

# Revisional and complicated bariatric surgery

Citation for published version (APA):

van Wezenbeek, M. R. (2020). *Revisional and complicated bariatric surgery*. [Doctoral Thesis, Maastricht University]. ProefschriftMaken. <https://doi.org/10.26481/dis.20200214mw>

## Document status and date:

Published: 01/01/2020

## DOI:

[10.26481/dis.20200214mw](https://doi.org/10.26481/dis.20200214mw)

## Document Version:

Publisher's PDF, also known as Version of record

## Please check the document version of this publication:

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## VALORISATION

This thesis describes the outcome and safety of revisional surgery as treatment option for long-term complications after primary bariatric surgery, while gaining more knowledge on the older bariatric procedures. Furthermore, this thesis describes some methods to reduce and properly treat short-term complications such as anastomotic leakage. Bariatric surgery is still gaining in popularity, as is shown by the increasing number of bariatric procedures performed annually worldwide.<sup>1-4</sup>

In 2018 in the Netherlands, a total of 11,468 procedures were performed, of which roughly 10% were revisional procedures. At the end of 2018, Angrisani et al. published the global numbers of 2016, describing a total number of 685,784 procedures of which 7.4% (n=50,977) were revisional procedures. This was the first manuscript to separately describe the worldwide number of revisional procedures, which strengthens the believe that revisional surgery is obtaining a larger part in the diverse world of bariatric surgery.<sup>1-3</sup>

More knowledge is becoming available on the large amount of long-term complications after bariatric surgery, which often required revisional surgery. Even though the older procedures and their complications are rapidly decreasing in volume, a lot is still unknown about these long-term complications in terms of the mechanism of origin, the proper treatment and the risk factors contributing to the occurrence of these complications. Furthermore, more data is needed on the effects and safety of revisional bariatric procedures and all the gathered data will be useful for any future complications in modern or future bariatric procedures. The first part of this thesis provides some support on these issues, which will be discussed below.

Even though bariatric surgery is relatively safe, the high number of performed procedures worldwide results in a high absolute number of complications.<sup>5-7</sup> The second part focuses on the challenging issue of lowering the early serious complication rate after primary Roux-en-Y gastric bypass (RYGB) surgery to an all-time low.

Below, the value of this thesis in discussed in separate sections.

### **Social and economic relevance**

Bransen et al. have reported on the additional health care costs of leaks and bleedings after sleeve gastrectomy.<sup>8</sup> This study reported high costs after a serious complication. These costs were especially high due to prolonged hospitalization and additional interventions.

These numbers should be taken into account when looking at the total number of annually performed bariatric procedures. In case of these large numbers,

even less than one percent reduction in serious complications will cause a significant reduction in total health care costs. Therefore, this thesis has provided data on how to further reduce these serious complications.

The amount of long-term complications is largely dependent on choosing the right primary bariatric procedure. Even though this thesis does not provide a definitive answer on what the best procedure is, it supports abandoning VBG as primary procedure and speculates on the indication of AGB as primary procedure, as it shows a high number of long-term complications. This thesis seems to support the choice for conversion to RYGB in case of failed VBG or AGB, although new alternatives should be explored as well.

Such information has to be taken into account in the decision-making process for the revisional-technique of choice. This in turn will help reducing health care costs as the patient is becoming healthier.<sup>9</sup>

Finally, this thesis has proven that the implementation of a fast track protocol is safe. This protocol potentially reduces health care costs by lowering hospital stay and improving logistics without increasing the complication rate.<sup>10,11</sup>

## **Target audience**

This thesis targets a broad audience as it contains valuable information for bariatric surgeons, obesity teams, general practitioners (who will eventually perform follow-up of these patients) and other specialists such as endocrinologists and gastroenterologists. This thesis attempts to provide some unity to bariatric experts in treating long-term complications which necessitate revisional bariatric surgery.

All patients currently experiencing complications after restrictive procedures such as primary vertical banded gastroplasty (VBG) or adjustable gastric banding (AGB) can be helped more accurately with the use of the results in this thesis, as it provides some guidelines for clinicians who are being challenged by long-term complications after VBG or AGB.

In case of failed VBG or AGB, this thesis advises to perform a conversion to RYGB when revisional surgery is deemed necessary. Furthermore, VBG should be completely abandoned as primary bariatric procedure. In case of a failed sleeve gastrectomy, more research is required, since this thesis challenges the gold standard of performing conversion to RYGB after failed SG and provides a potentially better alternative which is the Single Anastomosis Duodenal bypass (SADI).

Furthermore, this thesis urges all clinicians to always preserve the neurovascular bundle of the lesser gastric curvature in primary RYGB surgery if technically possible, as it reduces the number of serious adverse events after surgery.

## Activities

This results of multiple chapters thesis has been fundamental for the new study design on the effects of SADI vs RYGB as revisional procedure after failed sleeve gastrectomy. It will add valuable information to the draft of a model which may be helpful in easy decision making to choose the correct revisional procedure when indicated.

## Innovation

This thesis has shown that VBG is inferior as primary bariatric procedure, supporting previous research. New insights are provided on pre-operative factors that predict long-term success after a bariatric procedure, in this case primary VBG.

This thesis encompasses a study to compare revisional RYGB after either primary AGB or primary sleeve gastrectomy. Furthermore, it includes the first study to prove the safe use of a fast track protocol in the more complicated revisional bariatric procedures and proves that preserving the neurovascular bundle significantly reduces postoperative complications after primary RYGB.

## The future

The search for the perfect bariatric procedure is still ongoing, however the focus is slowly turned towards screening, selection of patients and the proper follow-up. With this search, new procedures are bound to be developed, which can cause short- and long-term complications, which in turn may require new treatment strategies.

Currently, the quest for finding the best revisional procedure after SG to achieve additional weight loss is still ongoing. This thesis has suggested a prospective, randomized controlled trial to investigate the effect of SADI after failed SG in the near future. SADI was suggested as a better alternative to achieve additional weight loss, however, present day practice has already caught up with the future. Nonetheless, future research on the SADI is necessary, as the first published results are very promising.<sup>12</sup>

The main aim for future research on long-term complications after failed bariatric procedures should be to provide consensus and hopefully even guidelines on how to treat these challenging complications. This will be challenging nonetheless, as patient characteristics will be very diverse.

Finally, the main aim for bariatric surgery in general may demand more focus on the screening of the patients and the perfect postoperative follow-up.

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