Laryngectomy and Reflux

Incidence of reflux in laryngectomees
Consequences and treatment of reflux in laryngectomees
Preface

This document contains a bibliography and summaries of selected publications relating to the incidence, consequences, and treatment of reflux in laryngectomized individuals. The document is part of a growing, and regularly updated collection of documents, the *Atos Medical Clinical Evidence Series*, covering various clinical topics related to Atos Medical’s areas of expertise. The topics are chosen based on questions, suggestions and requests that we receive from our customers.

Examples of available topics are:
- HME Use and Compliance
- Primary versus Secondary TE puncture
- Primary versus Secondary Voice Prosthesis Fitting

If you would like to receive a list of all currently available topics, if you are interested in any of the topics listed above, or if you have a suggestion for additional topics, please contact your local Atos Medical representative.
# Table of content

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>2</td>
</tr>
<tr>
<td>Table of content</td>
<td>3</td>
</tr>
<tr>
<td>Incidence of reflux in laryngectomees</td>
<td>4</td>
</tr>
<tr>
<td>Bock et al, 2010</td>
<td>5</td>
</tr>
<tr>
<td>Marín Garrido et al, 2007</td>
<td>6</td>
</tr>
<tr>
<td>Smit et al, 1998</td>
<td>7</td>
</tr>
<tr>
<td>Consequences and treatment of reflux in laryngectomees</td>
<td>8</td>
</tr>
<tr>
<td>Cocuzza et al, 2012</td>
<td>10</td>
</tr>
<tr>
<td>Lorenz et al, 2011</td>
<td>11</td>
</tr>
<tr>
<td>Lorenz et al, 2011</td>
<td>12</td>
</tr>
<tr>
<td>Lorenz et al, 2010</td>
<td>13</td>
</tr>
<tr>
<td>Lorenz et al, 2010</td>
<td>14</td>
</tr>
<tr>
<td>Lorenz et al, 2009</td>
<td>15</td>
</tr>
<tr>
<td>Pattani et al, 2009</td>
<td>16</td>
</tr>
<tr>
<td>Boscolo-Rizzo et al, 2008</td>
<td>17</td>
</tr>
<tr>
<td>Jobe et al, 2002</td>
<td>18</td>
</tr>
<tr>
<td>Sarria Echegaray et al, 2000</td>
<td>19</td>
</tr>
<tr>
<td>Seikaly and Park, 1995</td>
<td>20</td>
</tr>
</tbody>
</table>
Incidence of reflux in laryngectomees is reported to be rather high. In the immediate postoperative period pathological reflux is reported in 30-40%. In the long-term, rates as high as 80% are reported. In 58% of patients, pepsin was found in the tracheoesophageal puncture site.

### Incidence of reflux in laryngectomees

The publications listed below concern the publications regarding Incidence of reflux in laryngectomees that are referenced above. Clicking the link while holding the Ctrl key will take you directly to the summary you are interested in.


Bock et al, 2010

Title
Analysis of pepsin in tracheoesophageal puncture sites.

Authors
Bock JM, Brawley MK, Johnston N, Samuels T, Massey BL, Campbell BH, Toohill RJ, Blumin JH.

Affiliation(s)
Department of Otolaryngology and Communication Sciences, Medical College of Wisconsin, Milwaukee, Wisconsin 53226, USA.

Journal and year of publication

Type of publication
Prospective study

Introduction
Gastroesophageal reflux has been proposed as a cause of problems with the tracheoesophageal (TE) puncture site in laryngectomized patients using a voice prosthesis. In this study the TE puncture sites were evaluated for the presence of pepsin in tissue biopsy specimens and tract secretions to explore this association.

Subjects and Methods
Seventeen laryngectomized patients with TE punctures were interviewed for a history of symptoms related to reflux, medication use history, voice quality, and incidence of complications. Tissue biopsy specimens and tract secretions were obtained from TE puncture sites and analyzed for the presence of pepsin via sodium dodecyl sulfate-polyacrylamide gel electrophoresis Western blot analysis.

