CHAPTER 18
General discussion

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This dissertation addresses pre-and postoperative assessment and complications in bariatric surgery and indicates an important role for patient characteristics and simple medication adjustments in reducing perioperative risks. It contributes in optimizing bariatric surgery patient’s perioperative care and identifying factors that increases the risk on the development of perioperative complications. Furthermore, it elaborates patient’s information preferences and education level as these are connected with the information provided preoperatively to increase their understanding of the benefits, but also possible risks of bariatric surgery.

The ultimate goal of bariatric surgery is to increase life expectancy, reduce (co-)morbidity and increase patient’s quality of life (QOL). Laparoscopic Roux-en-Y gastric bypass (LRYGB) translates in a significant relative risk reduction in mortality of 89% and a sustained 67% excess weight loss compared to conservative treatment (1). Patient’s QOL, influenced by the reduction of diabetes mellitus, body mass index (BMI) and the increase of physical possibilities, rises after bariatric surgery (2). Compared to conventional therapy as diet and physical training, bariatric surgery is the only treatment with sustainable long-term results in terms of weight loss as well in persistent increased QOL (2; 3).

The results achieved with surgery for obesity and metabolic diseases are extremely good and impossible to achieve with conservative treatments. However, operative interventions are not without risks and the mortality is still around the 0.2% (4). Therefore, it is important to constantly improve the peri-operative care in this group of patients.

The first part of this dissertation showed that a prophylactic course of proton pump inhibitors (PPI’s) is necessary to reduce the incidence of marginal ulcers after RYGB, that a standard esophagogastroduodenoscopy (EGD) does not contribute in patient’s risk assessment prior to surgery and routine admission of patients with severe obstructive sleep apnoea (OSA) on the intensive care is not advised. In the second part some of the patient characteristics that influence the risks on perioperative complications were analysed and a risk prediction model was developed. The BASIC is not an all covering prediction model but a start in the distinction between patients with a low, intermediate and high risk. Of notice, being a ‘low risk’ patient does not eliminate the risk of a postoperative complication. As the BASIC shows, complications do occur in patients without any risk factors. Almost 80% of the patients

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belonged to class I with zero to one risk factor and in this group 10.2% developed a complication. However, the BASIC does identify patients with a greater risk, of which should be anticipated on and discussed with the patient in the preoperative consultation. Furthermore, unique in the BASIC is the parameter of COPD as this is not often scored in the bariatric surgery patients. Although the BASIC shows the importance of this parameter, validating the BASIC with use of an external database was not possible as COPD is not used as a parameter till now. We acknowledge that external validation of the presented risk prediction model in different, preferably international hospitals is important for its applicability.

The occurrence of complications in bariatric surgery is around 10-15% (4). Fortunately, the incidence of severe complications is much lower between the 0.5 and 5.2 percent (4). As a consequence, to perform adequate research on severe complications, much more patients than the now used and published standard cohorts are necessary to avoid bias in power. Therefore, the gathering of data in international, standardized databases will be of essential value in future research programs. To identify and scientifically substantiate the needed variables for those databases, this dissertation is of importance. As already mentioned, the contribution of chronic obstructive pulmonary disease to the development of a complication was unknown and not used in other research papers or databases. Even more, the chapters concerning postoperative PPI treatment, monitoring of OSA and preoperative EGD can be used in worldwide bariatric surgery guidelines, making global, equal treatment of all patients undergoing bariatric surgery possible without the need for further randomised trials.

As bariatric surgery is a standard procedure, almost comparable to the laparoscopic cholecystectomy, it is increasingly performed with Enhanced Recovery After Surgery (ERAS) protocols and even in daytime surgery. This causes a restriction in the period of hospitalization and observation of patients (5) what further increases the importance of early recognizing deterioration in patients, preferably prior to discharge. Although, in our opinion LRYGB and LSG can be regarded as major abdominal surgery, in most centres patients are discharged within 20-30 hours after surgery. In 90-95% of the operated patients this does not cause any problems, but in the other 5-10% early discharge limits the possibility of laboratory diagnostics or radiology for early identification of anastomotic leaks or other severe short-term complications. As morbidity and mortality in each individual patient decreases with early recognition of the complications we demonstrated that the understanding and interpretation of patient’s clinical parameters in terms of heart rate, blood pressure and
breathing frequency is essential, as is the pre-operative identification of patients with an increased risk on the development of a complication.

As a bariatric surgical procedure can be planned ahead as much as necessary, each and every patient’s care should be extensively reviewed, analysed, discussed, adjusted and constantly improved. Large patient groups are essential for the analysis of risk factors and the development of valuable prediction models.

