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Audit of Adenotonsillar surgeries in a Tertiary Facility in Uyo, South-south Nigeria

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Abstract

Background: Adenoid and tonsils are lymphoid tissues that occupy the nasopharynx and tonsillar fossae and serve as the initial site of immunological contact for inhaled and ingested antigens. Adenoidectomy, tonsillectomy or adenotonsillectomy is a lifesaving surgical procedure and remains a leading reason of surgical admission in general otorhinolaryngological practice both in developed and developing countries.
The study aims to audit adenotonsillar surgeries in the Department of Ear, Nose and Throat in University of Uyo Teaching Hospital, and compare findings with similar studies.
Method: This is a retrospective study of patients who had adenoidectomy, tonsillectomy, or adenotonsillectomy over 5 years from January 2015 to December 2019 at the Department of Ear, Nose, and Throat, University of Uyo Teaching Hospital, Uyo, Akwa Ibom state, south-south Nigeria.
Results: A total of 526 patients were recruited, and this accounted for 38.7% of the total ENT surgeries performed within the study period. Ages ranged from 6 months to 72 years, with a mean age of 11.89+1.03. The majority of the patients were aged between 1-5 years and the commonest presenting symptom was snoring and mouth breathing (79.5%). Sleep-disordered breathing (55.7%) was the main indication for the surgeries. Adenotonsillectomy (61.0%) was the commonest surgery performed. About 1.0% of the patients had recurrent adenoids.
Conclusion: The surgeries were of immense necessity to the patients as all presenting complaints and pre-operative diagnoses became completely resolved.

Keywords: Adenotonsillectomy, tonsillectomy, adenoidectomy

Introduction

Adenoid (Luschka tonsil) and tonsils (palatine tonsils) are lymphoid tissues that occupy the nasopharynx and tonsillar fossae at the portal of the upper aero-digestive tract. In early childhood, they are the initial site of immunological contact for inhaled and ingested antigens. Along with the lingual tonsils, tubal tonsils, and the diffuse aggregates of pharyngeal submucosal lymphoid tissue, they make up the Waldeyer's ring of lymph nodes around the head and neck.[1–3] Exposure to antigens especially in early childhood through the nose and mouth is an important part of naturally acquired immunity because these lymph nodes play major roles in the host's defenses of the upper aero-digestive tract by producing antibodies. The adenoids and tonsils produce B-cells giving rise to immunoglobulins IgG and IgA plasma cells, which enhance both local and systemic immunity.[3]
Adenoids are relatively largest at about 7 years age group.[4] It can be detected in the nasopharynx as

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early as 5 months of age, and its growth plateaus between 2 and 14 years of age.[1,5] Also, tonsils are present in varying sizes throughout life. Brodsky et al highlighted a grading scale for tonsil sizes.[6] Enlarged adenoids and/or tonsils in relation to a relatively small volume nasopharynx and oropharynx are referred to as either adenoidal hypertrophy, tonsillar hypertrophy, or adenotonsillar hypertrophy, causing upper airway obstruction and a focus for sepsis.[4,7] Adenoidectomy, tonsillectomy, and/or adenotonsillectomy is a lifesaving surgical procedure that entails the removal of either the adenoid, tonsils or both.[3,8] It remains a leading cause of surgical admission in general otorhinolaryngological practice both in developed and developing countries.[8] There is no evidence that surgical removal of these adenoids and palatine tonsils results in impaired immunity; possibly because the other components of Waldeyer's lymph nodes continue to produce the immunoglobulins.[2]

In the USA, over 500,000 cases of adenotonsillar related surgeries are performed annually.[9] Approximately 687/100,000 children in the US had adenotonsillectomy in 2006.10 In England about 17000 adenotonsillar procedures were reported between 2014-2015; while in Sweden more than 9000 adenotonsillectomies were performed in 2013.[11–13]

Patients with enlarged adenoid and/or tonsils usually complain of chronic mouth breathing, snoring, throat discomfort/sore throat, halitosis, recurrent purulent rhinorrhea, reduced hearing, protruding upper incisors, and sleep disturbances amongst others.[1,2,14] Complications associated with this condition include but are not limited to recurrent nasopharyngitis, rhinosinusitis, recurrent acute otitis media, conductive hearing loss, failure to thrive, obstructive sleep apnea which may be complicated by pneumonia, cor-pulmonale, pulmonary hypertension, chronic hypercapnia, right heart failure, and upper airway obstruction.[14–16] These symptoms and complications of the disease may limit the patient's daily activities and contribute to school or work absenteeism.[15–17]

