



Austrian experiences with redo antireflux surgery

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Received: 25 August 2004/Accepted: 10 May 2005/Online publication: 28 July 2005

Abstract

Background: From 1996, the entire number of funduplications performed in Austria increased dramatically, favoring the laparoscopic technique. Despite good results, some patients experience failure of antireflux surgery and therefore require redo surgery if medical therapy fails to control symptoms. The aim of the study was to describe the refunduplication policy in Austria with evaluation of the postoperative results.

Methods: A questionnaire was sent to all Austrian surgical departments at the beginning of 2003 with questions about redo funduplications (number, techniques, intraoperative complications, history, migration of patients, preoperative workup, mortality, and postoperative long-term complaints). It also included questions about primary funduplications (number, technique, postoperative symptoms).

Results: Out of 4,504 primary funduplications performed in Austria since 1990, 3,952 have been carried out laparoscopically. In a median of 31 months after the primary operation, 225 refunduplications have been performed, laparoscopically in the majority of patients. The Nissen and the partial posterior fundoplication were the preferred techniques. The conversion rate in these was 10.8%, mainly because of adhesions and lacerations of the spleen, the stomach, and the esophagus. The mortality rate after primary funduplications was 0.04%, whereas the rate after refunduplications was 0.4%, all resulting from an open approach.

Conclusion: Laparoscopic refunduplications are widely accepted as a treatment option after failed primary antireflux surgery in Austria. However, the conversion rate is 6 times higher and the mortality rate is 10 times higher than for primary antireflux surgery. Therefore, redo funduplications should be performed only in departments with large experience.

Key words: Gastroesophageal reflux — Surgery — Complications — Fundoplication — Esophagitis — Esophagus

Antireflux surgery is an effective treatment for gastroesophageal reflux disease [4, 17]. Since 1996, the entire number of funduplications performed laparoscopically in Austria has increased dramatically [2]. Despite the good results of laparoscopic antireflux surgery, some patients experience the development of recurrent reflux, dysphagia, or both postoperatively, and often require surgical repair when medical therapy fails [5, 6, 9, 13, 14]. Reoperations after failed antireflux surgery are a widely accepted treatment option, but are generally considered to be more difficult [3, 5, 9, 11, 16].

Most departments in Austria do not report their results regularly, and there is also a high rate of patient migration after failed antireflux surgery. Therefore, the overall outcome for primary antireflux surgery and the experience with redo fundoplication in Austria remain unclear. Thus, the aim of our study was to assess more detailed data on antireflux surgery in Austria, with a focus on redo procedures, because patient migration, overall outcome, and quality of care cannot be described satisfactorily by reports of some single specialized centers.

Methods

A self-designed questionnaire was sent to all 119 Austrian surgical departments. Patients who underwent surgery between 1990 and 2003 were included in this survey. The main content of the questionnaire was focused on redo funduplications, but it also contained questions about primary antireflux operations. Of 119 centers, 100 (84%) replied to the questionnaire. The questionnaire was structured as follows:

Table 1. Primary antireflux procedures in Austria: techniques and number of institutions

Procedure	<i>n</i>
Nissen or Toupet	25
Only Nissen	18
Only Toupet	3
Nissen with proximal selective vagotomy	1
Nissen or Hill	1
Nissen, Toupet or Hill	1
Nissen, Toupet or Dor	1
Nissen, Toupet or Watson	1
Nissen–Rossetti	1
Not reported	4

Primary funduplications

- Overall number since 1990 (conventional, laparoscopic, conversions),
- preferred technique(s)
- Long-term complications

Redo funduplications

- Overall number since 1990 (conventional, laparoscopic, conversions)
- Preferred technique(s)
- Complications (trocar-associated, spleen, stomach, esophagus, other bleedings, conversion attributable to adhesions, others)
- Patient migration (same/other hospital)
- Technique and number of primary operations (open/laparoscopic)
- Diagnostic tests performed before redo fundoplication (endoscopy, esophageal manometry, esophageal 24-h pH-monitoring, X-ray, others)
- Interval between primary and redo fundoplication
- Main symptoms/indication requiring redo fundoplication
- Time requiring treatment on an intensive care unit after open/conventional redo fundoplication
- 30-day mortality (primary fundoplication: open/laparoscopic: redo fundoplication: open/laparoscopic)
- Long-term complications (dysphagia, recurrent reflux, gas bloat, diarrhea, others) and their therapy

