

METTE PEDERSEN

# Mucosa of the upper airways, objective aspects of the larynx related to adeno-tonsillectomy

VI International Symposium on Tonsils and Mucosal  
Barriers of the Upper Airways (VI ISTMB)

Round Table in the Auditorium 01.09.2006 4.00 pm

# Adenotonsillectomy when and why?

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The **mucosal barrier** of the rhino pharynx, pharynx and **larynx** is based on the same structure of well functioning cylindrical respiratory epithelium. Tos, Passàli and others have studied the pathological epithelium with the development of pathological cells.

In a **clinical setting** attacks on the mucosal barrier are well known:

virus,  
bacteria,  
fungal infections,  
diet,  
environmental toxins,  
with individual responding genetic aspects.

***For provocation*** of pathological reactions as well as ***for repair*** of the mucosal barrier these aspects have to be taken into account. ***For prophylaxis***, treatment and prognosis the reactions of the individual as a whole must be considered and advice as well as treatment must be given *individually and evidence based*.

## We searched the literature for this study, the first author and year of the studies are presented

1. Abdul-Bagi KJ et al 2001 Use of adenoidectomy and adenotonsillectomy in children with otitis media with effusion
2. Abraham SC et al 2001 Upper gastrointestinal tract injury in patients receiving kayexalate (sodium polystyrene sulfonate) in sorbitol: clinical, endoscopic, and histopathologic findings
3. Abraham SN et al 2005 Bacterial penetration of the mucosal barrier by targeting lipid rafts
4. Acta otolaryngol 2003 Does the tonsillar surface flora differ in children with and without tonsillar disease?
5. Adams NP et al 2005 Fluticasone at different doses for chronic asthma
6. Adunka O et al 2004 Cochlear trauma in cochlear implantation
7. Akbayir N. et al 2005 Heterotopic gastric mucosa in the cervical esophagus: Could this play a role in the pathogenesis of laryngopharyngeal reflux in a subgroup of patients with posterior laryngitis?
8. Akimoto T et al 2003 Effects of 12 months of exercise training on salivary secretory IgA levels in elderly subjects.
9. Alexander C et al 2005 The effect of feline d 1-derived T-cell (UP)
10. Alexander K.C. Leung et al 2004 Childhood cervical lymphadenopathy
11. Alexander K.C. Leung et al 2004 Viral Croup: A current perspective
12. Alexopoulos EI et al 2005 Resolution of nocturnal enuresis in snoring children after treatment with nasal budesonide
13. Al-Ghamdi SA 1997 Do systemic corticosteroids effectively treat obstructive sleep apnea secondary to adenotonsillar hypertrophy.
14. Alonso MJ 2004 Nanomedicines for overcoming biological barriers
15. Andersson JA et al 2002 A decrease in maxillary sinus pressure

20. Andersson JA et al 2002 A decrease in maxillary sinus pressure, as seen in upper airway allergy or infection.
21. Andrus JG 2005 Transnasal esophagoscopy: a High-yield diagnostic tool
22. Anon JB 2003 Acute bacterial rhinosinusitis in paediatric medicine
23. Arens R 2002 Linear dimensions of the upper airway structure during development: assessment by magnetic resonance imaging.
24. Arens R et al 2003 Upper airway size analysis by magnetic resonance imaging of children with obstructive sleep apnea syndrome. Detailed analysis of the upper airway has not been performed in children with obstructive sleep apnea.
25. Arens R. et al 2001 Magnetic resonance imaging of the UA structure
26. Arguin AL et al 2004 Gastroesophageal reflux in infants
27. Arvidsson MB et al 2002 Effect of 2-year placebo-controlled immunotherapy on airway symptoms
28. Atzeni F. et al 2005 Autoantibody profile during short-term (Crohn's disease)
29. Aurelian L. et al 2003 Herpes simplex virus (HAEM)
30. Avies MW 2002 Nebulized racemic epinephrine for extubation of newborn infants.
31. Aygenc E et al 2001 The Role of Helicobacter pylori infection in the cause of squamous cell carcinoma of the larynx
32. Bachert C et al 2001 Elevated levels of myeloperoxidase, pro-inflammatory cytokines and chemokines in naturally acquired upper respiratory tract infections
33. Bachert C. et al 2006 The role of sinus disease in asthma
34. Bakhai A et al 2002 Bronchial artery delivery of viral vectors for gene
35. Banasiak NC et al 2005 Leukotrienes: Their role in the (allergic rhinitis)
36. Baraniuk J N 2001 Neurogenic mechanisms in rhinosinusitis.
37. Barclay L et al 2004 Incidence of Eosinophilic esophagitis
38. Barclay L et al 2004 Sputum culture of little value in diagnosing community-acquired pneumonia
39. Barclay L, Désirée L 2005 Update guidelines for diagnosis and management of sinusitis
40. Barclay LD 2003 New guidelines for influenza prevention and control

42. Bardhan KD et al 2004 International validation of request in patients with endoscopy-negative gastro-oesophageal reflux disease
43. Baschiera F. et al 2002 Improved tonsillar disposition of azithromycin following a 3-day oral treatment with 20 mg kg (-1) in paediatric patients.
44. Batzloff MR. et al 2005 Towards a development of an anti-disease
45. Belliveau PP 2005 Omalizumab: A Monoclonal Anti-IgE Antibody
46. Bengmark S. 2005 Synbiotics and the mucosal barrier in critically ill patients. (Purpose of review: Outcome in severe and critical illnesses...)
47. Bergelson JM 2003 Virus interactions with mucosal surfaces
48. Bi, Luke C et al 2003 Gastroduodenal mucosal defense: an integrated protective response.
49. Bingle CD et al 2004 Host defence in oral and airway epithelia: chromosome 20 contributes a new protein family...
50. Birch KE et al 2005 The immunomodulatory effects of regulatory T cells
51. Bitar MA et al 2005 Helicobacter pylori and adenoids
52. Blandizzi C et al 2002 Distribution of azithromycin in plasma and tonsil tissue after repeated oral administration of 10 or 20 milligrams per kilogram in pediatric patients
53. Blomgren K et al 2005 Patients` preferences for length of stay: valuable in day-case tonsillectomy
54. Boehmer A. et al 2006 Asthma therapy for children under 5 years
55. Borregaard N. et al 2005 Neutrophils and keratinocytes in innate immunity-cooperative actions to provide antimicrobial defence at the right time and place.
56. Bosch WJ Van et al 2005 Adenotonsillectomy in children only under exceptional circumstances
57. Bourges D. et al 2004 T and IgA B lymphocytes of the pharyngeal and palatine tonsils: differential expression of adhesion molecules and chemokines...
58. Boyton RJ et al 2002 Pulmonary defences to acute respiratory infection

65. Brandtzaeg P 2003 Immunology of tonsils and adenoids: everything the ENT surgeon needs to know
66. Brandtzaeg P. 2002 Current understanding of gastrointestinal immunoregulation
67. Brandtzaeg P. 2005 Mucosal B cells: Phenotypic
68. Brankston ER et al 1998 Cefprozil versus cefuroxime axetil in the treatment
69. Braunstahl GJ et al 2001 Nasal allergen provocation induces adhesion
70. Braunstahl GJ et al 2003 Allergic Rhinitis and Asthma
71. Braunstahl GJ et al 2003 Mucosal and systemic inflammatory changes
72. Briars LA et al 2005 Omalizumab: A Steroid-sparing Option for Improving Pediatric Asthma Management?
73. Broide DH et al 2003 Selected coverage (allergy asthma immuno)
74. Browning GG 2005 An important randomized controlled trial of adenotonsillectomy
75. Buchholz UJ et al 2004 Contributions of the structural proteins of severe acute respiratory syndrome coronavirus to protective immunity.
76. Bueving HJ et al 2005 Is influenza vaccination in asthma helpful?
77. Bui C. et al 2005 The place for PET
78. Burkart CM et al 2005 Antibiotics for reduction of post tonsillectomy morbidity: a meta-analysis
79. Butt AK et al 2002 Correlations of helicobakter pylori
80. Butter NS, et al 2004 Mechanisms of Disease: Caecinogenesis
81. Canning BJ 2002 Neurology of allergic inflammation and rhinitis.
82. Cantani A et al 1986 Serum immunoglobulins and secretory IgA deficiency in tonsillectomized children
83. Cara CO et al 2002 Prevalence of tonsillar hypertrophy and associated oropharyngeal symptoms in primary school children in Denizli, Turkey.
84. Cardwell M 2005 Non steroidal anti-inflammatory drugs and perioperative bleeding in paediatric tonsillectomy
85. Carr MM et al 2001 Correlation of findings at direct laryngoscopy and bronchoscopy with gastroesophageal reflux disease in children: a prospective study

88. Carr MM et al 2001 Correlation of findings at direct laryngoscopy and bronchoscopy with gastroesophageal reflux disease in children: a prospective study.
89. Cash BD et al 2004 Irritable bowel syndrome – An evidence-based approach to diagnosis
90. Cash BD et al 2005 Digestive disease week 2005
91. Cash BD, Katz PO et al 2005 American College of Gastroenterology 70th Annual scientific Meeting
92. Celiker V et al 2004 Minimum effective dose of dexamethasone after tonsillectomy
93. Charalabopoulos K et al 2005 Effects of cigarette smoking
94. Chervin RD et al 2003 Tolerance of esophageal pressure monitoring during polysomnography in children
95. Cheung KM et al 2003 Esophageal eosinophilia in children with dysphagia.
96. Childers NK et al 2001: Human salivary immunoglobulin and antigen-specific antibody activity after tonsillectomy.
97. Chuang L et al The therapy of children with secretory otitis media by myringotomy with grommet insertion and the relevant management
98. Cieslak TJ et al 2003 Effects of physical activity, body fat
99. Cirak MY et al 2003 Detection of Helicobacter pylori and its CagA gene in tonsil and adenoid tissues by PCR.
100. Claeys S et al 2003 Human beta-defensin and toll-like receptors in the upper airway (Background: measurement of innate markers in nasal mucosa...)
101. Claeys S et al 2005 Nasal polyps in patients with and without cystic fibrosis
102. Claypool SM et al 2004 Bidirectional trans epithelial IgG transport by a strongly polarized basolateral membrane Fc gamma-receptor.
103. Colantonio D. et al 2002 Paradoxical low nasal nitric oxide in nasal polyposis.
104. Cox AJ 2004 Valtrex therapy for Epstein-Barr virus reactivation and upper respiratory symptoms in elite runners.