A cross-sectional study in Ekiti, southwestern Nigeria highlighted snoring, noisy breathing, tonsillar enlargement, and narrowing of postnasal space air column as the commonest clinical features; while failure to thrive, otitis media and rhinosinusitis were identified as common complications among patients with adenotonsillar hypertrophy.[15] Another cross-sectional study in Enugu Nigeria showed the common symptoms among those with adenoid hypertrophy were cough, catarrh, history of allergy, fever, snoring, expiratory rhonchi, and mouth breathing.[18]

The indication for adenotonsillectomy could be therapeutic, diagnostic, or as access for another procedure. The commonest indications are snoring and mouth breathing in children and recurrent acute tonsillitis in older children and adults.[5,15,19] Other indications include peritonsillar abscess, unilateral tonsillar enlargement for biopsy, and diagnosis to rule out malignancy.[2] According to the American Academy of Otolaryngology, Head, and Neck Surgery (AAO-HNS), in the past only those with 3 or more infections of the tonsils and/or adenoids per year, or those who had cases of chronic tonsillitis which were unresponsive to antibiotics had adenotonsillectomy.[20] Unfortunately, this narrative has changed because adenotonsillar hypertrophy has been identified as a major risk factor for developing pediatric obstructive sleep apnoea; hence adenotonsillectomy is recognized as the first-line treatment for obstructive sleep apnoea syndrome worldwide.[12,21] The benefits of surgical removal of the adenoid and/or tonsils include deterrence of recurrent infections and elimination of upper-airway obstruction, hence, resulting in a remarkable improvement in the quality of life.[22]

This study is aimed at auditing adenotonsillar surgeries in the Department of Ear, Nose and Throat, University of Uyo Teaching Hospital, and comparing findings with similar studies.

Materials and methods

This was a retrospective study of patients who had adenoidectomy, tonsillectomy, or adenotonsillectomy over 5 years from January 2015 to December 2019 at the Department of Ear, Nose, and Throat, University of Uyo Teaching Hospital, Uyo, Akwa Ibom state, south-south Nigeria. The surgeries were done for all patients aseptically under general anesthesia via endotracheal intubation with meticulous pre-, intra-, and post-operative hemostatic management, using the adenoid curette for adenoidectomy and cold-steel

method for tonsillectomy. A proforma was used to extract information from the patients' case notes retrieved from the medical records department. The following information was extracted namely: age, sex, presenting symptoms, indications for surgery, type of surgery (adenoidectomy, tonsillectomy, or adenotonsillectomy), complications, and outcome of the surgery. Inclusion criteria were all patients that had adenoidectomy, tonsillectomy, and/or adenotonsillectomy during the period under review. Those patients with incomplete clinical records or missing case notes were excluded. The data were analyzed using IBM. SPSS version 23.0 with simple tables and graphs.

Results

A total of 526 patients who had either of the adenotonsillar surgeries (adenoidectomy, tonsillectomy, or adenotonsillectomy) were recruited, of which 419 (79.7%) were children (<18 years) and 107 (20.3%) were adults (>18 years). Their ages ranged from 6 months to 72 years, with a mean age of 11.89+1.03. The male to female ratio was 1:1.2. The majority of the patients were aged between 1-5 years (36.7%) and 6-10 years (25.5%) respectively, while the least age group was 41-45 years (0.6%). Figure 1.

Table 1 shows that the commonest presenting symptoms were snoring and mouth breathing

Table 1: Presenting symptoms

S/No.	*Presenting symptoms*	*Group*		*Total N=526*	*Children to Adult ratio*
		Children n = 419	**Adults n = 107**		
1.	Recurrent sore throat	214 (51.1)	96 (89.7)	310 (58.9)	2.2: 1
2.	Persistent nasal discharge	332 (79.2)	13 (12.2)	345 (65.6)	25.5: 1
3.	Recurrent ear pain/tugging	192 (45.8)	31 (29.0)	223 (42.4)	6.2: 1
4.	Snoring/mouth breathing	371 (88.5)	47 (44.0)	418 (79.5)	7.9: 1
5.	Protruding upper incisors	131 (31.3)	9 (8.4)	140 (26.6)	14.6: 1
6.	Bad breath	8 (1.9)	69 (64.5)	77 (14.6)	1: 8.6
7.	Bleeding from the mouth following native tonsillectomy	17 (4.1)	-	17 (3.2)	-
8.	Swelling in the mouth	-	22 (20.6)	22 (4.2)	-
9.	Fishbone impaction	-	14 (13.1)	14 (2.7)	-
10.	Hearing impairment	11 (2.6)	5 (4.7)	16 (3.0)	2.2: 1
11.	Hyponasal speech	253 (60.4)	-	53 (48.1)	4.8:1
12.	Failure to thrive	61 (14.6)	-	61 (11.6)	-

