Long-term results of redo gastro-esophageal reflux disease surgery

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Abstract

Objective: To review the long-term results of redo gastro-esophageal reflux disease (GERD) surgery with special emphasis on residual acid-suppressing medications, pH monitoring results, and quality of life. Methods: Retrospective analysis of 52 patients (24 males) who underwent redo GERD surgery between 1986 and 2006 through a transthoracic (n = 14), or a transabdominal (n = 38) approach. Indications were recurrent GERD in 41 patients, and complication of the initial surgery in 11. Quality of life was evaluated by telephone enquiry using a validated French questionnaire (reflux quality score, RQS). Results: Postoperative complications occurred in 18 patients (35%), resulting in one death (2%). Reoperation was required in seven patients. At 1 year, 26 patients (51%) had 24 h pH monitoring, among whom 2 (8%) were proved to have recurrence of GERD. RQS values were calculated in 38 patients with a mean follow-up of 113 months. Fifty percent of this subgroup had a RQS value beyond 26/32, indicating an excellent quality of life. Among these 38 patients, 20 (53%) had acid-suppressing medications whatever their RQS values. Patients who underwent transthoracic GERD surgery had the highest RQS values (p = 0.02), a lower rate of complications (p = 0.06) and a lower rate of reoperation (p = 0.04). Conclusion: Our experience confirms that selection of candidates for redo GERD surgery is a challenging issue. A transthoracic approach seems to produce better results and lower rates of complications.

Keywords: Gastro-esophageal reflux disease; Redo surgery; Transthoracic approach; Long-term follow-up; Quality of life

1. Introduction

There are very few studies evaluating long-term follow-up after redo GERD surgery. However, clinical experience supports two important issues. First, complications of fundoplication procedures are probably under estimated. Second, GERD surgery is not a definitive therapy whatever the quality of the surgical procedure might have been. The aim of the present study was to analyze the long-term results of redo GERD surgery with special emphasis on residual acid-suppressing medications, pH monitoring results, and quality of life. We report on the results of a retrospective analysis of 52 subsequent patients who underwent redo surgery because of a complication or a failure of their primary operation.

Abbreviations: GERD, gastro-esophageal reflux disease; RQS, reflux quality score.

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2. Material and methods

Between 1986 and 2006, among 405 anti-GERD procedures performed at our department, 52 (12.8%) consisted of a redo surgery. There were 24 men and 28 women with a mean age of 53 years, ranged from 26 to 74. Seven patients had their primary fundoplication in our department, whereas 45 patients were referred from elsewhere (n = 45). Indications were recurrent GERD in 41 patients, and complications of initial surgery in 11. All patients were carefully selected for surgery on the basis of their clinical history, video barium contrast studies, esophagogastrscopy, esophageal manometry and 24 h pH monitoring. Postoperative data included the surgical technique, complications and 24 h pH monitoring. A telephone enquiry was used to evaluate the quality of life by using a validated French questionnaire (reflux quality score, RQS). This disease-specific questionnaire was validated and verified psychometrically [1]. Using eight items, a cumulative general index score can be assessed, ranged from 0 (worse results) to 32 points (better results) (Table 1).

Data was analyzed using SPSS 12.0 package (SPSS Inc., Chicago, IL, USA). Results were expressed as mean ± SD for quantitative variables and as percentages for qualitative variables.
variables. Student’s t-test or Mann–Whitney U-tests were used for quantitative variable, Pearson’s chi square or Fisher’s exact tests were applied for qualitative variables. A one-way repeated measures analysis of variance (ANOVA) was used to evaluate the effects on pre- and postoperative complications and RQS values.

3. Results

At the time of first surgery, 12 (21%) patients had undergone a laparoscopic procedure and 40 (79%) an open surgery. The initial fundoplication technique consisted of a Nissen operation in 18 patients (8 laparoscopic), a Toupet operation in 9 (270° posterior fundoplication), and a Dor operation (180° anterior fundoplication) in 25 (4 laparoscopic). GERD symptoms, as heartburn or dysphagia, appeared within the first 3 months after the initial surgery in 9 (17%) patients, and 24 (46%) received antacid medications when redo surgery was considered. Eleven patients had a complication of the first surgery: fistula (n = 3), gastric stasis (n = 3), acute dysphagia (n = 1), and intrathoracic gastric hernia (n = 4).

Table 2 describes patients’ characteristics and their preoperative evaluation at the time of redo surgery. Among the 41 patients who underwent redo surgery for a recurrent GERD, 26 were operated on within 3 years after their initial surgery. Heartburn (50%) was the most common symptom.

Thirty-three patients had an esophagogastroscopy, 31 had a 24 h pH monitoring, 31 had video barium contrast studies, and 12 had an esophageal manometry preoperatively. The endoscopy disclosed an erosive esophagitis in 29 cases and a Barrett esophagus in 5. In 27 of the 31 patients who were investigated by 24 h pH monitoring, evidence of GERD (percentage total time esophageal pH < 4 more than 5%; percentage upright time esophageal pH < 4 more than 8%; percentage supine time esophageal pH < 4 more than 3%; number of episodes pH < 4 for >5 min more than 3) was provided. A hiatal hernia was documented in 29 patients among the 31 who underwent video barium contrast studies. Manometric studies showed a decreased pressure of the lower esophageal sphincter below 5 mmHg in 11 out of 12 patients, and the absence of abnormality of the esophageal motility in all, testifying of the effectiveness of esophageal clearance.

Redo surgery was performed via a transthoracic approach in 14 cases and a laparotomy in 38. The transthoracic approach was a posterolateral thoracotomy in the seventh intercostal space associated with a limited radial phrenotomy. Toupet’s technique was performed in 29 patients (transthoracic n = 4), Nissen fundoplication in 14 (transthoracic n = 4), Collis Nissen operation in 6 (transthoracic n = 6), total duodenal diversion in 2, and resection in 1 (esophagectomy with retrosternal coloplasty). The operative reports highlighted noticeable technical difficulties in 22 cases. A defective wrap was documented in 28 patients.

The mean hospital stay was 17.7 days [7—69] (median 14 days). Eighteen complications occurred resulting in two endoscopic dilatations, seven reoperations and one death (Table 3). Four patients had three operations and one patient had five surgeries on the whole.

During the first year following redo surgery, 26 patients (51%) underwent 24 h pH monitoring; results were within normal values in 24 of them (92%).

RQS values were evaluated in 38 patients with a mean follow-up of 113 ± 64.6 months [range 6—247]. With a mean value of 25.5 ± 7.4 [range 1—32], RQS had a normal distribution in this population. Fifty-seven percent of these

<table>
<thead>
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<th>number</th>
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<tr>
<td>2</td>
<td>Pneumonia</td>
<td>Acute lung injury, multigener failure and death (n = 1)</td>
</tr>
<tr>
<td>4</td>
<td>Fistula</td>
<td>Reoperation</td>
</tr>
<tr>
<td>1</td>
<td>Bowel obstruction</td>
<td>Reoperation</td>
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<tr>
<td>2</td>
<td>Bleeding</td>
<td>Reoperation</td>
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<td>4</td>
<td>Residual dysphagia</td>
<td>Endoscopic dilatation in 2</td>
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<td>5</td>
<td>Parietal abscess</td>
<td>Medical treatment</td>
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38 patients were considered to have a good quality of life. Among these 38 patients, 19 (50%) had acid-suppressing medications whatever the RQS value was. There was no correlation between the RQS values and the corresponding length of follow-up.

Patients who underwent a transthoracic GERD redo surgery had the highest RQS values ($p = 0.01$) when compared to those who have had a transabdominal approach. Patients who underwent Toupet or Nissen procedures at redo surgery had the highest RQS values when compared to other procedures ($p = 0.04$). Toupet funduplications at the second operation were associated with a lower rate of postoperative complications when compared to Nissen operations and other procedures ($p = 0.04$). The identification of technical difficulties noticed in the operative report was correlated with the occurrence of postoperative complications ($p = 0.05$). Patients who developed a postoperative complication had a lower RQS value than those who experienced an uneventful postoperative course ($p = 0.05$). Patients having undergone a transthoracic approach had a lower rate of postoperative complications ($p = 0.06$) and a lower rate of reoperation ($p = 0.04$) than those who had had a laparotomy.

Early recurrences ($n = 26$; ER group), occurring within the first 3 years following the initial GERD surgery, were compared to late recurrences ($n = 15$; LR group) in terms of causes of failure. In the ER group, preoperative investigations documented a physiological failure in 73%, and operative findings disclosed a misplaced wrap in 77% versus 14% ($p < 0.001$) and 21% ($p < 0.01$) in the LR group, respectively.

4. Discussion

With the growing use of antireflux surgery, reoperations for failed funduplications are being increasingly seen. Despite the limits of the present study due to its retrospective design and the disparity of the clinical conditions encountered, our experience may provide some clues for the care of these challenging patients. Three points need to be considered: the possible indications for surgery, available surgical techniques and their risks, and finally the expected functional results.

4.1. Indications

Five percent of patients who undergo fundoplication will require reoperation [2]. Causes of failure of primary antireflux procedures are difficult to categorize. Two kinds of situations, however, are usually identified. The first one relies on postoperative complications following the initial surgery such as gastric fistula, dysphagia or symptomatic paraesophageal hernia. The second situation is recurrence of GERD symptoms due to a slipped or disrupted wrap [3].

The selection of patients for reoperation is demanding. Recurrent or persistent symptoms occur in 5–20% of patients after antireflux surgery [4]. Symptoms of GERD are highly variable and often poor indicators of a pathological gastroesophageal reflux. Thus, esophageal function tests are of paramount importance to select potential surgical candidates. Twenty-four hours pH monitoring remains the gold standard in this setting to assess the pathological acid exposure of the esophagus. In the prospective study by Galvani et al. [5], 76 patients had a normal esophageal acid exposure among 124 symptomatic patients after GERD surgery. Others investigations are necessary to prove the failure of the first procedure. Manometry looks for an ineffective lower esophageal sphincter and the presence of motility disorders misdiagnosed at the time at the first surgery. Endoscopy may find esophagitis and/or Barrett esophagus, and video barium contrast studies help in the recognition of short esophagus, recurrent hernia, slipped wrap, and various anatomical disorders. At least one abnormality of the aforementioned investigations is necessary to decide to proceed to a redo surgery [6]. In our study, among 41 patients who had a recurrent GERD, 28 had an abnormal 24 h pH monitoring. We considered pH monitoring unnecessary in either the 10 patients in whom the endoscopy showed evidence of esophagitis or in the 1 who presented with an esophageal stenosis on videobarium contrast studies. Finally only two patients have been reoperated on because of recurrent symptoms of GERD with hiatal hernia in the 1 who presented with an esophageal stenosis on videobarium contrast studies without direct or indirect proof of esophageal acid exposure.

The delay from the first procedure is also informative. Failures occurring within the first 3 years were mostly related to technical inaccuracies in our experience, whereas latest events were likely to rely on the ‘ageing’ of the surgical procedure. To summarize, indications for redo surgery in GERD seem to be imperative for immediate surgical complication after the first procedure, logical for early recurrence due to an anatomical failure, but very cautious for late recurrence without documented anatomical failure, especially when there is no symptom improvement with antacid medication. At the occasion of the largest series ever reported, some investigators claim that redo fundoplication must be considered for all patients with GERD-related respiratory symptoms or Barrett metaplasia [7].

4.2. Technical

The first technical issue is the choice of the surgical approach. Transabdominal open and laparoscopic surgeries for GERD have been deeply evaluated since 15 years. Nowadays, first intent antireflux surgery is commonly performed laparoscopically, even if level-1 evidence-based arguments fail to demonstrate its superiority in comparison with laparotomy [8]. There is a growing evidence that laparoscopic refundoplication as a safe and technically feasible procedure in a large range of cases [2,3,9,10]. However, some series on laparoscopic refundoplication reported on high rates of gastric perforations, sometimes exceeding 20% [11,12]. The best indication for laparoscopic redo surgery relies on immediate postoperative complications after an initial laparoscopic fundoplication [13]. To date, we have no experience in this setting.

The transthoracic approach is accompanied by post thoracotomy pain, sometimes disabling, which is its main inconvenience. In our opinion, as in others’ [14], left thoracotomy is the gold standard in cases of short esophagus, intrathoracic gastric hernia, when a transabdominal open
surgery has been performed as the former procedure, and in late recurrence cases. We tended to favor the transabdomi-

nal approach in case of early recurrence after a laparoscopic surgery, in the absence of short esophagus. We have

experienced a lower rate of complications following the use of left thoracotomy than that observed after laparotomy.