Results

The reported total number of primary funduplications performed in Austria during the observation period was 4,505, including 3,952 laparoscopic procedures. The different techniques used by the institutions are summarized in Table 1. The conversion rate from laparoscopy to an open access was 1.9% (77/3952). The main reasons for conversions in primary antireflux surgery were nonsplenic bleeding (31.3%), difficulties attributable to adhesions (27.1%), bleeding of the spleen (12.5%), trocar-associated lacerations (8.3%), laceration of the esophagus (8.3%), laceration of the stomach (4.2%), and other nondefined problems (8.3%).

The experience of the departments performing antireflux surgery ranged from less than 10 to 814 primary funduplications. For primary funduplications, 25 institutions use either the Nissen technique for patients with normal esophageal peristalsis or a partial posterior fundoplication for patients with impaired esophageal peristalsis. In 18 institutions, only the Nissen is per-

formed, and 3 institutions exclusively perform a partial posterior fundoplication. Some single institutions use the Nissen–Rossetti-technique or techniques according to Watson et al. [15], namely, a Dor, Hill, or Nissen fundoplication combined with proximal selective vagotomy.

In addition to these 4,505 primary funduplications, 225 refunduplications have been performed since 1990: 194 laparoscopically and 31 by an open approach. This indicates a rate of 4.9% for primary funduplications necessitating further surgical repair.

A total of 32 surgical departments perform redo antireflux surgery. The number of redo funduplications performed per institution did not correlate with the total experience in antireflux surgery (Fig. 1). The findings showed that 63% of the patients with redo surgery previously had undergone a laparoscopic approach, and 37% had undergone previous open surgery. For 50% of the patients, refundoplication was performed at the same institution in which the primary fundoplication had been performed, and for 50%, the former operation had been performed in an other hospital. Most of the patients had undergone one previous antireflux operation (90%), but some had undergone two (7%), three (2%), or even more (1%).

The preoperative workup for refundoplication included upper gastro intestinal (GI) endoscopy, esophageal manometry, 24-h pH monitoring, and facultative barium studies in 61% of the institutions. According to the findings, 39% of the institutions performed only some of these examinations, or even others such as computed tomography (CT) scan, plain abdominal radiograph, or only symptoms evaluation. The reasons for redo surgery were as follows: recurrent reflux (53%), dysphagia (20.4%) or both (21%). Other reported reasons for reintervention included slipping of the fundic wrap into the chest (37%), a telescope-like slipping (12%), and other complications (12%) such as a misplaced wrap or a dumbbell-stomach. One patient presented with an acute abdomen caused by a large incarcerated portion of the stomach that had slipped through the Nissen wrap 12 months after primary fundoplication, requiring immediate open repair.

The median interval between primary fundoplication and redo operation was 31 months (range, 2–180 months). For redo funduplications, 13 centers always use the Nissen technique, 11 use the Nissen or a partial posterior (Toupet) fundoplication and 5 only a partial posterior (Toupet) fundoplication. One center uses the Nissen or a Hill repair, one center uses the Nissen or a partial posterior (Toupet) fundoplication or in selected cases, a Meredino technique and one center uses closure of the hiatus combined with fundopexy. The exact number of redo Nissen funduplications and/or other techniques performed in each center has not been stated.

For laparoscopic redo funduplications, there was a conversion rate of 10.8% (21/194). In 50% of the cases, adhesions were stated to be the cause for conversion, followed by lacerations of the spleen (12.5%) and perforation of the stomach (12.5%), perforation of the esophagus (6.3%), non splenic bleeding (6.3%), and