Note: children: ≤ 18 years; adults: > 18 years

Table 2: Indications for adenotonsillar surgeries

	Indication for adenotonsillar surgeries	*Frequency*		*Total N=526*	*Children to Adult ratio*
		Children n=419	**Adults n=107**		
1.	Sleep-disordered breathing	276 (65.9)	17 (15.9)	293 (55.7)	16.2: 1
2.	Recurrent tonsillitis	53 (12.7)	48 (44.9)	101 (19.2)	1.1:1
3.	Persistent rhinorrhoea	41 (9.8)	-	41 (7.8)	-
4.	Recurrent quinsy	3 (0.7)	19 (17.8)	22 (4.2)	1: 6.3
5.	Recurrent otitis media	29 (6.9)	-	29 (5.5)	-
6.	Impacted fishbone	-	14 (13.1)	14 (2.7)	-
7.	Post-native tonsillectomy bleeding	17 (4.1)	-	17 (3.2)	-
8.	Suspected malignancy	-	9 (8.4)	9 (1.7)	-
	Total	419 (100.0)	107 (100.0)	526 (100.0)	3.9: 1

Note: children: ≤ 18 years; adults: > 18 years

Table 3: Type of Adenotonsillar surgeries

Age (years)	*Type of surgery (%) N=526*		
	Adenoidectomy	**Tonsillectomy**	**Adenotonsillectomy**
< I	5 (1.0)	-	17 (3.2)
1-5	-	4 (0.8)	189 (35.9)
6-10	-	28 (5.3)	106 (20.2)
11-15	-	51 (9.7)	7 (1.3)
16-20	-	36 (6.8)	1 (0.2)
21-25	-	12 (2.3)	-
26-30	-	22 (4.2)	-
31-35	-	15 (2.9)	-
36-40	-	6 (1.1)	-
41-45	-	3 (0.6)	-
46-50	-	6 (1.1)	1 (0.2)
>50	-	17 (3.2)	-
Total:	5 (1.0)	200 (38.0)	321 (61.0)