We hypothesize that it is the combined results of the wide view provided on the operative field (Fig. 1) and the easy

access offered on the hiatal area through a blank entry. However, we acknowledge that there was no difference

between transabdominal and transthoracic approaches in the ability to control reflux.

Another issue is the type of the antireflux method. According to our own experience, the most common

reoperation reported in the literature is partial or total fundoplication such as Nissen’s or Toupet’s procedures [6].

Some authors have evaluated alternative procedures such as resection or total duodenal diversion in the most complex

cases. Resection carries a substantial morbidity, provides contrasted functional results, and thus should be held in

reserve as the last-chance solution in very complex cases with profound end-stage esophageal body dysfunction and/or

following multiple failed attempts [15]. The chief causes of poor results following vagotomy, antrectomy, and Roux-en-Y
diversion, are gastric stasis and recurrent reflux leading to stricture and dysphagia [16]. We observed the best functional

results in those patients having undergone a redo fundoplica-
tion. However, such a direct comparison with alternative

techniques appears unsound because they rely on very different clinical situations.

4.3. Outcome

Redo surgery for GERD is a high-risk procedure, and we observed 34.6% morbidity and 1.9% mortality rates, which are in-line with published data [17,18]. As illustrated by our experience, the leading complications following redo surgery in this setting are dysphagia, gastric perforation and bleeding [19]. The occurrence of postoperative complications also impacted on long-term functional results as it was correlated with a lower quality of life score. Such data are not available in the current literature.

Long-term results in this setting are seldom reported. At 1 year, most of the patients seem to be symptomatically improved [20]. The initial experience of the Mayo Clinic showed that, with a mean follow-up of 44 months among 134 patients functional results could be good or excellent in 59% of the cases [21]. The most recent experience of the same institution [18] reported improved results with a 71% satisfaction rate in 126 patients operated from 1995 to 2004 with a median follow-up of 10 months. Such a patient satisfaction grading, however, depicts disappointingly the clinical reality. Extensive objective data with postoperative pH monitoring are lacking. Our experience with 26 patients showed normal values in 24 patients 1 year after the procedure. Furthermore, there was no strict relationship between pH monitoring results and the presence or not of symptoms. Thus, final results should not ignore the expectations, personal feelings, satisfaction, and quality of life of the patients. We used a dedicated questionnaire, and a good score was achieved in 57% of our patients with a mean follow-up of 113 months. One of our striking observations was that half of the patients received proton pump inhibitor therapy at the time of the inquiry, independently of their satisfaction score. This finding echoes the data published by Spechler et al. [22] who reported on a similar 67% rate in patients having undergone an antireflux surgery in the frame of a randomized study. It is also in line with the results of a recent dedicated study in which despite a 94% satisfaction rate, 39% of the patients were on antireflux medications, with 70% using continuous medication after laparoscopic antireflux surgery [23]. In this study, 56% of patients on antireflux medications after surgery had no GERD symptoms and took these medications for non-appropriate indications such as bloating.

5. Conclusion

Our experience confirms that selection of candidates for redo GERD surgery is a challenge. Surgical management of these patients should be considered carefully, on an individual basis, in view of the high morbidity and the contrasted perceived results in the long-term. The most challenging patients are those with GERD-related symptoms reoccurring more than 3 years after the initial surgery, that are resistant to the medical treatment, and who present with an anatomically normal-appearing wrap.

Fig. 1. Left thoracotomy for redo GERD surgery.
The transthoracic approach, often used in the most complex cases (late recurrence after laparotomy, presence of intrathoracic gastric hernia and/or short esophagus, multiple attempt of repair) provides fair results. Simpler cases, typified by failure of laparoscopic surgery in the absence of short esophagus and other anatomical disorders, may be approached safely and efficiently by laparotomy. Fundoplication, associated with an esophageal lengthening procedure if necessary, should be preferred to resection or total duodenal diversion whenever possible.

Whatever the procedure used and its presumed efficiency, surgery does not result in the suppression of antacid medications in half of the patients.

References