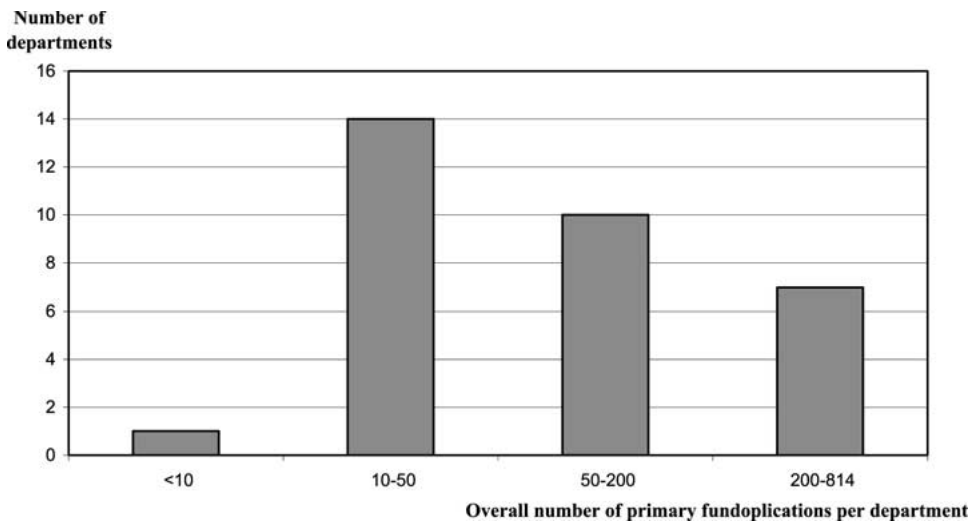


Fig. 1. The antireflux surgery experience of surgical departments that perform redo funduplications

others (12.5%), such as obesity, excessively long operative time, or unexpected cholecystitis.

The median stay in an intensive care unit was 0 days (range, 0–30 days) after open and 0 days (range, 0–2 days) after laparoscopic refundoplication. The mortality rate was 0.044% (2/4505) after primary laparoscopic fundoplication (attributable to perforation of the esophagus and perforation of the duodenum) and 0.44% (1/225) after refundoplication. The latter involved one patient who had undergone open surgery.

Because systematic follow-up evaluation was lacking, postoperative complaints were reported by only a few institutions. The mean incidences of the complaints were as follows: persistent dysphagia (6.7%), recurrent heartburn in (7.6%), gas bloat syndrome (6.2%), and persistent diarrhea (1.3%). Some other infrequently reported symptoms after redo fundoplication were intractable chest pain, early satiety, prolonged hiccup, epigastric pain, paresis of the phrenic nerve, and respiratory insufficiency attributable to a trapped lung.

Discussion

Antireflux surgery has gained a wide acceptance in Austria. It has been performed in 47% of the surgical units since the late 1990s. In most centers, the laparoscopic Nissen fundoplication or the partial posterior fundoplication is applied. Transthoracic techniques, such as the Belsey Mark IV or the Collis procedure, have not been used. There was a low conversion rate with commonly acceptable results in terms of the mortality rate and the rate of postoperative failure [1, 4]. One lethal case was caused by an undetected perforation of the esophagus. One other patient died because of a duodenal perforation with delayed reoperation.

Of all the surgical units in Austria, 28% perform redo antireflux operations, mainly the Nissen or partial posterior fundoplication. Only 21% of the departments that perform redo operations are specialized such that they have an overall experience of more than 200 pri-

mary funduplications performed (Fig. 1). Indeed, 45% of the institutions have performed fewer than 50 primary funduplications. Because it is common sense that the surgeon caring for patients with failed antireflux procedures should have experience with the whole spectrum of revisional, resective, and reconstructive procedures of the stomach, the gastric cardia, and the esophagus [10], some departments probably should defer their few patients to institutions with large experience.

Low specialization also is reflected by the fact that only 61% of the centers perform the entire suggested preoperative workup consisting of endoscopy, esophageal manometry, 24-h esophageal pH-monitoring, and Barium studies [5, 11, 12] before dealing with redo funduplications. For patients with previous surgery, a comprehensive preoperative workup generally is recommended because symptoms cannot be used to determine the cause of the problem [11]. In this context and considering the difficulty of a reoperation it seems insufficient that some units in our study performed only one of the previously listed examinations before redo surgery.

The relation between experience and complications is depicted in Fig. 2. The graph supports the commonly accepted opinion that centers with a high rate of funduplications and more experience consequently have a lower rate of complications.