110. Coyte PC et al 2001 The role of adjuvant adenoidectomy and tonsillectomy in the outcome of the insertion of tympanostomy tubes.
111. Craig WL et al 2003 Cellular turnover of normal gastrointestinal epithelium assessed by changes in telomeric: total DNA signal ratios.
112. Craig WR et al 2004 Metoclopramide, thickened feedings, and positioning for gastroesophageal reflux
113. Criscuoli G et al 2003 Frequency of surgery among children who have adenotonsillar hypertrophy and improve after treatment with nasal beclomethasone
114. Crofford LJ 2003 COX – 2: Where are we in 2003?
115. Cross JP et al 1971 “should adenotonsillectomy be done
116. D`Alessandro DM et al 2004 A randomized controlled trial of an information prescription for paediatric patient education on the internet
117. Dagan R et al 2001 Impact of conjugate vaccines on paediatric disease
118. Daines DA et al 2004 Identification and characterization of a nontypeable Haemophilus influenzae putative toxin-antitoxin locus.
119. Darrow DH et al 2002 Indications for tonsillectomy and adenoidectomy
120. Davenport V et al 2003 Evidence for naturally acquired T cell-mediated mucosal immunity to Neisseria meningitides.
121. Davies MW et al 2002 Nebulized racemic epinephrine
122. Davis SS 2001 Nasal vaccines. The nasal route for vaccination
123. De S et al 2005 Passive smoking and nasal blockage
124. Debkowska I et al 2005 Lymphocyte subpopulations in the surface secretion on the adenoid

128. DeDio RM et al 1988 Microbiology of the tonsils and adenoids in a pediatric population
129. DelGaudio JM 2005 Direct nasopharyngeal reflux of gastric acid
130. Demir AU et al 2002 Allergy symptoms and IgE immune response to rose: an occupational and an environmental disease.
131. Densert O. et al 2001 Tonsillotomy in children with tonsillar hypertrophy.
132. De-Serres LM et al 2002 Impact of adeno on quality of life in children
133. DeVault KR 2002 Presbyesophagus: a reappraisal.
134. Dhanasekar G et al 2005 Immunotherapy – an answer to allergic rhinitis
135. Dhiwakar M et al 2005 Evidence-based support for additional therapies for tonsillectomy
136. Di Francesco RC et al 2003 Weight and height development in children (adeno)
137. Diaz MC et al 2004 Effect of standardized pharyngitis treatment protocol on use of antibiotics in a paediatric emergency department
138. Doruer ZN et al 2004 Malondialdehyde and antioxidant enzymes in children with obstructive adenotonsillar hypertrophy
139. Drossman DA et al 2005 Evaluation and management of chronic diarrhea: an algorithmic approach
140. Dumont JA et al 2005 Delivery of an erythropoietin-Fc fusion protein by inhalation in humans through an immunoglobulin transport pathway.
141. Ebenfalt A et al 2001 Neutrophil migration in tonsils. Recent studies
142. Eccles R et al 2005 Efficacy and safety of single and multiple doses of pseudoephedrine Akexopoulos EI et al 2005 Resolution of nocturnal enuresis in snoring children after treatment with nasal budesonide.
143. Ennaifer-Jerbi E et al 2001 Tracheopathia osteochondroplastica associated with the liver
144. Epstein S et al 2003 Disintegration/Dissolution Profiles of Copies of Fosamax
145. Ersoy B et al 2005 Changes in growth pattern, body composition and biochemical markers of growth after adenotonsillectomy in prepubertal children.
146. Espalda MP et al 2002 Predictive factors of efficacy in antimicrobial prophylaxis for acute recurrent otitis media.

147. Esposito S et al 2006 Role of Atypical Bacteria and Azithromycin Therapy for Children With Recurrent Respiratory Tract Infections
148. Eygenc E et al 2001 The role of Helicobacter pylori infection in the cause of squamous cell carcinoma of the larynx.
149. Fahlman MM 2005 Gastric oxidative stress and hemorrhagic ulcer
150. Fahlman MM et al 2005 Mucosal IgA and URTI in American college football players: a year longitudinal study
151. Fahrenholz JM 2003 Natural history and clinical features of aspirin-exacerbated respiratory disease.
152. Fajdiga I 2005 Snoring Imaging
153. Farkas L et al 2004 Plasmacytoid dendritic cells activate allergen-specific
154. Feldman M et al 2001 Role of helicobacter pylori infection in gastroduodenal injury and gastric prostaglandin synthesis during long term/low dose aspirin therapy
155. Fennerty MB 2003 When should endoscopy be done in the patient with reflux?
156. Fennerty MB et al 2005 New advances in immediate release PPI
157. Ferrero RL 2005 Innate immune recognition of the extracellular
158. Fiedler N et al 2005 Health Effects of a Mixture of Indoor Air Volatile Organics, Their Ozone Oxidation Products, and Stress
159. Fischer A. et al 2005 Neuronal plasticity in persistent perennial allergic
160. Fischer T et al 2005 Influence of patient symptoms and physical findings on general practitioners' treatment of respiratory tract infections.
161. Fischer Y. 2005 Identification and evaluation of obstructive sleep apnea in children before adenotonsillectomy using evaluative surveys
162. Fisher MC et al 2005 Recent Advances and Future Directions in Pediatric Vaccination
163. Flanary VA 2003 Long-term effect of adenotonsillectomy on quality of life in pediatric patients.
164. Ford ES et al 2003 Asthma and influenza Vaccination
165. Francesco VD et al 2004 Sequential treatment for helicobacter pylori

169. Franchini Y 1961 Allergy and adenotonsillectomy
170. Francis D. et al 2004 Non-antibiotic treatments for sore throat
171. Frees D et al 2003 Alternative roles of ClpX and ClpP
172. Frees D et al 2005 Global virulence regulation (staphylococcus)
173. Friday GA Jr 1992 Serum immunoglobulin changes in relation to tonsil and adenoid surgery
174. Friedman BC 2003 Adenotonsillectomy improves neurocognitive function in children with obstructive sleep apnea syndrome.
175. Frohna JG 2005 Effectiveness of adenotonsillectomy in children with mild symptoms of throat infections or adenotonsillar hypertrophy: open, randomised controlled trial.
176. Fujiwara Y. et al 2005 Association between dinner-to-bed time and gastro-esophageal reflux
177. Georgalas C et al 2005 Medical management of children with rhinosinussitis and adenoidal hypertrophy
178. Gerber ME et al 1996 Selected risk factors in pediatric adenotonsillectomy
179. Ghirardo R et al 1992 Adenotonsillectomy as correction of dentofacial growth and dysfunctions
180. Glasziou PP et al 2004 Antibiotics for AOM in children
181. Go M et al 2004 Expression and function of tight junctions in the crypt epithelium of human palatine tonsils
182. Going JJ et al 2002 "Senescence-associated" beta-galactosidase activity in the upper gastrointestinal tract
183. Gokhale YA et al 2003 Celiac disease in osteoporotic Indians.
184. Goldbart AD 2005 Leukotriene modifier therapy for mild sleep-disordered breathing in children
185. Goldbart AD et al 2004 Differential expression of cysteinyl leukotriene receptors
186. Goldstone AI et al 1918 should adenotonsillectomy be done
187. Gomez CR. et al 2005 The aging innate immune system. Advanced age is associated
188. Gorelik B 1951 Effects of adenotonsillectomy in respiratory allergies

191. Gorfien JL et al 2001 Comparison of the microanatomical distributions of macrophages and dendritic cells in normal and diseased tonsils.
192. Gregg CR 2002 Enteric bacterial flora and bacterial overgrowth
193. Griffin GH et al 2002 Antihistamines and/or decongestants for hearing loss (OM)
194. Griffin JL 1994 Prevalence of IgE - mediated hypersensitivity in children with adenotonsillar disease.
195. Groneberg DA et al 2003 Aspirin-sensitive rhinitis-associated changes in upper airway innervation.
196. Gross G. 2003 Human papillomaviruses (HPV) infect exclusively the basal cells of the skin and of mucosal epithelia.
197. Guilleminault C. et al 2005 Paediatric obstructive sleep apnea syndrome
198. Guilliano MJ et al 2001 The microenvironment of human Peyer's patches
199. Haben CM et al 2003 Lateral phase mucosal wave asymmetries in the clinical voice laboratory
200. Hanley CN et al 1958 Voice quality after adeno
201. Harsha WJ 2003 et al Remission of chronic inflammatory demyelinating polyneuropathy following adenotonsillectomy
202. Hattum ES Van et al 2006 Adenoidectomy and/or tonsillectomy in childhood
203. Hauber HP et al 2005 Niflumic acid and MSI-2216 reduce TNF-alpha-induced mucin expression in human airway mucosa
204. Henriksson G et al 2004 Immune response to Mycoplasma pulmonis in nasal mucosa is modulated by the normal microbiota.
205. Heubi C et al 2003 PANDAS: pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections—an uncommon, but important indication for tonsillectomy
206. Hewer CDL et al 2004 Grommets (vent tubes) for recurrent AOM in children
207. Hewer LSC et al 2004 Adenotonsillectomy in children with mild symptoms: Watchful waiting may deny children opportunity for development
208. Hewson-Bower B et al 2001 Psychological treatment for recurrent symptoms of colds

212. Hewson-Bower B et al 2001 Psychological treatment for recurrent symptoms of colds and flu in children
213. Hien Q. Huynh Invasive tests for Helicobacter pylori in children.
214. Hiki Y. et al 2004 IgA Nephropathy and tonsils
215. Hirai H 2005 Application of a laser Doppler perfusion
216. Hirsch N et al 2005 Lymphocyte contamination of laryngoscope blades
217. Hochban W et al 1998 Obstructive sleep apnea in the child with special reference to craniofacial changes.
218. Hofmann T. et al 2003 Influence of sensitization to inhalative allergens on adenotonsillar disease
219. Horie A et al 2003 IgA1 molecules produced by tonsillar lymphocytes are under-O-glycosylated in IgA nephropathy.
220. Huang KJ et al 2003 IgA class switch occurs in the organized
221. Hua-Xiang HX et al Helicobacter pylori infection is associated with increased expression
222. Hulisz D. 2004 Efficacy of Zinc against common cold viruses
223. Hung IFN et al 2004 Viral Loads in clinical specimens and sars manifestations
224. Hurley BP et al 2004 Polymorphonuclear cell transmigration induced by Pseudomonas aeruginosa requires the eicosanoid hepoxilin A3.
225. Hussain I 2001 Induction, distribution and modulation of upper airway allergic inflammation in mice.
226. Ikinio UA. et al 2002 Is immune system influenced by adenotonsillectomy in children?
227. Ikinioullari A et al 2002 Is immune system influenced by adeno in children?
228. infections or adenotonsillar hypertrophy
229. Israel DA et al 2006 The role of persistence in heli pylori pathogenesis

234. Issing WJ et al 2001 [Manifestations of gastroesophageal reflux in the otorhinolaryngologi tract]
235. Issing WJ et al 2003 Impact of 24-hour Intraesophageal pH monitoring
236. Iyer S et al 2005 The use of perioperative antibiotics in tonsillectomy: Does it increase morbidity?
237. Jaffe IS 1974 Adenotonsillectomy as the treatment of serious medical
238. Jarry TM et al 2006 Staphylococcus aureus Escapes
239. Jefferson T et al 2006 Amantadine and rimantadine for influenza A in adults
240. Jiang W. et al 2005 Structure and bonding issues at the interface
241. Johnson CD et al 2003 Route of nutrition influences generation of antibody-forming cells and initial defence to an active viral infection in the upper respiratory tract.
242. Johnson DA 2005 Gastroenterology, June 2005
243. Johnson LB et al 2002 Complications of adenotonsillectomy
244. Johnson RF et al 2004 Outcomes research in pediatric otolaryngology
245. Jones CW 2004 Platelet disorders
246. Kalra M et al 2005 Asthma as a risk factor for respiratory complications after adenotonsillectomy in children with obstructive breathing during sleep
247. Kara CO et al 2002 Prevalence of tonsillar hypertrophy and associated oropharyngeal symptoms in primary school children in Turkey
248. Karlidag T et al 2002 Resistant bacteria in the adenoid tissues of children with otitis media with effusion
249. Katz PO et al 2005 Gastrointestinal mucosal protection and cardiovascular risk – contemporary approach to acid reflux and nonsteroidal anti-inflammatory drug therapy
250. Kaunitz JD 2004 Gastroduodenal mucosal defense: role of endogenous mediators. PURPOSE OF Lynch JM et al 2003 Increased protection against pneumococcal

256. Kawamura O. et al 2001 Laryngo-upper esophageal sphincter contractile reflex in humans deteriorates with age
257. Kay E et al 2005 Influenza vaccine for preventing AOM in infants
258. Kelly G. et al 2003 Idiopathic mucosal lesions of the arytenoid cartilages of 21 Thoroughbred yearlings
259. Kerschner JE et al 2002 Uvulopalatopharyngoplasty with tonsillectomy and adenoidectomy as a treatment for obstructive sleep apnea in neurologically impaired children
260. Keyserling HL 2002 Prevention of Pneumococcal
261. Kido H et al 2004 Secretory leukoprotease inhibitor and pulmonary surfactant
262. Kiehne K et al 2005 Oesophageal defensin expression during Candida infection and reflux disease.
263. Kim DS et al 2004 Long-term paparella II (aom)
264. Kirkness JP et al 2005 application of the "pull-off" force method for measurement of surface tension of upper airway mucosal lining liquid.
265. Kirkness JP et al 2005 Surface tension of upper airway mucosal lining liquid in obstructive sleep apnea/hypopnea syndrome.
266. Kiroglu AF et al 2006 Oxidants and antioxidants in tonsillar and adenoidal tissue in chronic adenotonsillitis and adenotonsillar hypertrophy in children
267. Kleinsasser NH et al 2001 Genotoxicity of phthalates. On the discussion of the plasticizers in children`s toys.
268. Kleinsasser NH et al 2004 Mono(2-ethylhexyl)phthalate exhibits genotoxic effects in human lymphocytes and mucosal cells of the upper aerodigestive tract in the comet assay.
269. Klimanskaia NV et al 2002 Effects of non-steroid anti-inflammatory and
270. Kluijver J de et al 2002 Rhinovirus infection in nonasthmatic subjects
271. Kocatürk S. 2003 Comparison of adenoid and tonsil core cultures in chronic adenotonsillitis.
272. Koh D. et al 2002 Stress, mucosal immunity, upper respiratory tract infections
273. Köping-Höggård M et al 2005 Nanoparticles as carriers for nasal vaccine



276. Krahnke J et al 2002 Benefit and risk management for steroid treatment (pittsburgh)
277. Ku CC et al 2002 Tropism of varicella-zoster virus for human tonsillar CD4(+) T
278. Kucharzik T et al 2005 Acute induction of human IL-8 production
279. Kukuruzovic RH et al 2004 Non-surgical interventions for eosinophilic oesophagitis
280. Kumar P. 2005 Histology, immunohistochemistry and ultrastructure of the equine tubal tonsil.
281. Kummer AW et al 1993 Changes in nasal resonance secondary to adenotonsillectomy.
282. Kunkel EJ et al 2003 CCR10 expression is a common feature of circulating and mucosal epithelial tissue IgA Ab-secreting cells
283. Kutluhan A et al 2005 Possible role of Helicobacter Pylori in the Etiopathogenesis of Chronic Otitis Media
284. Kvestad E et al 2005 Genetic predisposition for recurrent tonsillitis
285. Kyd JM et al 2001 Mucosal immunity in the lung and upper airway. The mucosal surfaces of the lungs and the upper airways are common sites for infection
286. Lacroix JS et al 2002 Symptoms and clinical and radiological signs
287. Laichalk LL et al 2002 The dispersal of mucosal memory B cells: evidence from persistent EBV infection. We have used latent infection with the human herpesvirus Epstein Barr virus to track the dispersal of memory B cells from the mucosal lymphoid tissue of Waldeyer's ring (tonsils/adenoids).
288. Laichalk LL et al The dispersal of mucosal memory B cells: evidence from persistent EBV infection.
289. Lechapt-Zalcman E. et al 2001 Increased expression of matrix metalloproteinase-9
290. Lemberg DA et al 2005 Role of Esophagogastroduodenoscopy
291. Lencer WI et al 2005 A passionate kiss (recycling of IgG)
292. Leon M. van den Toorn et al 2003 Asthma Remission
293. Lesmeister MJ et al 2005 Toll-like receptor expression in the human nasopharyngeal tonsil

296. Lesperance MM 2001 Substituting a telephone call for pediatric adenotonsillectomy postoperative visits
297. Li J et al 2005 Haemopoietic mechanisms in murine allergic upper and lower airway inflammation.
298. Lim J 2003 Adenotonsillectomy for obstructive sleep apnea in children.
299. Lin CY et al 2004 Effect of bismuth subgallate on nitric oxide and prostaglandin E2 production by macrophages
300. Liu J et al 2003 System for UA segmentation and measurement
301. Lörinc E. et al 2005 Ki67 and p53 immunohistochemistry reduces interobserver variation in assessment of Barrett's oesophagus.
302. Lotz T. 2005 Developing an asthma action plan
303. Luke C Bi 2003 Gastroduodenal mucosal defense: an integrated protective response. Purpose of
304. Lynch JM et al 2003 Increased protection against pneumococcal
305. Lynch JS 2002 (expert opinion) How can I differentiate between allergic rhinitis?
306. Lynch JS et al 2004 What are the new guidelines for management of bacterial rhinosinusitis
307. Malfertheiner P et al 2005 Helicobacter pylori eradication has the potential to prevent gastric cof-of-the-art critique
308. Man AL et al 2004, Improving M cell mediated transport across mucosal barriers: do certain bacteria hold the keys?
309. Mar Del CB et al 2004 Antibiotics for sore throat
310. Marques VC et al 2004 Pre- and postoperative evaluation by acoustic rhinometry of children submitted to adenoidectomy
311. Masur H et al 2004 32nd critical care congress of the society of critical care medicine general critical care

315. Matilla PS et al 2001 Causes of tonsillar disease and frequency of tonsillectomy operations
316. Matsuda M. et al 2003 Novel diagnostic method of testing for helicobacter
317. Matthews GM et al 2005 13C-Urea Breath Test: Reproducibility and Association With the Severity of Helicobacter pylori-associated Antral Gastritis
318. Mattila PS et al 2001 Causes of tonsillar disease and frequency of tonsillectomy operations
319. Mavor AL et al 2005 Systemic fungal infections caused by Candida species
320. Maw AR 1985 Age and adenoid size in relation to adenoidectomy in otitis media with effusion
321. Maw AR 1985 Factors affecting adenoidectomy for otitis media with effusion (glue ear)
322. Maw AR et al 1985 Are the tonsils and adenoids a reservoir of infection in otitis media with effusion (glue ear) ?
323. Maw AR et al 1986 Otosopic, impedance, and audiometric findings in glue ear treated by adenoidectomy and tonsillectomy.
324. Maw AR et al 1992 The effect of parental smoking on outcome after treatment for glue ear in children
325. Mayer L 2003 Mucosal immunity
326. McCarthy MW 2004 Trivalent intranasal influenza vaccine, live.
327. McCusker CT 2004 Use of mouse models of allergic rhinitis to study the upper and lower airway link
328. McMillin BD et al 1999 A role for tonsillectomy in he treatment of psoriasis?
329. McMurray JS et al 2001 Role of laryngoscope, dual pH probe monitoring (phar, reflux)
330. Medicine ACP 2004 Respiratory viral infections (reference)
331. Mekki FE et al 2004 Skin allergy to hydrocortisone hemisuccinate
332. Merritt L 2005 Part 2. Physical assesment of the infant with cleft lip
333. Metz DC 2005: Preventing the gastrointestinal consequences of stress-related mucosal disease.

336. Mirza N. et al 2004 Laryngeal findings in users of combination  
337. Mishima I et al 2005 Prevalence of endoscopically negative and positive gastroesophageal reflux disease in the Japanese.  
338. Mitchell RB et al 2004 Outcome of adenotonsillectomy for severe obstructive sleep apnea in children.  
339. Mitchell RB et al 2005 Does adenotonsillectomy always cure sleep apnea in children?  
340. Mitchell RB et al 2006 Behavior, Neurocognition and quality-of-life in children with sleep-disordered breathing  
341. Moayyedi P et al 2004 Pharmacological interventions for non-ulcer dyspepsia  
342. Moayyedi P et al 2006 Eradication of Helicobacter pylori for non-ulcer dyspepsia  
343. Moayyedi P et al 2006 Helicobacter pylori eradication for the prevention of gastric neoplasia  
344. Modrzynski M 2003 Frequency of adenoid hypertrophy (tons, allergic)  
345. Modrzynski M 2003 The present methods of diagnosing adenoidal hypertrophy  
346. Modrzynski M et al [Serum immunoglobulin E levels in relation to Waldeyer's ring surgery]  
347. Modrzynski M et al 2003 Frequency of adenoid hypertrophy in children with allergic diseases  
348. Modrzynski M et al 2003 The present methods (adenoid hypertrophy)  
349. Modrzynski M et al 2004 Additional diagnostic methods for recording of adenoid hypertrophy Modrzynski M et al 2004 The occurrence of food allergy and bacteria  
350. Modzelewski B 2004 Antioxidative barrier activity assessment in gastro-  
351. Moloney JR et al 1988 Age, Sex ethnic origin and tonsillectomy  
352. Mönnikes H et al 2001 Role of stress in functional gastrointestinal disorders.

