibility to reduce their overweight. Over the past 25 years several different operation techniques for bariatric surgery were developed. With increasing experience some methods were excluded due to their long-term complications affecting the quality of patients' life. Today, we can select from several operative techniques according to the status of the patient.

In 1982, Mason published his experiences with Vertical Banded Gastroplasty (VBG), a gastric restriction operation which he had developed as a modification of earlier performed techniques. The advantage in this operation was a smaller pouch size. The outlet at the lesser curvature with a constant diameter was strengthened by a polypropylene mesh collar. Thus, the natural passage of food was maintained. In 1986, Eckhout published a study of a different technique of vertical gastroplasty. Here no gastric window was needed to place the vertical staple-line. The outlet was supported with a silastic ring in order to avoid dilatation (SRVG).

Gastric segmentation by banding the upper part of the stomach, as performed by Molina and Kuzmak, provided an easier operative technique, the banding of the upper part of the stomach. Molina used a Dacron graft, while Kuzmak developed a stoma adjustable silicone gastric band (ASGB). The latter banding enabled adjustment of the stoma size.

In 1979 the first publication of Scopinaro about Biliopancreatic Bypass appeared. This method, today known as Biliopancreatic Diversion (BPD), was more difficult to perform than the gastric restriction operations. It was claimed, however, that the patient could be left on a normal diet with an excellent weight reduction, while after the restriction operations the patients had to adjust their eating habits. Only small volumes of food should be taken at once, extremely well-chewed.

Complications as seen in our patients were also described by other authors. Not in all cases, however, did the complications lead to a reoperation. Pouch dilatation and functional stoma stenosis was reported in 0–22%. In 1987 Granström and Backman using Marlex mesh lor gastric banding, observed this complication in 22%. A reduction of the band tension was necessary which, however, resulted in less weight.
loss. They assumed that overeating led to a pouch dilatation which produced the functional outlet stenosis.

Frydenberg\textsuperscript{14} found that 6\% of his banded patients suffered from the results of pouch dilatation, the so-called 'sump-effect'. This was an overhanging of the upper pouch over the band causing a functional obstruction despite a proper diameter of the stoma. The band used here was of silastic-impregnated Dacron. He proposed the Frydenberg fundal suture (F.F.S.) in order to avoid functional outlet stenosis.

Kuzmak\textsuperscript{15} in 1993 observed that half of his patients had minor enlargement of the pouches, which had no significant effect on the weight loss. In the experience of Favretti\textsuperscript{16} 7\% of the patients suffered from pouch dilatation and outlet stenosis. Here, the reason was found to be overtight banding due to faulty calibration at the initial operation, as also described by Lise \textit{et al}.\textsuperscript{17}

Slipping of the band was attributed to early postoperative vomiting.\textsuperscript{14,16} These patients were lacking the feeling of satiety. Using another kind of banding, a silicone band with nylon cable tie passed within, Broadbent\textsuperscript{18} observed band slippage in 7\% of his patients. There the reason was thought to be due to a missing stitch between the anterior surface of the band and the stomach wall.

Stomach perforation was described as an early and as a late complication in patients having undergone gastric banding. Granström and Backman\textsuperscript{13} observed this early and late complication in 3\% of their patients. Patients had suffered from pain resembling that in peptic ulcer. It was assumed that the eroding Marlex band had been too tight and hard around the stomach wall. This resulted in ischemia and penetration of the gastric wall. Using the ASGB, two early perforations without knowledge of the reason were described by Desaive.\textsuperscript{19} Kuzmak\textsuperscript{\textsuperscript{9}} in 1991 reported two late band erosions. They resulted in stoma obstruction and the bands had to be replaced. Favretti \textit{et al}.\textsuperscript{16} experienced one late band erosion with the ASGB. This happened 11 months after the initial operation. During reoperation a tiny perforation was found on the gastric wall. Only the infection at the port site caused a clinical sign which led to relaparotomy.

In literature staple-line failures have been described in a frequency between 0\% and 76\%. This frequently meant eventual regain of weight, although some of the patients were able to lose further weight or stay stable. In those patients where sudden weight gain occurred a revisional operation was necessary. After a follow-up of 2 years, Hell\textsuperscript{20} did not observe staple-line breakdowns while several other authors\textsuperscript{21-23} described a frequency of 1\% in their cohorts. A 1\% incidence of staple-line rupture was found in the VBG when compared with ASGB.\textsuperscript{34-35} Eckhou\textsuperscript{\textsuperscript{5}} using SRVG, had a staple-line breakdown of 1.6\% and Hunte\textsuperscript{16} published a dehiscence rate of 4\% in his patients. Using similar operative techniques several authors reported this complication in higher frequencies, namely in 5.5\%-6.3\% of the cases.\textsuperscript{27-31} Toppino \textit{et al}.\textsuperscript{32} reported staple-line disruption in 27.2\% and McLean\textsuperscript{14} in 48\%. Sweeney \textit{et al}.\textsuperscript{13} with a follow up of 9 years, reported staple-line rupture in 76\% that led to redoing gastric restriction.

We hereby report on post-operative complications specific for gastric restriction operations in 90 patients operated in the last 4 years. These complications were observed in 11 patients who all needed a reoperation.

\textbf{Methods and Patients}

Patients who contacted us for the treatment of obesity first received a detailed questionnaire. The inclusion criteria were age between 18 and 65 years, 45 kg overweight (according to the Broca index), or a BMI above 45 (BMI for women: kg/height\textsuperscript{2} and for men: kg/height\textsuperscript{2}). In addition, the patient had to suffer from serious illness caused by obesity, as well as failure of sustained weight loss on conservative regimens. Other criteria were no alcoholic or drug dependence, absence of endocrine disease, and co-operation due to high motivation. Patients selected through these criteria got all the necessary information on the operation itself, its effectiveness and on the absolute necessity to change eating habits after the operation. They were particularly informed about the risks and possible common complications, as well as severe ones, e.g. intra-abdominal leaks, abscess, organ failure, thrombosis and pulmonary embolism. If the patient, after all this information, was still convinced that the operation was the right treatment, she or he signed the informed consent.

The average age of our patients was 42 ± 4 years; we operated on 79\% women and 19\% men. The preoperative BMI ranged from 39 to 81, and the mean BMI was 57 ± 5.

Since 1990, 90 patients were operated and five different methods were used as outlined in Table 1. Of the two vertical gastroplasties we preferred the SRVG to the VBG, since no gastric window had to be set in order to create the pouch and stoma. Of the two banding operations we preferred the ASGB to the gastric segmentation, since there was the post-operative possibility to widen or lessen the stoma by increasing or decreasing the inflatable part of the silicone band. This was possible by injecting saline.