The main symptom leading toward redo surgery was recurrent reflux, followed by dysphagia, or both. The morphologic reasons for these complications were disruption of the hiatal crura in more than one-third of the patients, followed by telescope phenomenon, misplaced wrap or a too tight wrap, which also is reflected in current studies [3, 14].

In this Austrian series, laparoscopic redo antireflux surgery implied a six fold higher rate of conversion than for primary antireflux surgery, mainly caused by adhesions. The mortality rate of redo procedures was 0.4%, which was 10 times higher than for primary funduplications. The mortality occurred in an open approach. In the literature, a mortality rate up to 17% and a mor-

complications per case

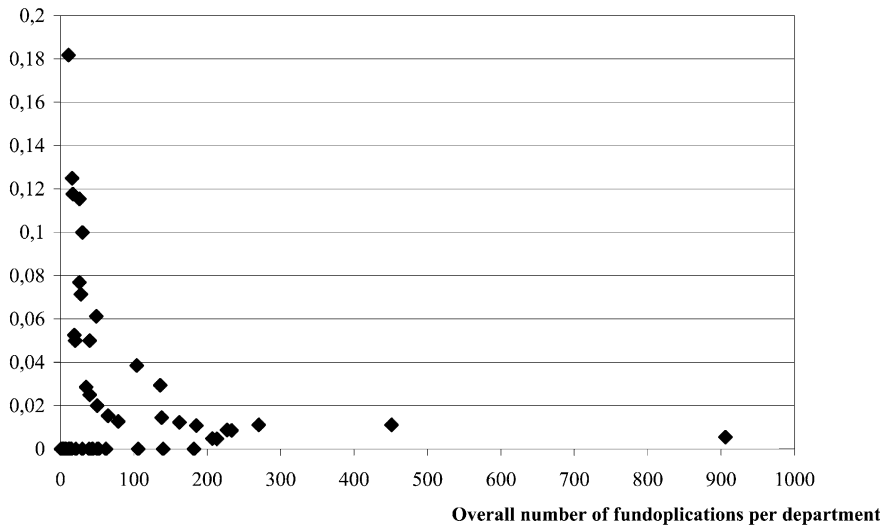


Fig. 2. The relation between the antireflux surgery experience of departments and complications

bidity rate of 20% to 75% have been reported after redo surgery [5, 7]. All this indicates a higher degree of difficulty that surgeons and patients should recognize, and that potentially could influence the decision making.

The postoperative long-term complaints such as dysphagia, recurrent heartburn, bloating, or diarrhea did not exceed the rates reported in the recent literature. Redo surgery may lead to a good clinical outcome in 70% to 90%, but the success rate falls to 66% after the third and to less than 50% after the fourth procedure [11]. However, in asking for postoperative complaints, our questionnaire did not differentiate between first, second, and third refunduplications.

Because this study was based on data obtained by a questionnaire, and because many centers do not perform follow-up examinations of their reflux patients on a regular basis, the numbers of complications and adverse side effects rather represent the lower limit. Some centers follow up the patients only if they have complaints, and some general practitioners and internists probably will not refer the patients back to surgeons when they can handle the patient's problems.

Additionally, as in a recent study, the reply rate of 84% also could have biased the results. In that study, the patients not responding to mail-out questionnaires were more likely to have adverse symptoms and a lower level of satisfaction than the patients who returned their questionnaires [8]. Questionnaires generally do not allow researchers to ask for more details about some interesting cases. For instance, the reason for the one mortality after refunduplication was not stated. On the one hand, some more detailed questions were desirable, but on the other hand, too many details probably would overextend the documentation possibilities of many centers. However, the overall number of 4,405 primary antireflux procedures and 225 redo operations provided a data pool large enough for conclusions to be drawn about the efficiency and safety of primary antireflux surgery and refunduplication, and for gaining informa-

tion about local preferences regarding diagnostic workup and treatment options.

In conclusion, we are of the opinion that treatment of patients after failed antireflux surgery should be referred to specialized centers with all the workup facilities and experience necessary to deal with these sometimes difficult operations that carry a higher risk for morbidity and mortality, and with follow-up programs to evaluate their results.

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