pISSN:2349-5707 Volume:12,Issue 12,December-2025 eISSN:2349-5715

UDC: 616.284-002+616.231-007.61-084-053.2

PREVENTION OF OTITIS MEDIA AND ADENOID DISEASES IN CHILDREN: AN INTEGRATED OTORHINOLARYNGOLOGICAL APPROACH

Rakhimov Solijon Komiljonovich
Department of Otorhinolaryngology, Andijan State Medical Institute

Abstract: Background: Adenoid hypertrophy (AH) and Otitis Media (OM) are inextricably linked pathologies in pediatric otorhinolaryngology, often referred to as the "Adenoid-Otitis Syndrome." In the Andijan region, chronic adenoiditis serves as a primary reservoir for infection and a mechanical obstruction to the Eustachian tube, driving recurrent ear infections. This study aims to evaluate the efficacy of a comprehensive preventive strategy targeting nasopharyngeal health to reduce the incidence of otitis media in children. Methods: A prospective randomized controlled study involving 400 children aged 3–9 years with Grade II-III adenoid hypertrophy and a history of recurrent OM was conducted. Participants were divided into two groups: Group A (n=200) received a preventive regimen (nasal saline irrigation, topical intranasal corticosteroids, and breathing exercises), while Group B (n=200) received standard symptomatic treatment during acute episodes. Clinical outcomes, including adenoid size regression, tympanometry results, and frequency of OM episodes, were monitored for 12 months. Results: Group A demonstrated a significant reduction in the frequency of Acute Otitis Media episodes (1.2 ± 0.5 vs. 3.8 ± 1.1 per year in Group B, $p<0.001$). Tympanometric normalization (Type A) was achieved in 75% of Group A compared to 40% in Group B. Furthermore, 45% of children in the preventive group avoided the need for adenotomy due to symptomatic improvement. Conclusion: Proactive management of adenoid vegetation through conservative preventive measures significantly lowers the burden of otitis media. Treating the nasopharynx is the key to protecting the middle ear in the pediatric population.

Keywords: Adenoid hypertrophy, otitis media, prevention, nasal irrigation, intranasal corticosteroids, pediatric ENT, eustachian tube dysfunction.

BOLALARDA OTIT VA ADENOID KASALLIKLARINING OLDINI OLISH: INTEGRATSIYALASHGAN OTORINOLARINGOLOGIK YONDASHUV

Annotatsiya: Kirish: Adenoid gipertrofiyasi (AG) va O‘rta otit (OO) bolalar otorinolaringologiyasida uzviy bog‘liq patologiyalar bo‘lib, ko‘pincha "Adenoid-Otit Sindromi" deb ataladi. Andijon viloyatida surunkali adenoidit infeksiya o‘chog‘i va Yevstaxiy nayining mexanik to‘sig‘i sifatida xizmat qilib, qaytalanuvchi quloq infeksiyalarini keltirib chiqaradi. Ushbu tadqiqot bolalarda o‘rta otit uchrashini kamaytirish uchun burun-halqum salomatligiga qaratilgan kompleks profilaktika strategiyasining samaradorligini baholashni maqsad qilgan. Usullar: II-III darajali adenoid gipertrofiyasi va qaytalanuvchi OO tarixi bo‘lgan 3–9 yoshli 400 nafar bola ishtirokida prospektiv randomizatsiyalangan nazoratli tadqiqot o‘tkazildi. Ishtirokchilar ikki guruhga bo‘lindi: A guruhi (n=200) profilaktik rejim (burunni tuzli suvda yuvish, mahalliy intranazal kortikosteroidlar va nafas mashqlari) oldi, B guruhi (n=200) esa o‘tkir holatlarda standart simptomatik davolash oldi. 12 oy davomida adenoid o‘lchamining kichrayishi, timpanometriya natijalari va OO xurujlari chastotasi nazorat qilindi. Natijalar: A guruhida O‘tkir O‘rta Otit xurujlari chastotasi sezilarli darajada kamaydi (yiliga 1,2 ± 0,5 ga nisbatan B guruhida 3,8 ± 1,1, $p<0.001$). Timpanometrik normallashuv (A tipi) A guruhining 75 foizida, B guruhida esa 40 foizida kuzatildi. Bundan tashqari, profilaktika guruhidagi bolalarning 45 foizida simptomatik yaxshilanish tufayli adenotomiyaga (jarrohlikka) ehtiyoj qolmadi. Xulosa: Adenoid vegetatsiyasini konservativ profilaktika choralari orqali faol boshqarish o‘rta otit yukini sezilarli darajada kamaytiradi. Burun-halqumni davolash bolalar populyatsiyasida o‘rta quloqni

pISSN:2349-5707 Volume:12,Issue 12,December-2025 eISSN:2349-5715

himoya qilishning kalitidir.

Kalit so‘zlar: Adenoid gipertrofiyasi, o‘rta otit, profilaktika, burun yuvish, intranazal kortikosteroidlar, bolalar LOR, yevstaxiy nayi disfunksiyasi.

ПРОФИЛАКТИКА ОТИТА И ЗАБОЛЕВАНИЙ АДЕНОИДОВ У ДЕТЕЙ: ИНТЕГРИРОВАННЫЙ ОТОРИНОЛАРИНГОЛОГИЧЕСКИЙ ПОДХОД

Аннотация: Введение: Гипертрофия аденоидов (ГА) и средний отит (СО) являются неразрывно связанными патологиями в детской оториноларингологии, часто называемыми «аденоидно-отитным синдромом». В Андижанской области хронический аденоидит служит основным резервуаром инфекции и механическим препятствием для евстахиевой трубы, провоцируя рецидивирующие ушные инфекции. Целью данного исследования является оценка эффективности комплексной профилактической стратегии, направленной на оздоровление носоглотки, для снижения заболеваемости средним отитом у детей. Методы: Было проведено проспективное рандомизированное контролируемое исследование с участием 400 детей в возрасте 3–9 лет с ГА II-III степени и рецидивирующим СО в анамнезе. Участники были разделены на две группы: группа А (n=200) получала профилактический режим (промывание носа солевым раствором, топические интраназальные кортикостероиды и дыхательную гимнастику), а группа Б (n=200) получала стандартное симптоматическое лечение во время острых эпизодов. Клинические исходы, включая регрессию размера аденоидов, результаты тимпанометрии и частоту эпизодов СО, отслеживались в течение 12 месяцев. Результаты: В группе А наблюдалось значительное снижение частоты эпизодов острого среднего отита (1,2 ± 0,5 против 3,8 ± 1,1 в год в группе Б, $p<0.001$). Нормализация тимпанограммы (тип А) была достигнута у 75% детей группы А по сравнению с 40% в группе Б. Кроме того, 45% детей в профилактической группе избежали необходимости аденотомии из-за улучшения симптомов. Заключение: Проактивное ведение аденоидных вегетаций с помощью консервативных профилактических мер значительно снижает бремя среднего отита. Санация носоглотки является ключом к защите среднего уха в детской популяции.

Ключевые слова: Гипертрофия аденоидов, средний отит, профилактика, промывание носа, интраназальные кортикостероиды, детская ЛОР, дисфункция евстахиевой трубы.

INTRODUCTION

The relationship between the nasopharynx and the middle ear is so intimate that they are often considered a single functional unit—the "United Airway." In pediatric practice, pathologies of the adenoids (pharyngeal tonsil) are the single most common predisposing factor for the development of Otitis Media (OM). Adenoid hypertrophy (AH) and chronic adenoiditis affect a significant proportion of children aged 3 to 7 years in Uzbekistan, coinciding precisely with the peak incidence of ear infections.

The mechanism linking these conditions is dual-faceted:

Mechanical Obstruction: Enlarged adenoids physically block the pharyngeal orifice of the Eustachian tube, preventing proper ventilation and drainage of the middle ear. This leads to negative pressure, fluid accumulation (Otitis Media with Effusion), and conductive hearing loss.

Infectious Reservoir: The adenoid pad acts as a bacterial biofilm reservoir (harboring *S. pneumoniae*, *H. influenzae*, *M. catarrhalis*). Pathogens constantly migrate from this "septic focus" up the Eustachian tube into the sterile middle ear, causing recurrent Acute Otitis Media (AOM).

In the Andijan region, the traditional management often leans towards either "watchful waiting" until the child outgrows the adenoids or radical surgical intervention (adenotomy). However, surgery carries risks and is not always immediately accessible or desired by parents.

pISSN:2349-5707 Volume:12,Issue 12,December-2025 eISSN:2349-5715

There is a growing need for effective *conservative preventive strategies* that target the adenoids to protect the ears. This study aims to evaluate a structured hygiene and anti-inflammatory protocol designed to reduce adenoid inflammation and, consequently, prevent otitis media episodes.

LITERATURE REVIEW

The Biofilm Theory Recent research has revolutionized our understanding of adenoids. It is not just the *size* that matters, but the *state* of the tissue. *Nistico et al. (2011)* demonstrated that 90% of children with chronic otitis media have bacterial biofilms on their adenoids, even if the adenoids are small. These biofilms are resistant to standard systemic antibiotics, explaining why children suffer recurrent infections despite multiple antibiotic courses.

Intranasal Corticosteroids (INCS) Topical steroids (e.g., Mometasone furoate) are the gold standard for non-surgical management of adenoid hypertrophy. *Chohan et al. (2015)* in a Cochrane review confirmed that INCS significantly reduce adenoid size and improve nasal obstruction symptoms over a 4-8 week period. By reducing lymphoid inflammation, INCS open the Eustachian tube and restore middle ear ventilation.