Results
Twelve of 17 patients (47%) had some history of preoperative or postoperative symptoms of gastroesophageal reflux disease or laryngopharyngeal reflux. Pepsin was present within the TE puncture site in a total of 10 of 17 patients (58%; 7 of 17 tissue biopsy specimens and 6 of 7 secretion samples). There were no statistically significant associations between the presence of pepsin and sex, reflux history, use of acid suppressive medicine, or time since laryngectomy.

Conclusions
Reflux with subsequent pepsin deposition into the TE puncture tract occurs in a majority of laryngectomy patients. Further studies on the effect of reflux on the health and function of the TE puncture tract are warranted.
Marín Garrido et al, 2007

Title
Study of laryngopharyngeal reflux using pH-metering in immediate post-op of laryngectomized patients.

Authors
Marín Garrido C, Fernández Liesa R, Vallès Varela H, Naya Gálvez MJ.

Affiliation(s)
Fundació Hospital de l’Esperit Sant, Santa Coloma de Gramenet, Barcelona, Spain.

Journal and year of publication

Type of publication
Prospective study

Introduction
Little is known about incidence of laryngo-pharyngeal reflux (LPR) and gastroesophageal reflux (GER) in the early postoperative period after total laryngectomy. This study evaluated the effect and characteristics of the LPR and GER in laryngectomized patients, by means of double pH-metry during the first 48 hours after surgery.

Subjects and Methods
In 50 laryngectomized patients, 48-hour double-probe pH monitoring was performed during the first 48 hours after total laryngectomy, after intraoperative placement of the probe.

Results
The incidence of LPR in the postoperative period ranged between 30% and 40%. GER was observed in 40%.

Conclusions
A high incidence of LPR and GER was observed in the immediate postoperative period after total laryngectomy.

Link to free download
http://www.elsevier.es/en/linksolver/ft/ivp/0001-6519/58/284?s=tr&ty=616148
Smit et al, 1998

Title
High incidence of gastropharyngeal and gastroesophageal reflux after total laryngectomy.

Authors
Smit CF, Tan J, Mathus-Vliegen LM, Devriese PP, Brandsen M, Grolman W, Schouwenburg PF.

Affiliation(s)
Department of Otorhinolaryngology Head and Neck Surgery, Academic Medical Center, University of Amsterdam, The Netherlands.

Journal and year of publication

Type of publication
Prospective study

Introduction
Gastroesophageal reflux (GER) appears to be related to laryngeal carcinoma. Little is known about GER and gastropharyngeal reflux (GPR) in the laryngectomized patient. Therefore, GER and GPR were studied in laryngectomized patients.

Methods
In 11 patients, 24-hour double-probe pH monitoring was performed in an ambulant setting. An optic fiberscope was used for the accurate positioning of the proximal probe in the upper esophageal sphincter.

Results
In 9 of 11 patients pathologic GPR was found. Four of these 9 patients had reflux in upright and supine position, 5 patients had reflux only in upright position.

Conclusions
A high incidence of GPR in laryngectomized patients was found. The authors raise the question whether all laryngectomized patients should be investigated for reflux and in the presence of pathologic reflux findings should be treated with reflux prophylaxis.
Consequences and treatment of reflux in laryngectomees

The publications listed below all concern the publications regarding consequences and treatment of reflux in laryngectomees that are referenced above. Clicking the link while holding the Ctrl key will take you directly to the summary you are interested in.


Cocuzza et al, 2012

Title
Gastroesophageal reflux disease and postlaryngectomy tracheoesophageal fistula.

Authors

Affiliation(s)
ENT Department, University of Catania, Via Santa Sofia, 78, Catania 95123, Italy.

Journal and year of publication

Type of publication
Retrospective study

Introduction
The objective of this study was to evaluate the incidence of pathologic gastroesophageal reflux in laryngectomized patients using a voice prosthesis, to analyze potential related problems, and to evaluate the effectiveness of a therapeutic protocol.

Subjects and Methods
A retrospective study was conducted in 43 laryngectomized patients using a voice prosthesis and who had problems with regard to recurrent tracheoesophageal granulation, the need of frequent prosthesis replacement (< 3 months), and unsatisfactory vocal results. All patients underwent physical examination of the puncture region and of the neopharynx and were submitted to esophagogastroduodenoscopy. All patients underwent a therapeutic anti-reflux protocol and were re-evaluated afterwards by examining the puncture region both on the tracheal side and on the esophageal side through videolaryngostroboscopy.

Results
Of the 43 recruited patients 13 (30%) presented with tracheoesophageal granulation, 20 (46.5%) with unsatisfactory vocal results, and 10 (23.5%) with frequent prosthesis replacement.

Of the 13 patients who had recurrent granulations, the evaluation results revealed the presence of gastroesophageal reflux disease (GERD) in 6 cases (46%). In the group of patients presenting unsatisfactory vocal results GERD was shown in 13 cases (65%). In the group of patients with short prosthesis device life, GERD was found in two cases (20%). Overall analysis of the data identified GERD in 21 (49%) of the 43 patients studied. The results of the therapeutic anti-reflux protocol in these 21 patients showed the disappearance or a significant (>75%) volume reduction of granulation formation in five cases (38%, p = 0.002), an overall improvement in the quality of voice in 12 patients (60%, p = 0.0001), and an increase of the prosthesis life in 4 patients (40%, p =0.05). Also the 22 GERD negative cases (51%) underwent the therapeutic anti-reflux protocol, serving as a control group. In this group, the treatment only showed substantial improvements in only two cases (9%)

Conclusions
The data obtained suggest a high degree of correlation between the presence of pathologic gastric reflux and voice prosthesis, voice and/or tracheoesophageal puncture problems. The introduction of a specific therapeutic anti-reflux protocol has led to significant improvements in 22 out of 43 patients (p <0.001).
Lorenz et al, 2011

Title
[Laryngectomised patients with voice prostheses: influence of supra-esophageal reflux on voice quality and quality of life].

Authors
Lorenz KJ, Grieser L, Ehrhart T, Maier H.

Affiliation(s)
Klinik für Hals-Nasen-Ohren-Heilkunde, Kopf-Hals-Chirurgie, Bundeswehrkrankenhaus Ulm, Oberer Eselsberg 40, 89081, Ulm, Germany.

Journal and year of publication
HNO. 2011 Feb;59(2):179-87. Article in German.

Type of publication
Prospective study

Introduction
This prospective study aimed to assess the influence of supra-esophageal reflux on voice quality and quality of life in patients who have undergone total laryngectomy and prosthetic voice rehabilitation.

Subjects and Methods
Subject were 60 laryngectomized patients whom were assessed using 24-h dual-probe pH monitoring before and 6 months after oral anti-reflux treatment with proton pump inhibitors (PPIs). Quality of life was assessed using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ) C30. Voice quality was quantified using the voice handicap index (VHI10). Quality of life and voice quality parameters were then correlated with the severity of reflux disease.

Results
Patients with physiological reflux area index (RAI) scores had a mean VHI10 score of 46.4 (±11.4). VHI scores were found to increase to up to 64.1 (±9.6) with reflux severity (p=0.025). Total quality of life scores ranged from 115.8 (±24.7) in patients with physiological RAI scores to 131.0 (±33.1) in patients with highly pathological RAI scores (p=0.007). After 6 months of treatment with PPIs, VHI scores improved to a total score of 57.5 (±20.6, p=0.003). Quality of life scores improved to 123.3 (±29.0, p=0.045).

Conclusions
Supra-esophageal reflux influences voice quality and quality of life in laryngectomized patients with voice prostheses. This can be explained, for example, by an increased incidence of periprosthesis leakage, the presence of edema in the pharyngo-esophageal segment (where speech is produced), and general reflux symptoms. Rigorous treatment with anti-reflux medications leads to an improvement in reflux parameters that can be assessed objectively (RAI) and in correlated quality of life and voice quality parameters. For this reason, the authors recommend rigorous oral treatment with PPIs in laryngectomized patients with a confirmed diagnosis of supra-esophageal reflux.
Lorenz et al, 2011

Title
The management of periprosthetic leakage in the presence of supra-oesophageal reflux after prosthetic voice rehabilitation.

Authors
Lorenz KJ, Grieser L, Ehrhart T, Maier H.

Affiliation(s)
Department of Otorhinolaryngology-Head and Neck Surgery, German Armed Forces Hospital of Ulm, Oberer Eselsberg 40, 89081, Ulm, Germany.

Journal and year of publication
Eur Arch Otorhinolaryngol. 2011 May;268(5):695-702.

Type of publication
Prospective study

Introduction
The objective of the study was to investigate the influence of anti-reflux medications on the management of periprosthetic leakage in laryngectomized patients with prosthetic voice rehabilitation.

Subjects and Methods
Subjects were 60 patients who underwent total laryngectomy and prosthetic voice rehabilitation. In a prospective non-randomized study, subjects were assessed clinically and by means of 24-h dual-probe pH monitoring before and 6 months after oral anti-reflux treatment with proton pump inhibitors (PPIs). The severity of reflux, the effectiveness of anti-reflux therapy, and the clinical success of treatment were evaluated. Reflux parameters before and after anti-reflux therapy as well as the severity and incidence of periprosthetic leakage before and after PPI therapy were the main outcome measures.

Results
The absolute number of reflux events was 162.2 (±144.3) before treatment and 63.1 (±87.9) after treatment with PPIs (p = 0.031). The reflex area index score (RAI) decreased from 327.1 (±419.3) without PPIs to 123.8 (±249.7) with PPIs (p = 0.0228). The mean DeMeester score was 108.3 (±85.4) before treatment and 47.4 (±61.7) after 6 months of treatment (p = 0.0557). The relative risk of periprosthetic leakage decreased to 0.5 after anti-reflux treatment. In 19 patients, periprosthetic leakage problems were successfully managed by rigorous treatment with PPIs. No further surgical procedures were required in these cases.

Conclusions
Rigorous anti-reflux treatment leads to an improvement in parameters that can be assessed objectively by 24-h dual-probe pH monitoring. In the majority of patients, the symptoms associated with periprosthetic leakage can be improved or cured by anti-reflux treatment.
Lorenz et al, 2010

Title
Role of reflux in tracheoesophageal fistula problems after laryngectomy.

Authors
Lorenz KJ, Grieser L, Ehrhart T, Maier H.

Affiliation(s)
Department of Otorhinolaryngology-Head and Neck Surgery, German Armed Forces Hospital of Ulm, Ulm, Germany.

Journal and year of publication

Type of publication
Prospective study

Introduction
The purpose of this 2-year prospective non randomized study was to investigate the relationship between pathological supra-esophageal reflux and the occurrence of tracheoesophageal (TE) puncture complications, especially severe TE puncture enlargement, in patients who underwent total laryngectomy and prosthetic voice restoration.

Subjects and Methods
The study included 60 laryngectomized patients using a voice prosthesis. The presence of reflux disease was objectively assessed using 24-hour dual-probe pH monitoring in 60 laryngectomized patients. The relationship between the severity of reflux and the incidence of tracheoesophageal (TE) puncture complications was investigated. The risk for TE puncture problems was assessed by determining the absolute number of reflux events at the level of the TE puncture, the reflux area index score, and the DeMeester score.

Results
All patients with TE puncture enlargement showed highly pathological results in the diagnostic tests for reflux disease. Depending on reflux severity, the relative risk of developing TE puncture complications was up to 10 times higher for these patients.

Conclusions
A significant correlation was found between the occurrence of TE puncture complications and the severity of supraesophageal reflux. Potential chronic irritation of the esophageal and tracheal mucosa can possibly contribute to the development of these problems. If the presence of reflux disease has been confirmed by 24-hour dual-probe pH monitoring, patients with TE puncture complications should be treated with proton pump inhibitors.
Lorenz et al, 2010

**Title**
[Prosthetic voice restoration after laryngectomy: the management of fistula complications with anti-reflux medications].

