"COMPARISION OF NASOPHARYNGEAL ASSESSMENT AND TYMPANOMETRIC EVALUATION OF EUSTACHIAN TUBE DYSFUNCTION FOLLOWING CONVENTIONAL AND ENDOSCOPIC ASSISTED ADENOIDECTOMY"

By

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DISSERTATION SUBMITTED TO

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH, KOLAR

In partial fulfilment of the requirements for the degree of

MASTER OF SURGERY

in

OTORHINOLARYNGOLOGY

Under the guidance of

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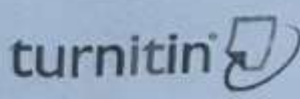

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DR. B. SRIPARNA SWATHI

ABSTRACT

Background: Adenoid hypertrophy is a frequent cause of nasal blockage and Eustachian tube dysfunction (ETD) in children. While conventional adenoidectomy is widely practiced, endoscopic-assisted techniques offer improved visualization and precision. This study compares results of adenoidectomy performed conventionally and with endoscopic assistance with respect to middle ear function and residual adenoid tissue. **Objectives:** To evaluate and compare Eustachian tube pressures, tympanometric findings, and residual adenoid tissue following conventional and endoscopic-assisted adenoidectomy. **Methods:** Between May 2023 -October2024, a prospective observational study was conducted at R.L. Jalappa Hospital and Research Centre. A total of 52 patients aged 3 to 18 years were randomly divided into two groups: Group A received traditional curettage adenoidectomy, whereas Group B received endoscopic-assisted adenoidectomy. Tympanometry was done before surgery, as well as on days 1 and 30 afterward. Postoperative nasopharyngeal assessment for remnant tissue was conducted via trans nasal endoscopy. The data was analyzed using SPSS version 20, and the statistical significance level was set at $p < 0.05$.

Results: Endoscopic-assisted adenoidectomy showed significantly better outcomes in tympanometric parameters, hearing thresholds, and compliance by the 30th postoperative day ($p = 0.008$, $p = 0.019$). In comparison to the conventional group (61.5%), the endoscopic group had considerably less residual adenoid tissue ($p = 0.012$). Tympanogram normalization was substantially higher in the endoscopic group on postoperative day 1 ($p = 0.032$) and day 30 ($p = 0.042$). Residual tissue was most commonly located at the pharyngeal roof in the conventional group.

Conclusion: Compared to traditional curettage, endoscopic-assisted adenoidectomy is more effective in improving Eustachian tube function, ensuring better hearing outcomes, and minimizing residual adenoid tissue. It should be considered the preferred surgical technique, particularly in patients with associated ETD or recurrent middle ear pathology.

Keywords:

Adenoidectomy , endoscopic assisted adenoidectomy , conventional adenoidectomy, middle ear function , tympanometry, middle ear pathology,

LIST OF ABBREVIATIONS

S.NO	ABBREVATION	Expansion
1	FDC	Follicular Dendritic Cells
2	GC	Germinal Centre
3	AH	Adenoid Hypertrophy
4	IL	Interleukin
5	TNF- α	Tumour necrosis factor A
6	IFN-γ	Interferon-Γ
7	PAMPs	Pathogen-Associated Molecular Patterns
8	GERD	Gastro-Esophageal Reflux Disease
9	OSAS	Obstructive Sleep Apnoea Syndrome
10	HIV	Human Immunodeficiency Virus
11	ADHD	Attention-Deficit/Hyperactivity Disorder
12	OME	Otitis Media With Effusion
13	ET	Eustachian Tube
14	MEP	Pressure in the middle ear
15	ETD	Eustachian tube Dysfunction
16	SPSS	Statistical Package For Social Science
17	POD	Post Operative Day

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INTRODUCTION

INTRODUCTION

Adenoid hypertrophy is frequently encountered problem in pediatric population throughout the world with an annual prevalence of 34.46%[1]. It manifests with a spectrum of clinical symptoms and signs include nasal discharge, nasal blockage, mouth breathing, snoring, sleep apnea, hypo nasal speech, orofacial development abnormality, rhinosinusitis, recurrent otitis media, and otitis media with effusion.. [1-3]

Although it can be managed by medical and surgical modalities, Adenoidectomy is treatment of choice for symptomatic adenoid hypertrophy. Adenoidectomy is a frequently performed surgery in children, involving the removal of nasopharyngeal lymphoid tissue1[4]. The procedure was initially described in 1885 as a curettage (conventional) adenoidectomy [5]. The standard technique for this procedure uses an adenoid curette or adenotome [6].