357. Moorthy R et al 2004 Adenotonsillectomy in children with mild symptoms watchful waiting is appropriate
358. Moratti G et al The use of bacterial lysates in postoperative immunodeficiency in ENT
359. Mrsny RJ 2004 Identification of heparin A3 in inflammatory events: a required role in neutrophil migration across intestinal epithelia. The mechanism by which neutrophils (polymorphonuclear leukocyte (PMNs) are stimulated to move across epithelial barriers at mucosal surfaces has been basically unknown in biology.
360. Müller HP et al 2001 Intraoral distribution of *Actinobacillus actinomycetemcomitans* in young adults with minimal periodontal disease. The aim of the present study was to investigate the intraoral distribution...
361. Mummy KL et al 2005 Events at the host-microbial interface
362. Nagler-Anderson C 2001 Man the barrier! Strategic defences in the intestinal
363. Nambiar S. et al 2003 Are pediatricians adhering to principles (UA)
364. Nelson HS 2003 Advances in upper airway diseases and allergen immunotherapy
365. Newton JL 2004 Changes in upper gastrointestinal physiology with age.
366. Newton JL 2005 Effect of age-related changes in gastric physiology on tolerability of medications for older people.
367. Nicholson KG et al 2001 Influenza vaccination for healthy
368. Niemann DC 2003 Current perspective on exercise immunology
369. Nieminen P et al 2000 Snoring and obstructive sleep apnea in children
370. Nieminen P et al 2002 Growth and biochemical markers of growth in children with snoring and obstructive sleep apnea.
371. Nieuwenhove Y van et al 2001 Spatial distribution and cell kinetics of the glands in the human
372. Nishiyama K et al 2003 USE of YAG laser combined with mucosal suturing for the treatment of polypoid vocal cord
373. Nix. P. 2003 Prions and disposable surgical instruments
374. Noddin L et al 2005 Irritable bowel syndrome

377. O'Hollaren MT 2004 (expert opinion) Intranasal corticosteroids for negative allergy test
378. Omari TI et al 2006 Assessment of the intraluminal impedance for the detection of pharyngeal bolus flow during swallowing in healthy adults.
379. Oomen KP et al 2005 Effect of adenotonsillectomy on middle ear status in children
380. Orr CW 2003 Sleep and gastroesophageal reflux: what are the risks?
381. Osterwail N. 2004 Novel thrombopoietic protein effective, safe in ITP
382. Ozmen S et al 2002 The efficacy of peritonsillar lidocaine infiltration for pain relief...
383. Pabuccuolu U et al 2002 Histopathology of candidal hyperplastic lesions of the larynx.
384. Paediatric Pulmonology 2002 Diagnosis and management of childhood obstructive sleep apnea syndrome
385. Palmer JN 2005 Bacterial biofilms: more than just scum?
386. Pappas AL et al 1998 The effect of preoperative dexamethasone on the immediate and delayed postoperative morbidity in children undergoing adenotonsillectomy.
387. Paradise JL et al 2002 Tonsillectomy and adenotonsillectomy for recurrent throat infection in moderately affected children
388. Park AH et al 2004 Effect of perioperative administration of ropivacaine with epinephrine on postoperative paediatric adenotonsillectomy recovery
389. Park HS et al 2003 Membranous cells in nasal-associated lymphoid tissue
390. Passalacqua G et al 2004 An update on the asthma-rhinitis link
391. Passali D et al 2004 Structural and immunological characteristics of chronically inflamed adenotonsillar tissue in childhood
392. Paulsen FP et al 2002 Upper airway epithelial structural changes (sleep disorder)
393. Pawankar R 2004 Allergic rhinitis and asthma: the link, the new ARIA
394. Pbert L et al 2004 Smoking cessation approaches

399. Pediatrics 2002 Clinical practise guideline: diagnosis and management of childhood obstructive sleep apnea syndrome
400. Perini R. et al 2004 Mechanisms of nonsteroidal anti-inflammatory drug-induced
401. Persun LS Jr. An objective appraisal (tons)
402. Pickett KC et al 2004 Facial submandibular cellulites associated with late-onset group b streptococcal infection
403. Pikäranta A. et al 2003 Detection of rhinovirus RNA in middle turbinate of patients with common colds by in situ hybridization.
404. Pilotto A et al 2005 Recent Advances in the Treatment of grid in the elderly:
405. Pinder D et al 2001 Dissection versus diathermy for tonsillectomy
406. Pinder D. 2005 Dissection versus diathermy for tonsillectomy
407. Plzäk J et al 2003 The role of dendritic cells in the pharynx.
408. Poelmans J et al 2004 The Yield of Upper Gastrointestinal Endoscopy in Patients With Susp Reflux-Related Chronic Ear, Nose, and Throat Symptoms
409. Polak MJ 2004 Respiratory syncytial virus
410. Pransky SM et al 1991 Actinomycosis in obstructive tonsillar hypertrophy and recurrent tonsillitis
411. Prusek W et al 1991 Circulating immune complexes in Waldeyer's ring hypertrophy
412. Quibo et al 2002 Immune responses to novel pneumococcal proteins ... from children
413. Qvarnberg Y. et al 2001 Intranasal beclomethasone dipropionate in the treatment of common cold.
414. Randall DA et al Complications of tonsillectomy and adenoidectomy
415. Rasmussen MJK et al 2001 Non-steroidal anti-inflammatory drugs in treatment of migraine
416. Ratner AJ et al 2005 Synergistic proinflammatory responses induced by polymicrobial colonization of epithelial surfaces. The epithelial surfaces of the upper respiratory tract are continuously exposed to a wide variety of commensal microorganisms
417. Ratner AJ et al 2005 Synergistic proinflammatory responses induced by polymicrobial
418. Ravelli A et al 2005 Variability of histologic lesions

## References - Articles

421. Richards WO et al 2003 Paradigm shift in
422. Roberts G et al 2003 Relevance of Inhalational Exposure to Food Allergens
423. Roberts WJ 1959 Speech defects following adenotonsillectomy
424. Robins G. et al 2005 Advances in Celiac disease (evidence-based clinical management)
425. Robinson M et al 2003 What is “appropriate” Therapy for intermittent heartburn?
426. Rockey DC et al 2005 Medscape conference coverage, based on selected sessions at: digestive disease week 2005
427. Roemmich JN et al 2006 Increases in overweight after adenotonsillectomy in overweight children with obstructive sleep-disordered breathing are associated with decreases in motor activity and hyperactivity
428. Rosenfeld R M et al 1991 Systemic steroids for OM with effusion in children
429. Rosenfeld RM 2000 Adenoidectomy and adenotonsillectomy for recurrent otitis media
430. Rottner K. et al 2004 Pathogen-induced actin filament rearrangement in infectious diseases
431. Roxane R. Carr et al 2006 Complementary and alternative medicine for upper-respiratory-tract infection
432. Rudblad S et al 2004 Nasal histamine reactivity among adolescents in a remediated moisture-damaged school – a longitudinal study
433. Russell FM et al 2003 Vaccine developments for capsulate bacteria causing pneumonia
434. Ryan CM et al 2005 Pathogenesis of obstructive sleep apnea
435. Saginur R 2001 Barriers to the effective management of respiratory tract infections in the community
436. Saito H et al 1996 Does adenotonsillectomy affect the course of bronchial (allergy)
437. Saito H et al 1996 Does adenotonsillectomy of diclofenac and tenoxicam for postoperative analgesia with and without fentanyl in children undergoing adenotonsillectomy or tonsillectomy.
438. Saito H et al 2001 Allergen-induced murine UA inflammatory



## References - Articles

441. Sasaki CT 1978 Indications for adenotonsillectomy
442. Satish SC et al 2005 Clinical Utility of diagnostic Tests for Constipation in Adults
443. Saunders NC et al 2004 Velopharyngeal insufficiency following adenoidectomy
444. Savidge TC et al 2006 Lipopolysaccharide-induced human enterocyte
445. Scadding G 2005 Predicting and Establishing the Clinical Efficacy of a Histamine H1- Receptor Antagonist
446. Schachtner M. 2003 COX-2 inhibitors and cardiovascular risk
447. Schierholz JM 2001 implant infections: a haven for opportunistic bacteria.
448. Schmidt U et al 2002 Mucosal immunization with live recombinant bovine respiratory syncytial virus (BRSV)
449. Schmitt E. 2001 Employment and unemployment in middle and advanced adult age for perception of aging and realization of potentials and barriers of a responsible life
450. Schoenwetter WF et al 2004 Economic Impact and
451. Shahab R et al 2004 Prostaglandins, leukotrienes and perennial rhinitis
452. Shapiro M et al 2006 The extent of oesophageal
453. Sherman PM et al 2003 Risk reduction in pediatric acid-related disorders
454. Shott SR 2004 Cine magnetic resonance imaging: evaluation of persistent airway
455. Shulkin B. et al 2003 PET case cavalcade
456. Shusterman D et al 2003 Differences in nasal irritant
457. Skelly MM 2003 Dual COX inhibition and upper gastrointestinal damage.
458. Smith SR et al 2004 Influence of time stress and other variables on counselling by Pharn Antiretroviral Medications
459. Sobel GR 1956 Adenotonsillectomy in the allergic child
460. Solak S et al 2005 Short communication: clinical predictors of group A beta haemolytic streptococci isolation in upper respiratory tract infections.
461. Soo S et al 2005 Psychological interventions for non-ulcer dyspepsia
462. Spiekermann GM 2002 Receptor-mediated immunoglobulin G transport across mucosal barriers in adult life: functional expression of FcRn in the mammalian lung.
463. Spirt MJ 2004 Stress-related mucosal disease: risk factors and prophylactic therapy.