Limitations
This dissertation contains mainly prospective, observational, database studies of a single centre population. However, of most included studies, the conclusion can be extrapolated to the bariatric surgery population and no randomized controlled trials are necessary to deliver final proof (6). Although this automatically reduces the level of evidence within this dissertation, performing a randomized (placebo controlled) trial would only unnecessary delay implementation as suggested in the results of the studies regarding marginal ulcers, the prophylactic administration of PPI’s and the value of preoperative EGD.

Despite the fact that all research in this dissertation is based on the same single centre patient population, we managed to gather a sufficient number of patients, validating the power of the studies and increasing the general applicability of the current dissertation and its proposed model to predict postoperative complications to other clinics. The problem of power in bariatric surgery research is acknowledged by Zhang et al. who recently published one of the most important articles, concluding in their 2015 systematic review that a variety of risk prediction models concerning mortality after bariatric surgery exist, but they often lack power and external validation (7). Therefore, we strongly believe that the future of (bariatric surgery) research is in world wide data collection according to the same protocols and strong collaboration between different specialties, hospitals and countries to improve patient care, regardless of the individual researchers and centres publication.
**Future perspectives:**

Although the first bariatric operation was dated in 1957, the performance of bariatric procedures on the enormous scale of today is relatively new (8). Nowadays, over 500,000 bariatric procedures are performed annually (9) to increase the bariatric surgery patient’s life expectancy, decrease their comorbidities and increase their quality of life. As already mentioned, bariatric surgery is deemed effective if patients lose over 50% of their excess weight (EWL). Therefore, it is key in understanding bariatric surgery and educating bariatric surgery patients, that most patients remain a little overweight and still around 22% of the patients suffer of insufficient weight loss (10;11). Risk factors for these failures are partially known such as super obesity, personality disorders, binge eating and OSAS but more research should be performed to identify why and which patients have insufficient weight loss or regain their weight after bariatric surgery (12;13).

This dissertation contributes to an awareness of the obese patient changed physical responses compared to the non-obese population. Their generally poor health, even if their medical history does not involve any other conditions, has consequences for every part of the surgery: pre-operative screening for eligibility; anaesthesiology; surgical techniques; and the postoperative phase. Adjusting operative care to each and every individual patient is and should remain a subject of ongoing investigation and research (14;15). Although postoperative weight loss does not seem to be impaired by the development of complications, complications cause severe morbidity and mortality (16). Therefore, research on bariatric surgery should not only focus on the benefits of the procedure, it’s perioperative care and how this care can be improved and individualized is equally important. To increase the quality and applicability of bariatric research, global collaboration between researchers and hospitals is obligatory. Collaboration will result in research with sufficient patient groups, globally applicable research results and the highest (comparable) standard level of care worldwide.

At present, research focuses on less invasive and possible effective types of treatment, such as endoscopic interventions and medication that will reduce appetite and amounts of food ingested (17;18). It is likely that this type of research will increase further in the near future.

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Although the prevention of obesity is outside the scope of this dissertation, no discussion and dissertation concerning bariatric surgery and the treatment of obesity and metabolic disease is complete without addressing the topic of prevention, politics and shared responsibility.

Apart from investigating the benefits of bariatric surgery and the perioperative care, more research should focus on the prevention of morbid obesity and how to motivate global and local governments for extensive prevention and treatment programs. It is much more difficult to lose weight if childhood obesity exists compared to obesity originated in the adult life. Worldwide, currently 41 million children aged 0-5 years old are overweight or obese. If this trend continues, the estimated number of overweight and obese young children in 2025 is 70 million. Therefore, the pandemic of obesity will grow further. If obesity could be prevented, it would signify an enormous benefit to global health. However, despite all prevention programs, the incidence of obesity is still rising. Understanding of the concept, treatment and causes of obesity is of essential value to develop applicable and functioning prevention programs. For success of these programs, the focus of future (and present) politics is of utmost importance. Although nowadays, society is inclined to regard obesity as an individual problem with individual causes obesity is the example of a disease that is not only a community problem but is caused by the community, which can only be resolved with world-wide political, scientific and communal efforts and programs. Prevention as well as treatment of (morbid) obesity is a shared responsibility between clinicians, scientists and politicians. For clinicians and scientists, the focus should be in convincing local and global politics together with the food industry of the importance and significance of obesity prevention programs in increasing individual health, global health, economic health and environmental health. If this can be accomplished, at least one battle against obesity is won.

With the research in this dissertation it can be concluded that the future of bariatric surgery research is in improving bariatric surgery patients care peri-operatively by means of optimizing the conditions based on the individual patient’s needs and selection. The future for obesity research is in convincing local and global politics of the importance of obesity prevention. Both topics are a shared responsibility among clinicians and scientists.
Discussion

References:


