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Laryngectomy and Reflux

Incidence of reflux in laryngectomees

Consequences and treatment of reflux in laryngectomees

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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.

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Incidence of reflux in laryngectomees is reported to be rather high. In the immediate postoperative period pathological reflux is reported in 30-40%.² In the long-term, rates as high as 80% are reported.³ In 58% of patients, pepsin was found in the tracheoesophageal puncture site.¹

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.

¹[Bock et al. Analysis of pepsin in tracheoesophageal puncture sites. Ann Otol Rhinol Laryngol. 2010 Dec;119\(12\):799-805.](#)

²[Marín Garrido et al. \[Study of laryngopharyngeal reflux using pH-metering in immediate post-op of laryngectomized patients\]. Acta Otorrinolaringol Esp. 2007 Aug-Sep;58\(7\):284-9.](#)

³[Smit et al. High incidence of gastropharyngeal and gastroesophageal reflux after total laryngectomy. Head Neck. 1998 Oct;20\(7\):619-22.](#)

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

Ann Otol Rhinol Laryngol. 2010 Dec;119(12):799-805.

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

Acta Otorrinolaringol Esp. 2007 Aug-Sep;58(7):284-9.

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

Head Neck. 1998 Oct;20(7):619-22.

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.

Reflux in laryngectomized patients can lead to voice problems^{1,2,7}, puncture problems^{1,3,4,6}, and/or voice prosthesis problems^{1,8}. In patients with proven pathological reflux, relationships have been found between the presence of reflux and problems and voice quality problems^{1,2,7}, reduced voice-related quality of life (VHI)², reduced overall quality of life², increased incidence of peri-prosthetic leakage³, recurrent peri-prosthetic leakage⁶, increased incidence of enlarged tracheoesophageal punctures^{4,5}, formation of granulation tissue in the area of the tracheoesophageal puncture^{1,7}, shortened device life of the voice prosthesis^{1,8}, and increased incidence of postoperative pharyngocutaneous fistulae¹¹.

It is reported that aggressive pharmacological anti-reflux treatment reduces reflux symptoms^{3,5} and can lead to improved voice quality¹, improved voice-related quality of life², improved overall quality of life², healing of enlarged tracheoesophageal punctures/reduced peri-prosthetic leakage^{3,5}, reduction or elimination of granulation tissue^{1,7}, and improved device life of the voice prosthesis^{1,8}. During the postoperative period, aggressive anti-reflux therapy can reduce the incidence of pharyngocutaneous fistulae^{10,11}. In some cases, surgical treatment to prevent reflux may be indicated, although this has also been related to increased bloating and hyperflatulence⁹.

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.

¹[Cocuzza et al. Gastroesophageal reflux disease and postlaryngectomy tracheoesophageal fistula. Eur Arch Otorhinolaryngol. 2012 May;269\(5\):1483-8.](#)

²[Lorenz et al. \[Laryngectomised patients with voice prostheses: influence of supra-esophageal reflux on voice quality and quality of life\]. HNO. 2011 Feb;59\(2\):179-87.](#)

³[Lorenz et al. The management of periprosthetic leakage in the presence of supra-oesophageal reflux after prosthetic voice rehabilitation. Eur Arch Otorhinolaryngol. 2011 May;268\(5\):695-702.](#)

⁴[Lorenz et al. Role of reflux in tracheoesophageal fistula problems after laryngectomy. Ann Otol Rhinol Laryngol. 2010 Nov;119\(11\):719-28.](#)

⁵[Lorenz et al. \[Prosthetic voice restoration after laryngectomy: the management of fistula complications with anti-reflux medications\]. HNO. 2010 Sep;58\(9\):919-26.](#)

⁶[Lorenz et al. \[Coincidence of fistula enlargement and supra-oesophageal reflux in patients after laryngectomy and prosthetic voice restoration\]. HNO. 2009 Dec;57\(12\):1253-61.](#)

⁷[Pattani et al. Reflux as a cause of tracheoesophageal puncture failure. Laryngoscope. 2009 Jan;119\(1\):121-5.](#)

⁸[Boscolo-Rizzo et al. The impact of radiotherapy and GERD on in situ lifetime of indwelling voice prostheses. Eur Arch Otorhinolaryngol. 2008 Jul;265\(7\):791-6.](#)

⁹[Jobe et al. Surgical management of gastroesophageal reflux and outcome after laryngectomy in patients using tracheoesophageal speech. Am J Surg. 2002 May;183\(5\):539-43.](#)

¹⁰[Sarría Echegaray et al. \[Pharmacological prophylaxis of gastroesophageal reflux. Incidence of pharyngocutaneous fistula after total laryngectomy\]. Acta Otorrinolaringol Esp. 2000 Apr;51\(3\):239-42.](#)

¹¹[Seikaly and Park. Gastroesophageal reflux prophylaxis decreases the incidence of pharyngocutaneous fistula after total laryngectomy. Laryngoscope. 1995 Nov;105\(11\):1220-2.](#)

Cocuzza et al, 2012

Title

Gastroesophageal reflux disease and postlaryngectomy tracheoesophageal fistula.

Authors

Cocuzza S, Bonfiglio M, Chiaramonte R, Aprile G, Mistretta A, Grosso G, Serra A.

Affiliation(s)

ENT Department, University of Catania, Via Santa Sofia, 78, Catania 95123, Italy.

Journal and year of publication

Eur Arch Otorhinolaryngol. 2012 May;269(5):1483-8.

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 periprosthetic 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 reflux 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

Ann Otol Rhinol Laryngol. 2010 Nov;119(11):719-28.

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

Laryngoscope. 2009 Jan;119(1):121-5.

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

Eur Arch Otorhinolaryngol. 2008 Jul;265(7):791-6.

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

Am J Surg. 2002 May;183(5):539-43.

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.

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Journal and year of publication

Acta Otorrinolaringol Esp. 2000 Apr;51(3):239-42. Article in Spanish.

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

Laryngoscope. 1995 Nov;105(11):1220-2.

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.