466. Staij BK Van et al 2002 Adeno in children: not yet scientifically
467. Staij BK Van et al 2003 does the tonsillar surface flora differ in children with and without tonsillar disease?
468. Staij BK Van et al 2005 Adenotonsillectomy for upper respiratory infections: evidence based?
469. Staij BK Van et al Does the tonsillar surface (tonsillar disease)
470. Staij BK Van et al 2005 Effectiveness of adenotonsillectomy in children with mild symptoms of throat infections or adenotonsillar hypertrophy
471. Stefano DA et al 1985 Analysis of immunoglobulins and secretory components in the saliva of children, before and after adenotonsillectomy
472. Stenfors LE et al 2001 Bacterial coating with immunoglobulins
473. Stenfors LE et al 2002 Causes for massive bacterial colonization on mucosal
474. Stephen B et al inflammatory bowel disease: (probiotic therapy)
475. Steward DL et al 2001 Do steroids reduce morbidity of tonsillectomy? Meta-analysis of randomized trials
476. Steward DL et al 2003 Steroids for improving recovery following tonsillectomy in children
477. Stewart MG et al 2005 Quality of life and sleep study findings after adenotonsillectomy in children with obstructive sleep apnea.
478. Strachan DP 1998 Health effects of passive smoking. Parental smoking, middle ear disease and adenotonsillectomy in children.
479. Straumann A et al 2004 Eosinophilic esophagitis: red on microsurgery
480. Struttman TW et al 2002 injuries to tobacco farmers
481. Suttithawil W. et al 2006 Vocal cord dysfunction (gastro-, esophagus, reflux)
482. Suzuki H et al 2005 Improvement of gastrointestinal (Helicobacter, dyspepsia)
483. Taha AS et al 2006 Upper gastrointestinal mucosal abnormalities and blood loss complicating low-dose aspirin and antithrombotic therapy.
484. Taha S et al 2006 Upper gastrointestinal mucosal abnormalities
485. Takizawa H 2005 Bronchial epithelial cells in allergic reactions

488. Tal A et al 2003 Sleep characteristics following adenotonsillectomy in children with obstructive sleep apnea syndrome.
489. Tanaka N 2001 Infections of herpes simplex virus and Epstein-Barr virus
490. Tanneau GM 1999 Differential recruitment of T-and IgA B-lymphocytes in the developing mammary gland in relation to homing receptors and vascular addressins.
491. Tano K 2002 Bacterial adherence to pharyngeal cells
492. Tarasiuk A et al 2004 Adenotonsillectomy in children with obstructive sleep apnoea syndrome...
493. Teng CL et al 2003 Upper respiratory tract infections
494. Ther C. 2004 Stress-related mucosal disease: risk factors and...
495. Thomsen J. 2002 Adjuvant therapies in children undergoing adenotonsillectomy. Laryngoscope.
496. Toillier E. et al 2005 Intense training: muscosal immunity and incidence
497. Tom L W et al 1996 Dexamethasone in adenotonsillectomy
498. Toruner M et al 2004 Barrett's esophagus: Prevalence
499. Treiber G. et al 2004 Dyspeptic Symptoms Associated (helicobacter)
500. Tropism of varicella-zoster virus for human tonsillar CD4(+) T lymphocytes that express activation, memory, and skin homing markers.
501. Ulvestad B et al 2001 Gas and dust exposure in underground construction
502. Unal M et al 2005 The potential inflammatory role of arginase and iNOS in children with chronic adenotonsillar hypertrophy
503. Unver S et al 2001 Investigation of helicobacter pylori colonization in adenotonsillectomy specimens by means of the CLO test
504. Upham JW 2003 The role of dendritic cells in immune regulations
505. Uruma Y. et al 2003 Obstructive sleep apnea (OSAS, UA, hypertrophy adenoids)
506. Vajdy M. et al 2004 Mucosal adjuvants and delivery systems for protein-, DNA- and RNA-based vaccines

511. Valera FC et al 2003 Muscular, functional and orthodontic changes in pre school children with enlarged adenoids and tonsils
512. Valley J et al 2002 Influenza: Overview and recommendations for control
513. Valtonen HJ et al 2000 Consequences of adenoidectomy in conjunction with tonsillectomy in children
514. Vandenberg SJ 1997 Efficacy of adenoidectomy in relieving symptoms of chronic sinusitis in children.
515. Vega BL C 2004 Celiac Disease present in about 3 % of patients With Iron-deficiency anemia
516. Verschuur HP et al 2004 Antibiotic prophylaxis in clean and clean-contaminated ear surgery
517. Viljamaa M et al 2005 Is celiac disease screening in risk groups justified?...
518. Wallner BC et al 2005 Genotoxicity studies in mini-organ cultures of human nasal mucosa
519. Walsh GM 2002 Second-generation antihistamines in asthma therapy: is there a protective effect?
520. Walusiak J et al 2004 Occupational allergy to wheat flour
521. Wang DY 2004 Control of nasal obstruction in perennial allergic rhinitis.
522. Wang HW 2002 Immunolocalization of inducible nitric oxide (tons)
523. Wani S et al 2005 Lack of predictors of normalization of oesophageal acid exposure
524. Ward EM et al 2004 Successful Oesophageal pH Monitoring With a Catheter-Free System
525. Wassef W 2003 Interventional Endoscopy
526. Weatherly RA et al 2003 Identification and evaluation of obstructive sleep apnea prior to adenotonsillectomy in children

532. Weisser J et al 2002 Four distinct chondrocyte populations in the fetal bovine growth plate
533. Welsh DA et al 2001 Host defence in respiratory infections
534. Westermark A et al 2002 Basic fibroblast growth factor in human saliva decreases with aging
535. Weston AP et al 2004 Risk Stratification of Barret's Esophagus
536. WHO writing group 2006 Nonpharmaceutical interventions for pandemic influenza
537. Wildgrube HJ et al 2002 Registration of drug-associated lesions of themucosa of the upper gastrointestinal tract. The problem of characterizing the health status of healthy subjects
538. Wiley JA et al 2001 Antigen-specific CD8(+) T cells
539. Wilson JM Adenotonsillectomy: Scotland is beating England and Wales
540. Wilson JT et al 2001 Prospective study of morbidity after tonsillectomy in children.
541. Wing YK et al 2003 A controlled study of sleep related disordered breathing in obese children
542. Wo JM et al 2004 Clinical impact of upper endoscopy in the management of patients with gastrooesophageal reflux
543. Wolfensberger M et al 2000 Parent satisfaction 1 year after adenotonsillectomy of their children
544. Wolters M 2005 Diet and Psoriasis: Experimental Data and Clinical Evidence
545. Won S et al 2001 Analysis of residual saliva and minor salivary gland secretions.
546. Wong WM 2004 Extraesophageal and atypical manifestations of GERD.
547. Woodberry T et al 2005 Alpha E beta 7 (CD103) expression identifies
548. Woolford TJ et al 2000 Spontaneous resolution in children on the waiting list for tonsillectomy
549. Xie Y. et al 2004 Relationship between tonsils and IgA nephropathy as well as indications of tonsillectomy.
550. Yadav SP et al 2003 Pulmonary function tests in children (adeno, hypertrophy)

554. Yadav SPS et al 2003 Pulmonary function tests in children with adenotonsillar hypertrophy
555. Yamabe H et al 2004 Involvement of tonsils in IgA nephropathy
556. Yamada T et al 2005 Mucosal immunity of nasopharynx
557. Yang YX 2003 Prevention and treatment of stress ulcers in critically ill patients.
558. Yilmaz M et al 2004 Are tonsils a reservoir for helicobacter pylori infection in children?
559. Young YK et al 2003 The development of asthma (rhinitis)
560. Younis RT et al 2002 History and current practice of tonsillectomy
561. Zabel-Olejnik J et al 2003 Image cytometry appliance in chronic tonsillitis
562. Zheng Y. et al 2001 The therapy of children with secretory otitis media by myringotomy with grommet insertion and the relevant management
563. Zielnik-Jurkiewicz B. 2002 Implication of immunological abnormalities after adenotonsillectomy
564. Zielnik-Jurkiewicz B. 2005 Analysis of postoperative hemorrhage
565. Zuercher AJ 2003 Research immunology
566. Zuercher AW 2003 Upper respiratory tract immunity. Most viral infections occur via mucosal surfaces like the respiratory, gastrointestinal, or genital epithelium
567. Zullo A. et al 2005 High rate of helicobacter pylori eradication with sequential therapy... A prospective controlled study

# References - Reviews

1. 2000 (conference coverage) Neuroimaging central to diagnosis and follow-up
2. 2000 (conference coverage) Preventing respiratory infections with vaccines
3. 2002 New approaches for preventing sneezing and coughing
4. 2004 PPI (IV and oral) in the treatment of gastroesophageal reflux
5. 2005 Adeno for obstructive sleep apnea in children (Evidence based medicine reviews based primarily on meta-analysis of controlled clinical trials)
6. 2005 Exercise and well-being: A review of mental and physical health
7. 2005 Minireview-current issues in the development of a vaccine to prevent human immunodeficiency virus
8. 2005 Non-steroidal anti-inflammatory drugs and perioperative bleeding in pediatric tons
9. 2006 (conference coverage) Prevention of communicable disease in childhood
10. 41st Interscience conference on antimicrobial agents and chemotherapy fungal infections
11. American academy of pediatrics 2005 National conference and exhibition infectious disease update
12. American college of allergy, asthma & immunology 2003 annual meeting Highlights of the American college of allergy, asthma & immunology 2003 annual meeting 2004 Mark T. O'Hollaren
13. American college of gastroenterology 69th annual scientific meeting and postgraduate course – GERD/acid-related disorders
14. Anon JB et al 2000 Update on the diagnosis and treatment of sinusitis (underlying pathophysiology)
15. Arnold SR et al 2005 Interventions to improve antibiotic prescribing practices in ambulatory care
16. Baldwin C et al 2001 Dietary advice for illness-related malnutrition
17. Bartlett J 2004 infectious diseases
18. Boyaka PN et al - Third annual conference on vaccine research
19. Cash BD et al 2005 The Role of Serotonergic Agents in the Treatment of Patients With Primary Chronic Constipation

22. Castellano P Lopez-Escamez JA 2004 American society of anaesthesiology classification may predict severe post-tonsillectomy haemorrhage in children
23. Chervin RD et al 2003 Tolerance of esophageal pressure monitoring during polysomnography in children
24. Chung KF 2003 Individual cytokines contributing to asthma
25. De Serres LM et al 2002 Impact of adenotonsillectomy on quality of life in children with obstructive sleep disorders
26. Delaney B et al 2005 Initial management strategies for dyspepsia
27. Editorials 2003 Chronic cough (Jonathan E Kass)
28. Ford Ac et al 2006 Eradication therapy for peptic ulcer disease in Helicobacter pylori positive patients
29. Forman D et al 2000 Therapies for the eradication of Helicobacter pylori
30. Francis JN, Durham SR et al 2004 Adjuvants for Allergen Immunotherapy
31. Freidman BC et al 2003 Adenotonsillectomy improves neurocognitive function in children with obstructive sleep apnea syndrome
32. FSF Ram et al 2002 Cow's milk protein avoidance and development
33. FSF Ram et al 2004 Dietary salt reduction (allergic asthma)
34. Gern JE - American Academy of Allergy, Asthma & Immunology 60th Annual Meeting. Highlights of the American Academy of Allergy, Asthma & Immunology 60th Annual Meeting
35. Gispert JP et al 2004 H. pylori eradication therapy vs. Antisecretory non-eradication therapy (with or without long-term maintenance antisecretory therapy) for the prevention of recurrent bleeding from peptic ulcer
36. Graham V et al 2001 Antibiotics for acute asthma



37. Green MW 2005 Runny nose headaches: diagnosis is the key
38. Hattum ES Van et al 2006 Adenoidectomy and/or tonsillectomy in childhood is not associated...
39. Hirsch N et al 2005 Lymphocyte contamination of laryngoscope blades – a possible...
40. Hunt RH 2005 The unmet needs in delayed-release PPI therapy in 2005
41. Isenberg JI 2000 Digestive disease week 2000
42. Kollef MH 2001 Antibiotic resistance among gram positive bacteria
43. Lim J, Mckean M 2001 Adenotonsillectomy for obstructive sleep apnoea in children
44. Long term safety of GW685698X via nasal biopsy
45. Lynch JS 2003, Can Chronic Hoarseness be a Symptom of GERD
46. McKean M et al 2000 Inhaled steroids for episodic viral wheeze
47. Medscape conference coverage, based on selected sessions at: digestive disease week 2005
48. Moayyedi P 2005 Pharmacological interventions for non &hyphen; ulcer dyspepsia
49. Modrzynski M et al 2003 [Serum immunoglobulin E levels in relation to Waldeyer's ring surgery]
50. O'Hollraen MT 2005 A practical approach to the patient with sinusitis
51. Ohar JA et al 2004 COPD: an update on diagnosis and treatment
52. Reveiz L et al 2005 Antibiotics for acute laryngitis in adults
53. Review: The remarkable resistance of the mucosal lining of the upper...
54. Standards of care in asthma: the role of inhaled corticosteroid formulations Stanley Fineman 2004
55. Steward DL et al 2003 Steroids for improving recovery following tons
56. Unlu N et al 2001 Controlled release of biocyte materials – 28th international symp.
57. Vega C et al 2004 Celiac disease present

58. Yamanaka N et al 2003 Current topics on tonsils and mucosal barriers of the upper airways, 1257
59. Zachos M et al 2001 Enteral nutritional therapy for induction of remission in Crohn's disease
60. Zhen G et al 2002 Chinese herbal therapy for functional dyspepsia

## References - RCT and cohort case studies

1. Browning GG 2005 An important randomized controlled trial of adeno-tonsillectomy
2. Friese KH et al 2001 Results of a randomised prospective double-blind clinical trial on the homeopathic treatment of adenoid vegetations
3. Laurie Barclay et al 2005 Tonsillectomy no better than watchful waiting (randomized trial, adeno, hypertrophy)
4. Paradise JL (Bluestone) et al 1984 Efficacy of tons for recurrent throat infection in severely affected children (parallel randomized and nonrandomized clinical trials)
5. Paradise JL et al 1999 Adenoidectomy and adeno-tonsillectomy for recurrent acute otitis media: parallel randomized clinical trials in children not previously treated with tympanostomy
6. Park W et al 2005 Laryngo-pharyngeal reflux: (PPI therapy) cohort case study
7. Park W et al 2005 Optimum PPI dose in laryngo-pharyngeal reflux
8. Staij BK Van et al 2004 Effectiveness of adeno-tonsillectomy in children with mild symptoms (randomised controlled trial)
9. Wallwork B et al 2006 Macrolide vs. placebo RCT for chronic rhino-sinusitis
- Frohna JG 2005 Effectiveness of adenotonsillectomy in children with mild symptoms of throat infections or adenotonsillar hypertrophy: open, randomised controlled trial.

## References - Abbreviations

- Aom - acute otitis media
- OM – Otitis media
- UA - HAEM – Associated Erythema Multiforme
- upper airway
- PPI – Proton-Pump Inhibitor
- Tons – tonsillectomy
- Adeno – adeno-tonsillectomy
- Heli – Helicobacter
- Strepto – streptococcal
- Phar – Pharyngitis

There IS a shift for the understanding of evidence of prospective randomised blinded studies with control group and adequate follow up.

We wondered that the **larynx** so seldom was taken into account in research of the mucosa of the upper airways. If the larynx is disordered it cannot be expected that the mucosa of the upper airways functions in ***speech, swallowing and respiration.***

## Two Cochrane reviews were made on the upper airways

A: Surgical versus non-surgical interventions for vocal cord nodules  
(Pedersen M, McGlashan J 2000)

B: Acid reflux treatment for hoarseness ( Hopkins C, Yousaf U, Pedersen M 2006)

## A: Surgical versus non-surgical interventions for vocal cord nodules

For vocal nodules 659 studies were found, without any prospective randomised blinded studies without adequate follow up found following the standard scientific rules by the Cochrane Collaboration.-

(The demands for RCTs are not the only made by the Cochrane Collaboration -).

**Objective evaluation of the larynx were made in the later studies** (videostroboscopy, glottography, fundamental frequency, phonetograms, jitter% and shimmer% (= frequency and loudness variation), very seldom vibrato.

## B: Acid reflux treatment for hoarseness

For laryngo-pharyngeal reflux 290 studies were found, 6 were discussed intensively as for their qualities, but they were not evidence based following the rules of the Cochrane Collaboration.

### Comment

A strange lack was found of the aspect of the larynx as including the whole gateway to respiration- swallowing- and voicing –three very different functions –  
in studies of the mucosa of the upper airways.



The important inclusion criteria for patients in studies of the upper airways is not only

nose,

Eustachian tube,

Rhino-pharynx,

pharynx

but also the **larynx**

in molecular medicine as well as in pathological macro-anatomy.

**In the review of laryngo-pharyngeal reflux the inclusion criteria were based on the videostroboscopy.**

This is also the case for the newest protocol by the Mayo Clinic and the firm Astra Zeneca. They call the trial: Which supra oesophageal reflux symptoms reliably respond to proton-pump-inhibitor (PPI). American Government Identifier: NCT00170001.

Already in 1977 we found that this was not enough (Pedersen 1977), and supplemented with glottography qualitatively.

Dickers (alone) made a comment in the Lancet (1991) of expert evaluation of videostroboscopies being: 0,59 using Cronbach alpha.

This is why we included the glottogram quantitatively (among others) in a controlled prospective study of 77 patients that were analysed before and 1 month after medical treatment of a benign mucosal disorder of the larynx, where the primary complaint was “ my throat does not function”. They were compared with the results of 373 digitized consecutive videostroboscopies and at the same time quantitative measurement of glottograms, (and jitter, shimmer, fundamental frequency and formants) during 4 months. (Pedersen M, Yousaf U 2006)

As one of the inclusion criteria for future studies of the upper airways grades of oedema of the arytenoids in the larynx is an option that is not too complex for evidence based studies at best in combination with glottograms:

### **films (digital clips) with glottograms**

1. normal arytenoids
2. slight oedema of the arytenoids
3. moderate oedema of the arytenoids
4. large oedema of the arytenoids
5. very large oedema of the arytenoids

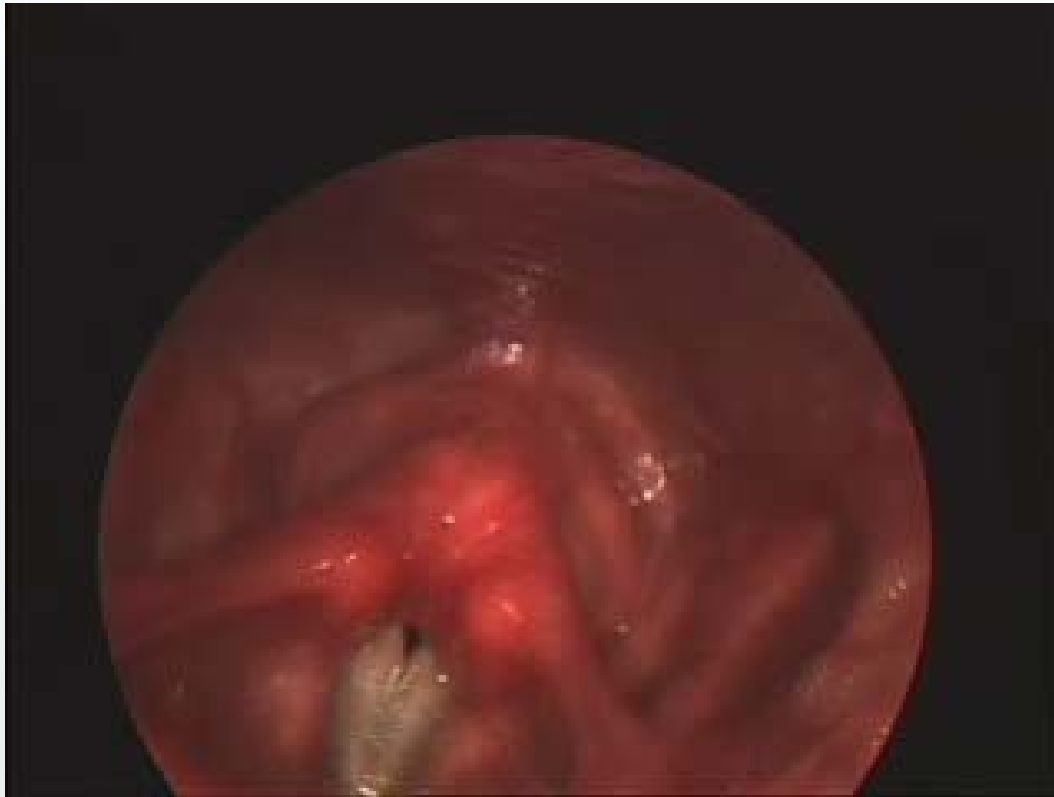
### **films (digital clips) of**

- a. normal well functioning vocal cords
- b. vocal cords with too small movements
- c. vocal cords with pathology

