

Outcome after laparoscopic antireflux surgery and hiatal hernia repair

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Valorisation addendum

Introduction

Gastroesophageal reflux disease (GERD) has an estimated prevalence of 18.1-27.8% in North America. GERD is currently the most common reason for outpatient gastrointestinal visits in the United States (US), with an estimated 8.9 million outpatient visits. With increasing number of patients, GERD has become a serious burden for the general population. GERD reduces quality of life in patients and comes with high costs for healthcare. Initial treatment is with life-style interventions, but next step is medical therapy. Medical therapy for GERD costs approximately 7.7 billion dollars annually in the US.

Relevance of this thesis

If left untreated GERD may lead to severe complications including erosive oesophagitis, pulmonary complaints and even Barret's dysplasia. First step in the treatment of GERD is medical treatment with PPI's, however long-term PPI usage can lead to an increased risk of pneumonia, dementia, Vit B12 deficiency and osteoporosis. Surgery is found to be more cost-effective at the long-term for the treatment of GERD, however comes with the risk of complications. Dysphagia, recurrence and vagal nerve injury are some of the most feared complications. To reduce complications and recurrence rates, several modifications have been developed. Total fundoplication, partial fundoplication, transoral incisionless fundoplication (TIF), lower oesophageal stimulation and even oesophageal lengthening procedures are available. **Chapter 2 and 3** provide an overview of current techniques of hiatal hernia repair and the treatment of hiatal hernia with special emphasis on the use of mesh. We have shown that synthetic mesh might be superior to biological mesh in hiatal hernia repair.

All techniques have advantages and disadvantages and for many techniques the long-term effects are still lacking. This thesis therefore addresses long-term outcome of several techniques to provide more insight in the effects of these techniques.

Since quality of life has become a more important outcome measurement over time, we have tried to establish the quality of life after hiatal hernia repair and after Nissen fundoplication for GERD. **Chapter 4** demonstrates that quality of life is good after a follow-up of up to 9.6 years and re-operation rate is 9.9%. Most re-operations occur within the first year after surgery and quality of life does not further change after 5 years of follow-up, as is seen in **chapter 5**. Therefore, a follow-up period of 5 years should be sufficient to evaluate quality of life after antireflux surgery. **Chapter 5** also addresses quality of life after antireflux surgery for GERD and shows an excellent quality of life at long-term follow-up. Patient who underwent re-operation reported worse quality of life, therefore the re-operation rate should be as low as possible.

We have found that 48% of the re-operations is due to persistent dysphagia after Nissen fundoplication. We believe that this might be due to failure of creating a proper fundoplication. It is difficult to create a symmetrical wrap that is neither too tight, nor too loose. In an attempt to help, especially beginning surgeons, we have developed a modified technique to create a more symmetrical and more reproducible fundoplication. This technique is described in **chapter 7** and further evaluated in **chapter 8**. Results are promising, but further research is needed to evaluate the possible clinical benefit.

Target population

The results of this thesis are relevant for patients with a hiatal hernia or with gastroesophageal reflux disease who are not satisfied with their medical therapy. Further, it offers a modified technique for beginning surgeons to create a proper Nissen fundoplication.

Innovation and future

This thesis evaluated existing treatment options for hiatal hernia repair and anti-reflux surgery. However, we also studied a more experimental and less invasive technique. The EsophyX device creates a transoral incisionless fundoplication. The results after 1 year were rather disappointing with a high recurrence rate. (22.7%-50.0%) However, we have studied the long-term results in **chapter 6**, in attempt to detect a subgroup that benefits from TIF procedure. We found that patients with a hiatal hernia or oesophagitis reported a worse quality of life after 7 years. We found a failure rate of 22%. Since additional surgery after previous TIF does not come with increase morbidity and mortality TIF can be a first step in the treatment of GERD. With this thesis, we hope to provide a tailor-made approach to all future GERD patients.