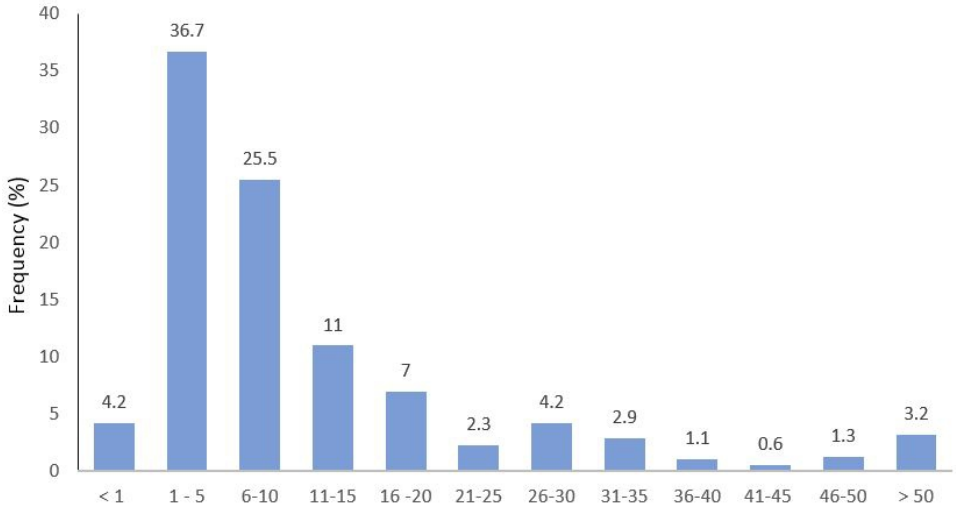

Figure 1: Age distribution of patients

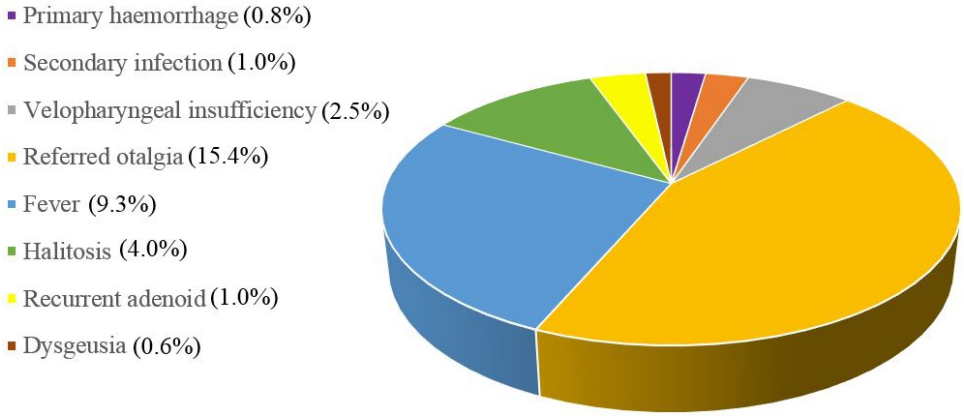

Figure 2: Complications associated with adenotonsillar surgeries

Figure 3: Monthly Distribution of Adenotonsillar Surgeries

(79.5%) followed by persistent nasal discharge (65.6%) and recurrent sore throat (58.9%). The least of the presenting complaint was fish bone impaction (2.7%).

The commonest indication for the surgeries was sleep-disordered breathing (55.7%). Recurrent tonsillitis (44.9%) was more in the adult population than in children (12.7%). Post-native tonsillectomy (3.2%) was also an indication of tonsillectomy in children. The least indication was suspected tonsillar malignancy (1.7%). Table 2.

With regards to the type of adenotonsillar surgeries, adenotonsillectomy (61.0%) was the commonest surgery performed, followed by tonsillectomy (38.0%) and adenoidectomy (1.0%). Adenoidectomy was performed only in infants whose diagnoses were mainly sleep-disordered breathing secondary to congenital adenoids. Adenotonsillectomy was the commonest amongst children aged 1-5 years (35.9%). Table 3.

Discussion

Adenoid and tonsil-related surgeries are the most commonly performed surgeries by otorhinolaryngologists globally.[23–25] In Uyo, adenotonsillar-related surgeries accounted for 38.7% of the total ENT surgeries during the period under review, with a majority of the patients being children. In Makurdi, north-central Nigeria it accounted for 32.7% of the total ENT surgeries.[19] Another study in Sokoto, north-western Nigeria had 71.5% of their study population as children.[26] The high prevalence of these surgeries in our center supports the assertion that they are the most performed ENT-related surgery.

Majority (66.4%) of our study population were 10 years and below, while other studies within and outside Nigeria, found as high as 81.9%, 87.8%, and 93.0% of their study population to be < 10 years.[19,23,25] Again, further buttressing adenotonsillar disease as an illness of childhood.[1,27] However, the low prevalence amongst the <10 years in our study when compared with others, might be due to the high socio-cultural and religious belief patterns. Most parents believe their children will outgrow the symptoms, and ultimately deny them the definitive surgical treatment. Unfortunately, many of the parents still opt for the surgery when the symptoms become recalcitrant and by then the children are older. Even when some parents give consent for the surgery, they still await a spiritual consent from their spiritual heads, which most times is never gotten because of fear of the unknown during surgery.

Our study showed a slight female preponderance similar to a study in north-central Nigeria.[28] However, other studies have reported male preponderance and even equal affectation of both sexes.[15,29] This strongly suggests that both males and females can be affected by the adenotonsillar disease.

With regards to presenting symptoms, the commonest amongst the children population included snoring and mouth breathing, persistent mucopurulent nasal discharge, and hyponasal speech. While amongst the adults, the commonest presenting symptoms included recurrent sore throat, halitosis, and swelling in the mouth. Overall, snoring (79.5%) followed by persistent nasal discharge (65.6%) and recurrent sore throat (58.9%) were the commonest presenting symptoms in patients who had adenotonsillar-related surgeries in our study. Similarly, Adegbiji et al in their study noted snoring (95%) as the commonest presentation in children with adenotonsillar disease.[15] However, persistent nasal discharge had highest prevalence ratio in children than adults (25.5: 1). This can be explained by the narrowed nasopharyngeal space in children harboring adenoid tissues since the proportion of the diameter of the adenoid tissue to the diameter of the nasopharynx is reported to be more important than the size of the adenoid.[1,7] The adenoid tissues serve as reservoirs for pathogenic microorganisms, thereby facilitating infections of the nasopharyngeal space, and interfere with aeration of the sinuses by obstructing the posterior paranasal sinus ostia.[1,30] Thus, the reason for persistent purulent nasal discharge in children with obstructing adenoids.