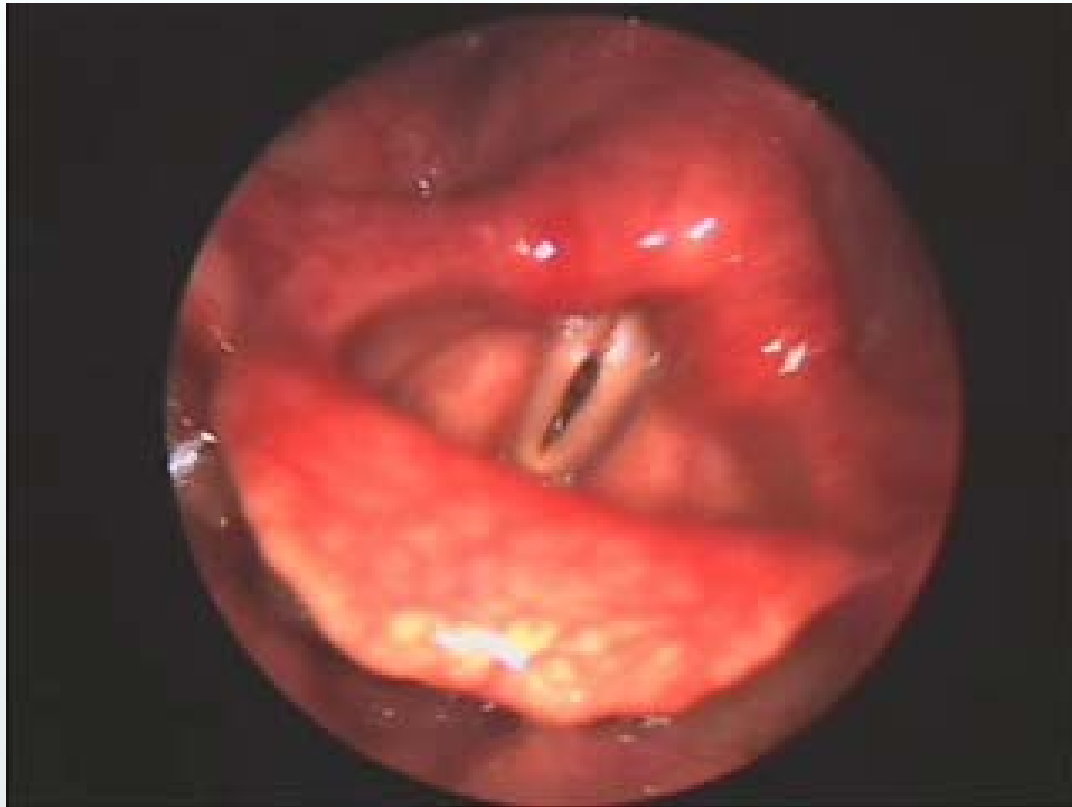
# 1. normal arytenoids



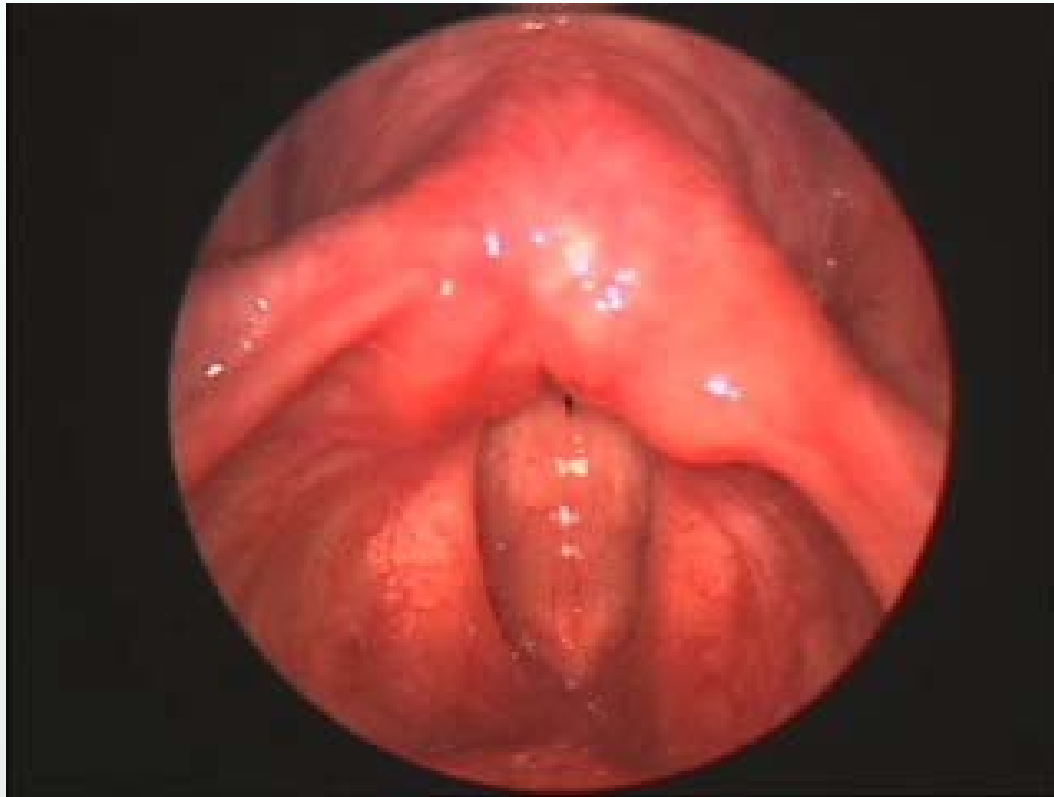
## 2. slight oedema of the arytenoids



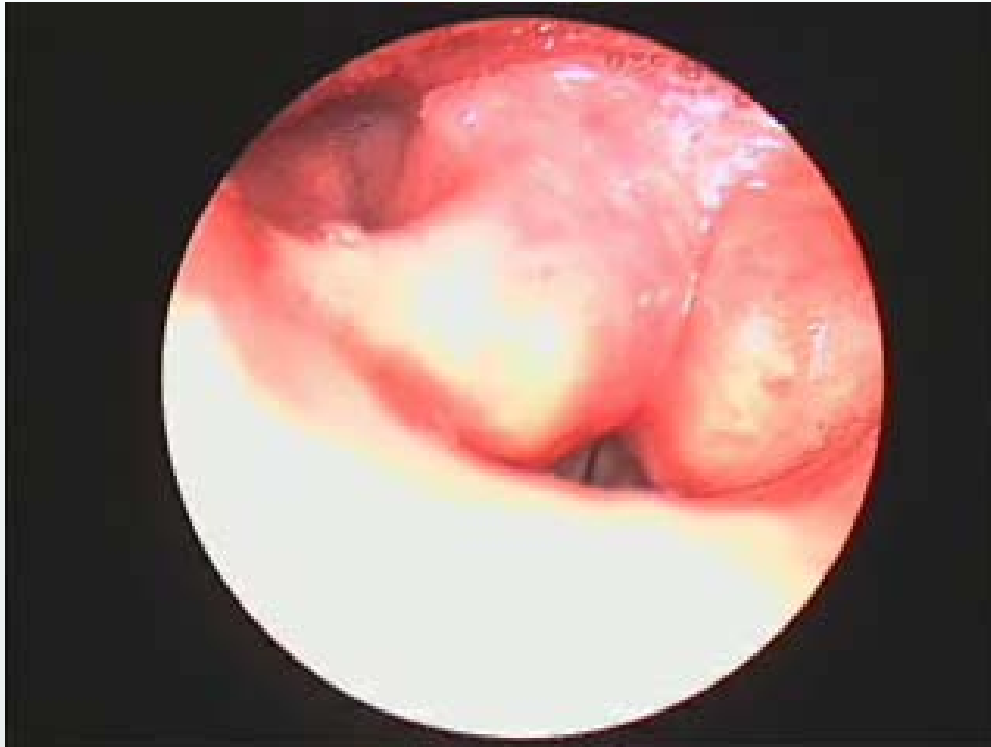
### 3. moderate oedema of the arytenoids



## 4. large oedema of the arytenoids



## 5. very large oedema of the arytenoids





a. normal well functioning vocal cords



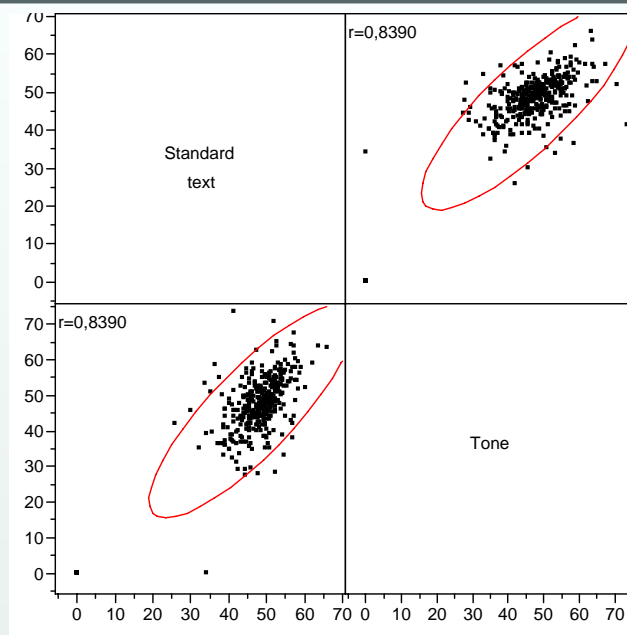
b. vocal cords with too small movements



## c. vocal cords with pathology



**Analysis of the glottography** was always made at the same time as the videos in the 373 studies. (Spead program by Laryngograph Ltd.)

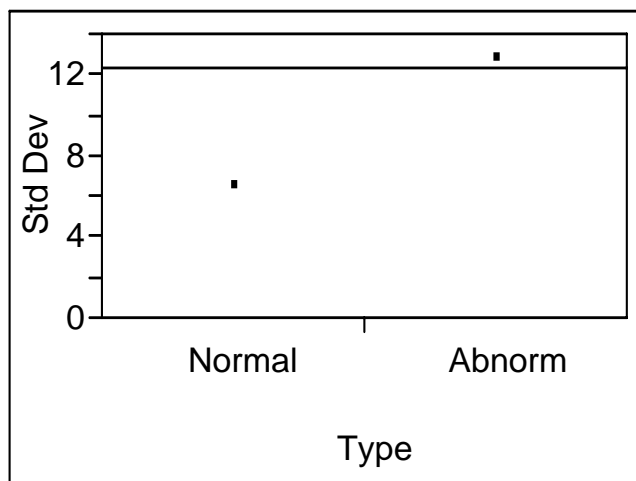


A dysfunction of the larynx is part of **the mucosal dysfunction of the upper airways:**

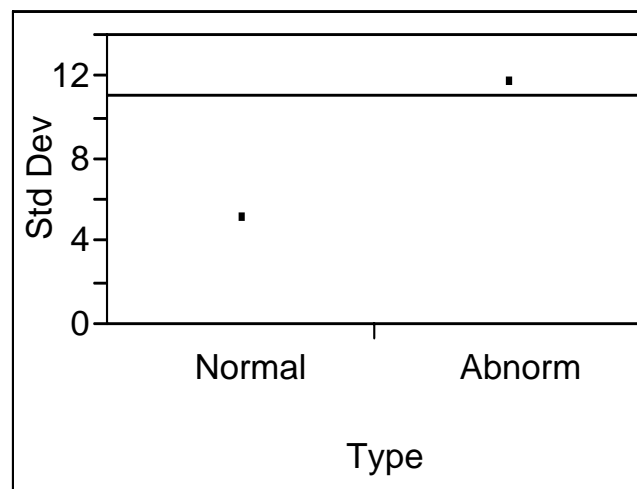
**Reading of a standard text** and intonation of a **sustained /ah/** in the lower register have the same statistical aspects for the closed phase of the vocal cords in the 373 glottograms (Qx%) with a correlation of  $r=0.8390$ .