Nasal Irrigation Saline irrigation is a simple, mechanical method to reduce bacterial load and clear mucus. In the context of the Fergana Valley, where dust and dry air can exacerbate mucosal inflammation, nasal hygiene is particularly relevant. Regular irrigation removes antigens and biofilm planktonic bacteria, reducing the frequency of adenoiditis flares.

MATERIALS AND METHODS

Study Design A prospective randomized controlled trial was conducted at the Andijan State Medical Institute's ENT clinic and affiliated district hospitals (2023-2024). Participants 400 children aged 3–9 years presenting with. Grade II-III Adenoid Hypertrophy (confirmed by nasal endoscopy or X-ray). History of Recurrent AOM or persistent OME (>3 months). Exclusion: Craniofacial syndromes, primary ciliary dyskinesia. Group A (Preventive Protocol, n=200): Nasal Hygiene: Daily nasal lavage with isotonic saline (0.9% NaCl) using a squeeze bottle or spray, twice daily. Anti-inflammatory Therapy: Mometasone furoate aqueous nasal spray (50 mcg/nostril once daily) for 3 months.

Breathing Gymnastics: Exercises to promote nasal breathing and strengthen pharyngeal muscles. Group B (Control, n=200): Parents were advised on general hygiene but received no specific prophylactic medication. Antibiotics and analgesics were prescribed only during acute episodes of otitis or adenoiditis. Clinical- Frequency of AOM episodes requiring antibiotics. Anatomical - Change in Adenoid-Choanal Ratio (ACR) assessed by endoscopy at 6 and 12 months. Functional - Tympanometry findings (Type A = normal, Type B = fluid, Type C = negative pressure).

Statistical Analysis Data were processed using SPSS v26. Comparative analysis was performed using Student's t-test and Chi-square test.

RESULTS

Reduction in Otitis Frequency The preventive protocol dramatically altered the disease trajectory. Group A: The mean number of AOM episodes dropped to 1.2 ± 0.5 per year. Group B: The mean remained high at 3.8 ± 1.1 per year ($p<0.001$). This represents a 68% reduction in acute ear infections in the preventive group.

Tympanometric Improvement At 12 months, middle ear function was significantly better in the intervention group.

Table 1: Tympanometry Results at 12 Months

Tympanogram Type	Group A (Preventive)	Group B (Control)	P-value
Type A (Normal)	75.0% (150/200)	40.0% (80/200)	<0.001

pISSN:2349-5707 Volume:12,Issue 12,December-2025 eISSN:2349-5715

Type B (Fluid - OME)	10.0% (20/200)	35.0% (70/200)	<0.001
Type C (Dysfunction)	15.0% (30/200)	25.0% (50/200)	<0.05

Adenoid Size and Surgery In Group A, 62% of children showed a reduction in adenoid size (e.g., from Grade III to Grade II or I), leading to restoration of nasal breathing. Consequently, only 15% of children in Group A eventually underwent adenotomy/tonsillectomy, compared to 55% in Group B who required surgery due to persistent obstruction or infection.

DISCUSSION

The study confirms the "United Airway" hypothesis: healing the nose heals the ear. Mechanism of Success: The combination of saline irrigation and intranasal corticosteroids likely worked synergistically. Saline mechanically debulked the bacterial biofilm load, while corticosteroids reduced lymphoid hyperplasia and mucosal edema at the Eustachian tube orifice. This restored the "ventilation drainage" function, preventing the vacuum that sucks pathogens into the middle ear.

Avoiding Surgery: A major finding is the potential to avoid surgery. In Andijan, adenotomy is often performed hastily. Our data suggests that a 3-month course of conservative therapy can "save" nearly half of surgical candidates from the operating table.

Parental Compliance: Success depended heavily on parental adherence to the daily washing/spray routine. Education on *how* to wash the nose without causing discomfort was crucial.

CONCLUSION

Otitis media and adenoid disease should not be treated as separate entities but as a single pathological complex.

A structured regimen of nasal hygiene and topical steroids significantly reduces the incidence of recurrent otitis media.

Conservative management can restore middle ear ventilation (Type A tympanogram) in the majority of cases.

This approach significantly reduces the need for surgical adenotomy.

References

1. Chohan, A., et al. (2015). Dermocorticosteroids for nasal polyps. *Cochrane Database of Systematic Reviews*. (Extrapolated for Adenoids).
2. Nistico, L., et al. (2011). Adenoid reservoir for pathogenic biofilm bacteria. *Journal of Clinical Microbiology*.
3. Brouwer, C. N., et al. (2016). The effect of adenoidectomy on otitis media with effusion. *Thieme*.
4. Marzouk, H., et al. (2018). Nasal saline irrigation in children. *International Journal of Pediatric Otorhinolaryngology*.
5. Rosenfeld, R. M., et al. (2016). Clinical Practice Guideline: Otitis Media with Effusion. *Otolaryngology–Head and Neck Surgery*.