In this study, more than half of the total adenoid and tonsil-related surgeries were adenotonsillectomy (61.0%), while tonsillectomy was 38.0% and adenoidectomy 1.0%. Adenoidectomy and adenotonsillectomy were common in the children, while tonsillectomy alone was more in the adult population and is similar to findings in other studies.[26,27] Sleep-disordered breathing (55.7%) whether partial or complete, was the major indication for adenotonsillectomy and adenoidectomy in the children population and is similar to findings in north-western Nigeria and the United States of America.[31,32] Adenoidectomy alone was performed in only 5 (1.0 %) patients who were all below 6 months of age presenting with complete upper airway obstruction secondary to congenital adenoids, recalcitrant to all conservative medical therapy. This is in contrast to a study in Poland, where adenoidectomy alone was performed in 60.1% of their study population.[33] However, in our center attempts are always made to do a tonsillectomy even when the obstruction is mainly due to adenoidal hypertrophy. This is to avoid a compensatory hyperplasia of the palatine tonsils post-adenoidectomy, which may result in a future obstruction. Recurrent tonsillitis was more in the adult population (44.9%) than in the children (12.7%) and was the major indication of tonsillectomy in the adults. Many other studies have highlighted recurrent tonsillitis as the major indication for tonsillectomy in the adult population.[26,34] Native tonsillectomy with its varying complications is still a practice in this part of the globe.[35] About 4.1% of our study population aged between 6 and 18 years had emergency tonsillectomy because of post-native tonsillectomy bleeding. This set of patients had their tonsils tempered by quacks, with resultant uncontrollable tonsillar bleeds necessitating emergency tonsillectomy before hemostasis could be properly secured.

Post-operative pain (figure 2) was common in all our patients, for which they all had good intra- and post-operative pain management using opiate analgesics, non-steroidal anti-inflammatory drugs, and paracetamol, as reported in other pieces of literature.[26,36,37] Ice cream or cold fluid diet was commenced a few hours after surgery when patients fully recovered from anesthesia. Tolerable pain was achieved within 48-72 hours post-operatively and is similar to findings by Amutta et al.[26] Most patients were discharged within 24-48 hours after surgery, except those with associated co-morbidities. Referred otalgia has been reported as a post-adenotonsillectomy complication.[38] About 15.4% of the patients in this study experienced referred otalgia either unilateral or bilaterally, which is due to the shared innervation of the 2 structures. The concept of revision adenoidectomy and factors enhancing recurrent adenoids have been reiterated.[39] In our study, recurrent adenoid (1.0%) was a noted complication. It occurred mainly in patients who presented with congenital adenoids and subsequently had surgery before the age of 1 year. The durations before recurrence of the adenoids with marked obstructive symptoms were between 6-9 months post-adenoidectomy. As a result, adenoidectomy in children < 1 year was performed only in inevitable cases of severe obstructive sleep apnoea. Their parents/guardians were always properly counseled on the possibility of recurrence. Other complications included primary haemorrhage (0.8%), secondary infection (1.0%), velopharyngeal insufficiency (2.5%), and halitosis (4.0%), which are all reported in literature.[26]

Except for those whose histological diagnosis suggested tonsillar malignancy (1.7%), and were subsequently referred for proper oncological care, all the other patients had complete resolution and deterrence of their presenting symptoms after the surgery. Those with sleep-disordered breathing recovered abruptly, with the elimination of all associated symptoms. The children with failure to thrive became healthier with desired weight again within 4 weeks of adenotonsillectomy.

An average of 105 adenotonsillar surgeries were performed annually in the study center. The monthly distribution of adenotonsillar surgeries showed that the frequencies of the surgeries peaked in April (11.8%), August (23.6%), and December (7.0%). The month of August had the highest peak (23.6%) followed by July (14.6%) and is usually the period for long vacations in the country's school academic program; unlike April and December which are shorter vacations. Most parents will prefer their children to have these surgeries during vacations because they want better recuperation at home before full academic work (figure 3)

Conclusion

The adenotonsillar surgeries were more prevalent amongst children than adult population. Commonest presenting complaints were snoring/mouth breathing and persistent nasal discharge for the children, and recurrent sore throat for the adult population. Sleep-disordered breathing was the major indication for adenotonsillar surgeries. These surgeries were of immense necessity to the patients as all presenting complaints and pre-operative diagnoses became completely resolved. Adenoidectomy or adenotonsillectomy should be considered as first-line surgical management of recalcitrant sleep-disordered breathing and persistent rhinorrhoea in children, while tonsillectomy as first-line management in recurrent tonsillitis.

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