There is a standard deviation of **Qx%**, measured as **normal** in the group 1 (control group) of the 373 videos in both reading of a standard text (the North win and the sun) and a sustained /ah/ (<6.9 and 6.5% respectively).  
 There is a standard deviation of **Qx%**, measured as **pathological** in the group 2-5 of the videos (11.1 and 12.7% respectively).

Tone /ah/ Qx%



Standard text Qx%

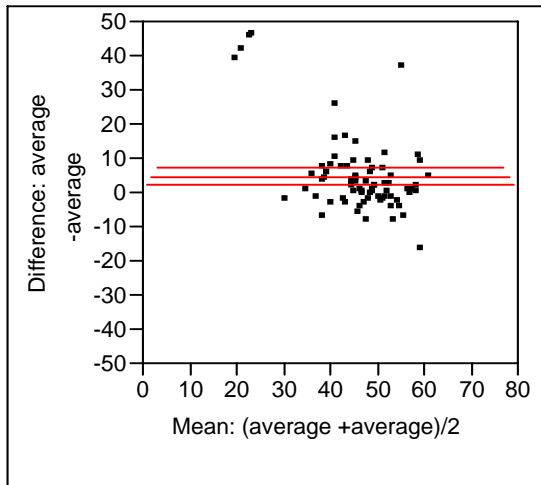


## Statistics for 77 patients in a prospective study with controls

For the **sustained tone /ah/**, no significant change was found of jitter% and shimmer% with paired t-test. For **Qx%** there was a significant better closure of the glottis of 4,6% ( 43,8% to 48,4%) with a significance of 0,0008 with paired t-test.

For the reading of a **standard text** the regularity frequency% was reduced with 1,98% (p= 0,053), the regularity of loudness% with 1,7% (p=0,004) and the **Qx%** was better with a change of 2,56% (p=0.044) analysed with paired t-tests.

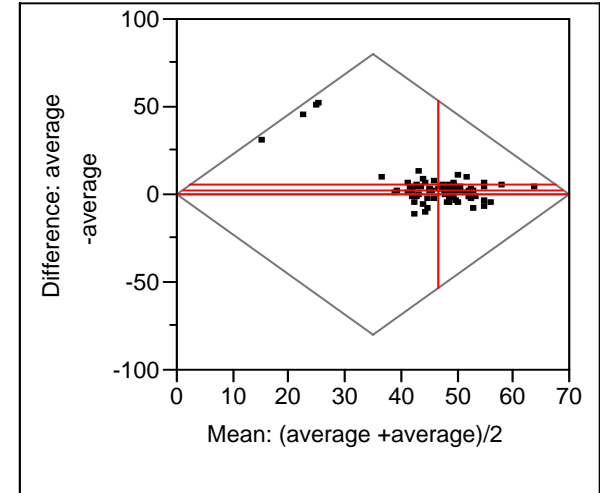
**Tone /ah/ Qx%**



average med 1 decimal 3

**A better throat function is related not only to a better videostroboscopy but also to a better voice function as measured with the glottogram in 77 patients before and after treatment.**

**Standard text Qx%**



The aspect is that e.g. Streptococcal pharyngitis and tonsillitis (as in the book ed. by JC Pechère and EL Kaplan. Karger Verlag 2004): can be secondary to disorders in the **larynx** and the treatment of **larynx** disorders results in healing of the pharynx.

Treatment of medical mucosal **larynx** disorders must include measurable parameters. Treatments aspects of dysphonia with phonetograms were discussed in our study in European Archives of ORL 2004.

It is necessary to take the **larynx** into account in the **clinical setting** dealing with specific diagnoses in the upper airways mucosa

with specific systematic **examinations** and blood **tests**

and **treatment** of specific virus (swabs), bacteria (swabs), fungal infections (swabs), reflux and helicobacter infections, immunological aspects (allergy treatment, diet correction), environmental toxins and other impacts also taking individual genetic responds into account.



The new approach is

that the immune system function must be taken into account.

A survey was made at the IFOS conference in Rome last year of acute otitis media (Pedersen 2005), the aspects are the same.

In their Cochrane review the benefit of grommets appeared small (Lous et al. 2005)

There are several **reviews** of the upper airways in the **Cochrane Library**. In children the two trials from Pittsburgh evaluating tonsillectomy had significant baseline differences between the surgical and non-surgical group and inclusion of children who also underwent adenoidectomy.

**Clear baselines should be made in the future.**

No trials evaluated the effectiveness of tonsillectomy in adults. ( Burton et al. Comment 2006).

Passàli et al. (2004) have described the structural and **immunological changes of the chronically inflamed adeno-tonsillar tissue** in childhood.

The problem is to explain the origin of these changes (the same as in the oesophagus?) and the option is thereafter *not surgery but immunological treatment*. Further studies on gluco-corticoid receptors in the tonsillar tissue are necessary, as earlier presented (Shirasaki et al. 2003).

In a survey of respiratory viral infections Hayden et al. (2004) jump over the larynx, they describe pharyngitis treatment, and go directly to laryngo-tracheo-bronchitis as one disorder.

## Future aspects

The critics of the literature of adeno-tonsillectomy is hard. There is no evidence. Still doctors do it.

It is necessary to implement evidence-based medicine (Hannes et al. 2005 show how difficult this is).

Some systematic points have been suggested for clinical diagnosis of mucosal disorders of the upper airways:

1. The **larynx**, as one part of the upper airways, should always be carefully inspected with a grading of oedema of the arytenoids and vocal cords as a minimum
2. At best a quantitative measurement of glottography at the same time should be made
3. Criteria for diagnosis and treatment should be well defined every time ( a database is easy to handle now-a-days for this purpose)

## **research of mucosal disorders of the upper airways.**

1. Hypotheses can be made of the mucosa, but objective clinical trials should be suggested
2. Laboratories to guarantee qualified clinical research should be defined
3. Clinical trials should always be systematic, referring e.g. to the Cochrane Collaboration Handbook

- 1 **Review.** M Pedersen and J McGlashan (2001) Surgical versus non-surgical interventions for vocal cord nodules The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. 23 April 2001 in Issue 2.
- 2 Review. C Hopkins, U Yousaf, M Pedersen (2006) Acid reflux treatment for hoarseness. The Cochrane Collaboration. Published by John Wiley & Sons, Ltd. 25 January 2006 in Issue 1.
- 3 Clinical Trials. Gov. Identifier: NCT00170001. Which Supraesophageal Reflux Symptoms Reliably Respond to Proton-Pump-Inhibitor (PPI) Therapy Sponsors and Collaborators: Mayo Clinic, AstraZeneca
- 4 Article. Pedersen M Fog (1977) Electroglottography compared with synchronized stroboscopy in normal persons. *Folia phoniatr* 29:191-200
- 5 Discussion letter. Dikkers FG. (1991) Intraobserver variation in diagnosis of benign non-neoplastic lesions of vocal folds. *The Lancet*. Apr 6; 337 (8745):866
- 6 Article. M Pedersen and U Yousaf (2006) Videostroboscopic expert evaluation of the larynx with running objective voice measurement at the same time gives more secure results than videos alone. Conference, Vocal fold physiology and biomechanics Tokyo. Japan
- 7 Book. J. C. Pechère and E. L. Kaplan. Ed. (2004) *Streptococcal Pharyngitis, Optimal Management*. Karger.
- 8 Article. M Pedersen, A Beranova, S Møller (2004) Dysphonia: Medical treatment and a medical voice hygiene advice approach. *Eur Arch Otorhinolaryngol* 261: 312-315
- 9 Round table. Pedersen M (2005) Acute Otitis Media, Aspects of infection and allergy: Round table IFOS Rome (By invitation)
- 10 Review. J Lous, MJ Burton, JU Felding, et al (2004) Grommets (ventilation tubes) for hearing loss associated with otitis media with effusion in children. The Cochrane Collaboration. Published by John Wiley & Son, Ltd. 24 January 2005 (update)
- 11 Review. MJ Burton, B Towler, P Glasziou (1999) Tonsillectomy versus non-surgical treatment for chronic/recurrent acute tonsillitis. Commented 2006 The Cochrane Collaboration. Published by John Wiley & Son, Ltd. 26 July 1999.
- 12 Article. D Passàli, V Damiani, G C Passàli et al (2004) Structural and Immunological Characteristics of Chronically Inflamed Adenotonsillar Tissue in Childhood. *Clinical and diagnostic laboratory immunology*, Nov. 2004 p. 1154-1157
- 13 Article. H Shirasaki, K Watanabe, J Sato et al (2003) Expression of steroid receptors in palantine tonsils. *International Congress Series* 1257 (2203) 115-118
- 14 Article. F G Hayden, M G Ison. (2005) Respiratory viral infections. ACP Medicine 2004 Copyrights 2004 WebMD inc.
- 15 Article. K Hannes, M Leys, E Vermeire et al (2005) Implementing evidence-based medicine in general practice. *BMC Family practice* 2005, 6:37

○ Thanks to all

# Indications for tonsillectomy for prevention of recurrent acute pharyngotonsillitis

- Chronic suppurative tonsil infection
- Recurrent acute tonsillitis that cannot be treated with ANY other approach
- Hypertrophy that cannot be reduced with ANY other approach

# Adenoidectomy for prevention of chronic otitis media with effusion

- Adenoidectomy is only indicated when no conservative/medical/immunological treatment does have effect. The effect of adenoidectomy alone is not evidence based



# Adenotonsillectomy for obstructive sleep apnoea

- Is not evidence based

# Tonsillectomy for peritonsillar abscess

- The literature is modest
- Mostly insufficient antibiotic treatment is the reason.
- In rare cases immunological deficits makes the operation necessary

# Adenoidectomy for prevention of recurrent acute otitis media

- Is not evidence based

# Indications for adenoidectomy and/or tonsillectomy for prevention of recurrent/chronic rhinosinusitis in children

- Is not evidence based

What is your recommendation for T&A when a child who has a repaired cleft palate has documented sleep apnoe due to hypertrophied tonsils and adenoids

- Mostly other immunological aspects will by treatment reduce the size focusing on primary and secondary defects
- Sufficient antibiotics, allergy and intolerance treatment including steroids (as in astma), treatment of reflux and bacteria with a systemic aspect (helicobakter, mycoplasma) and others

# What medical/surgical options are available for older infants who have documented sleep apnoea secondary to tonsil/adenoid hypertrophy

- Operation is not evidence based
- Check of primary and secondary immune defects
- Treatment effectively with relevant antibiotics for aggravations and local steroids to heal the mucosa
- Find provocations of other kinds (helicobacter, reflux, mycoplasma, diet, toxins in the environment ect.)