**Authors**
Lorenz KJ, Grieser L, Ehrhart T, Maier H.

**Affiliation(s)**
Klinik für Hals-Nasen-Ohren-Heilkunde, Kopf- und Halschirurgie, Bundeswehrkrankenhaus Ulm, Oberer Eselsberg 40, 89081 Ulm, Germany.

**Journal and year of publication**
HNO. 2010 Sep;58(9):919-26. Article in German.

**Type of publication**
Prospective study

**Introduction**
This prospective study aims to investigate the role of aggressive anti-reflux therapy in periprosthetic leakage problems in laryngectomized patients using a voice prosthesis.

**Subjects and Methods**
A total of 48 patients were assigned to one of two groups. Group A consisted of 16 patients with recurrent periprosthetic leakage. Group B comprised 32 patients without periprosthetic leakage. The presence of reflux was objectively assessed using 24-h dual-probe pH monitoring. All patients with pathological reflux underwent proton pump inhibitor (PPI) therapy. After 6 months, patients were re-evaluated for fistula complications and objective reflux parameters.

**Results**
The mean absolute number of reflux events was 202.8 (+/-44) before and 74.5 (+/-22.9) after PPI therapy (p=0.025). The reflux area index decreased from 419.5 (+/-112.5) before treatment to 105.8 (+/-54.7) after treatment (p=0.0005). The mean DeMeester score was 104.4 (+/-21.3) without PPIs and 43.5 (+/-9.3) after 6 months with PPIs (p=0.028). A risk analysis for patients with both periprosthetic leakage and pathological reflux (15 patients at the beginning of the study, four patients after therapy) showed that the relative risk of periprosthetic leakage decreased to 0.3 (p=0.0054) with PPI therapy.

**Conclusions**
Patients with recurrent periprosthetic leakage in the region of the TE puncture showed a significantly higher number of supra-oesophageal reflux episodes. Rigorous anti-reflux treatment can help manage or prevent periprosthetic leakage problems in a large proportion of patients.
Lorenz et al, 2009

**Title**
[Coincidence of fistula enlargement and supra-oesophageal reflux in patients after laryngectomy and prosthetic voice restoration].

**Authors**
Lorenz KJ, Ehrhart T, Grieser L, Maier H.

**Affiliation(s)**
Klinik für Hals-Nasen-Ohren-Heilkunde, Kopf-Hals-Chirurgie, Bundeswehrkrankenhaus Ulm, Oberer Eselsberg 40, 89081, Ulm, Germany.

**Journal and year of publication**
HNO. 2009 Dec;57(12):1253-61. Article in German.

**Type of publication**
Prospective study

**Introduction**
In the prospective study investigates if there was an increased incidence of supra-esophageal reflux in patients who developed recurrent periprosthetic leakage in the region of the tracheoesophageal (TE) puncture after laryngectomy and prosthetic voice restoration.

**Subjects and Methods**
A total of 48 patients was included: 16 patients with recurrent periprosthetic leakage (group A) and 32 patients without periprosthetic leakage (group B). The presence of reflux was objectively assessed using 24-hour dual-probe pH monitoring. The number of supra-esophageal reflux events, the reflux area index (RAI) and the DeMeester score were determined as well as the relative risk of TE puncture enlargement in relation to the presence of reflux and postoperative radiotherapy.

**Results**
In group A pathological reflux events were detected in 100% of the cases. The mean number of supra-esophageal reflux episodes was 414.8, the RAI was 419.5 (+/-212.45) and the DeMeester score was 104.4 (+/-21.3). In group B pathological reflux events were found in only 50% of the cases. The mean number of supra-esophageal reflux episodes was 11.8, the RAI was 146.9 (+/-40.4) and the DeMeester score was 42.9 (+/-11.8). All reflux parameter results for group A patients were significantly higher than those obtained for group B patients. The relative risk of TE puncture enlargement was 1.8-2.3 times higher in the presence of reflux. Postoperative radiotherapy did not increase the risk of TE puncture enlargement (relative risk 0.75-0.93).

**Conclusions**
A significantly higher number of supra-oesophageal reflux episodes occurred in patients with recurrent periprosthetic leakage. As reflux events may cause problems in the region of the TE puncture, prophylactic treatment with proton pump inhibitors is recommended.
Pattani et al, 2009

Title
Reflux as a cause of tracheoesophageal puncture failure.

Authors
Pattani KM, Morgan M, Nathan CO.

Affiliation(s)
Department of Otolaryngology Head and Neck Surgery, Louisiana State University Health Sciences Center, Feist-Weiller Cancer Center, Shreveport, Louisiana 71130, USA.

Journal and year of publication

Type of publication
Retrospective chart review

Introduction
This study evaluates the response to empiric reflux management in treatment of tracheoesophageal voicing difficulties in patients without any documented anatomic cause for the voice problems.

Methods
A retrospective chart review was performed to identify laryngectomized patients using a voice prosthesis who had voicing problems (n = 37). Only those patients without any documented anatomic cause for failure (n = 22) were then further reviewed to determine if empiric treatment for reflux improved voicing. Evidence of reflux was determined by either using video-flexible scope of the neopharynx, barium swallows, 24-hour pH probes, and /or transnasal esophagoscopy (TNE). In 13 of 22 patients who had voicing difficulties and no evidence of reflux on these tests, empiric treatment with anti-reflux medications had been documented. The 22 patients were closely monitored to determine the role of reflux therapy and subsequent voicing outcomes.

Results
Of the 22 patients studied, 9 were noted to have granulation tissue on the tracheal side of the prosthesis. All nine patients had complete resolution of the granulation tissue after anti-reflux treatment, and seven of nine were able to voice again. Of the patients with no obvious reason for their voicing problems, who were empirically treated for reflux, 62% (8 of 13) had voice after treatment. Overall, 77% of the patients (17 of 22) had a positive response to treatment with aggressive reflux therapy.

Conclusions
Previous studies have demonstrated patients with a total laryngectomy and/or radiation therapy have increased reflux. This study addresses reflux as a potential cause of tracheoesophageal voicing problems. Results showed that 41% (9 of 22) of patients with voicing difficulties had granulation tissue surrounding the prosthesis as a result of reflux. Aggressive anti-reflux therapy proved beneficial in eradicating this problem. Prophylactic anti-reflux therapy may be warranted for patients undergoing TE puncture to reduce voicing problems.
Boscolo-Rizzo et al, 2008

Title
The impact of radiotherapy and GERD on in situ lifetime of indwelling voice prostheses.

Authors
Boscolo-Rizzo P, Marchiori C, Gava A, Da Mosto MC.

Affiliation(s)
ENT Department and Regional Center for Head and Neck Cancer, University of Padua, School of Medicine, Treviso Regional Hospital, Treviso, Italy.

Journal and year of publication

Type of publication
Retrospective study

Introduction
The aim of this study was (1) to analyze the in situ lifetime of indwelling voice prostheses (VPs) and (2) to investigate the role of some variables on device lifetime.

Subjects and Methods
A retrospective clinical study was conducted that included 106 laryngectomized patients using a voice prosthesis that had visited our outpatient clinic for problems related to their VP between August 1998 and March 2006.

Results
The overall mean in situ voice prosthesis device lifetime was 180.9 days (95% CI 162.6-199.2). In irradiated patients average device life was significantly shorter (163.3 days) compared to non-irradiated patients (202.9 days; P = 0.008). In patients with endoscopic evidence of gastroesophageal reflux (GERD) the average device life was significantly shorter (126.5 days) compared to patients without evidence for GERD (215.7, P < 0.001). Multivariate analysis confirmed that radiotherapy and presence of GERD significantly affected the in situ voice prosthesis device lifetime.

Conclusions
This study confirmed the relationship between short voice prosthesis device lifetime and radiation therapy, and showed a possible association between GERD and limited device lifetime.
Jobe et al, 2002

Title
Surgical management of gastroesophageal reflux and outcome after laryngectomy in patients using tracheoesophageal speech.

Authors
Jobe BA, Rosenthal E, Wiesberg TT, Cohen JI, Domreis JS, Deveney CW, Sheppard B.

Affiliation(s)
Department of Surgery, Oregon Health Sciences University, Portland, OR, USA.

Journal and year of publication

Type of publication
Prospective study

Introduction
This study investigates the effects of surgical management (laparoscopic fundoplication) of Gastro Esophageal reflux disease (GERD) in laryngectomized patients using a voice prosthesis.

Subjects and Methods
Nine laryngectomy patients who use tracheoesophageal speech underwent laparoscopic fundoplication for documented reflux. Preoperative and postoperative symptoms were recorded. Quality of speech was documented before and after fundoplication.

Results
Although 88% of patients had resolution of GERD symptoms, all developed bloating and hyperflatulence. There was no difference in quality of tracheoesophageal speech after laparoscopic fundoplication.

Conclusion
Fundoplication in laryngectomy patients that use tracheoesophageal speech eliminates symptoms of gastroesophageal reflux and resolves regurgitation associated prosthesis erosion. Although nearly all patients are satisfied with outcome, there is a high incidence of postfundoplication bloating and hyperflatulence that may be life limiting. Poor quality tracheoesophageal speech should not be used as an indication for antireflux surgery.
Sarría Echegaray et al, 2000

Title
[Pharmacological prophylaxis of gastroesophageal reflux. Incidence of pharyngocutaneous fistula after total laryngectomy].

Authors
Sarría Echegaray P, Tomás Barberán M, Mas Mercant S, Soler Vilarrasa R, Romaguera Lliso A.

Affiliation(s)
Servicio de ORL, Hospital Son Dureta, Palma de Mallorca, 07014, Spain.

Journal and year of publication

Type of publication
Prospective study

Introduction
Development of a pharyngocutaneous fistula is a serious complication of total laryngectomy. The problem increases morbidity, prolongs hospitalization, and occasionally causes death. The authors propose that gastroesophageal reflux, which often is subclinical, is an important trigger and should be prevented.

Methods
Evaluation of the effect of associating an anti-reflux agent like metoclopramide hydrochloride to our usual ranitidine of our protocol after total laryngectomy on reducing the incidence of pharyngocutaneous fistula.

Results
Incidence of pharyngocutaneous fistula reduced significantly (p<.05)
Seikaly and Park, 1995

**Title**
Gastroesophageal reflux prophylaxis decreases the incidence of pharyngocutaneous fistula after total laryngectomy.

**Authors**
Seikaly H, Park P.

**Affiliation(s)**
Department of Surgery, University of Alberta, Canada.

**Journal and year of publication**

**Type of publication**
Prospective study

**Introduction**
Pharyngocutaneous fistula is a serious complication after laryngectomy. Gastric fluid is known to cause severe laryngopharyngeal injury and poor mucosal healing. This study was designed to evaluate the effects of a gastroesophageal reflux prophylaxis regimen on the incidence of fistulae after total laryngectomy.

**Subjects and Methods**
Twenty-one consecutive patients were entered in the study. Patients with positive resection margins were excluded from the overall analysis. All patients had a Connell's two-layer closure of the pharynx with absorbable suture, suction drainage of the neck, postoperative tube feeding, and prophylactic antibiotics. All patients were started on an anti-reflux regimen postoperatively composed of continuous tube feeds, intravenous ranitidine, and intravenous metoclopramide hydrochloride. Patients were followed postoperatively with Gastrografin swallows and clinically for 8 weeks. The control group consisted of retrospectively studied patients managed identically except for the anti-reflux prophylaxis.

**Results**
The two groups were well matched for factors reported to influence the rate of pharyngocutaneous fistulae formation. The control group had six fistulae (26%) and an average of 16.5 days of hospital stay. The study group had no fistulae and an average of 11.5 days of hospital stay (P = .02).

**Conclusion**
This study suggests that gastroesophageal reflux may predispose to fistula formation after laryngectomy and that mechanical and pharmacological prophylaxis decreases postoperative morbidity and length of hospital stay.