St. Clair Thompson curette typically used in conventional adenoidectomy procedure to remove the complete adenoid tissue. This method has been used for many years and remains a common approach. Endoscopic adenoidectomy, on the other hand, utilizes endoscopes to provide enhanced visualization and facilitate more complete removal of the adenoid bulk. Conventional adenoidectomy, the age-old practice which is often quoted as blind procedure and associated with significant risk factors like injury to surrounding structures like Eustachian tube leading to otitis media with hemorrhage, pharyngeal muscle laceration, effusion,, resulting in recurrence of symptoms.

After the procedure, surgeons use indirect techniques like digital palpation or a laryngeal or dental mirror to look for any leftover tissue. But this method's primary drawback is that it is rather "blind," which makes it difficult to confirm that all tissue has been removed[7]. If the procedure is performed by a less experienced surgeon, particularly in challenging places like the choanal and tubal regions, there is a greater likelihood of leaving behind leftover tissue. Attempting to remove this remaining tissue runs the danger of harming the pharyngeal muscles or the Eustachian tube. Different studies have shown varying rates of residual tissue, with Saxby and Chappel et al [8,9] reporting a rate of 68%, while Ezzat et al., [10] found it to be 14.5%. In cases where the adenoid is large or extends into the intranasal or nasopharyngeal area, some hyperplastic tissue may remain following conventional curettage [11].

Post-operative assessment following conventional adenoidectomy includes evaluating the nasopharynx for the presence of any adenoid remnants . A 70-degree endoscope can be used to visually inspect the area for remaining tissue. Palpation of the nasopharynx is also performed to help ensure adequate removal of the adenoids, although this is done without direct visualization. These methods help to determine the completeness of the adenoidectomy and identify any potential complications.

Eustachian tube dysfunction is among the first side effects following adenoidectomy. It results in otalgia and aural fullness, which can then create further problems including otitis media with effusion and hearing loss. Tympanometry is the most reliable method to assess Eustachian tube pressures. The objective audiological examination known as tympanometry is used to evaluate Eustachian tube function and middle ear pressure. Middle ear effusion, a common sign of

Eustachian tube dysfunction, can be found with the aid of this test. Tympanometry data are displayed as curves that are categorized into kinds based on their morphology. Each of these curves depicts a different aspect of middle ear function. Tympanometry is a valuable tool in evaluating the effectiveness of adenoidectomy in restoring normal Eustachian tube function.

Complete removal of adenoids is difficult when extending to intranasal or posterior choana due to which residual tissue is left which cause bleeding and recurrence. Therefore, complete adenoidectomy poses a challenge and warrants a combination of various techniques. In view of adequate disease clearance, newer methods like endoscopic assisted, coblation, Radiofrequency ablation, microdebrider's are introduced. Transnasal endoscopic examination is a feasible and appropriate technique of adequate visualization of nasopharynx following conventional adenoidectomy. Therefore, comparing the more recent methods in relation to Eustachian tube pressures and evaluating the nasopharynx to look for the position of remnant tissues, aids in improving the results and better outcome.

OBJECTIVES

OBJECTIVES

- To assess the Eustachian tube dysfunction by tympanometry evaluation after both traditional and endoscopic adenoidectomy.
- To evaluate the differences in Eustachian tube pressures between curettage adenoidectomy and endoscopic aided adenoidectomy.
- To assess the nasopharynx regarding location of remnant tissue following conventional and endoscopic assisted adenoidectomy.
- To compare the outcomes of traditional and endoscopically assisted adenoidectomy in relation to the aforementioned criterion.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Santorini discovered the nasopharyngeal lymphoid tissue, commonly referred to as "Luschka's tonsil," in 1724.[12] In 1870, Wilhelm Meyer used the name "adenoid" to describe what he referred to as "nasopharyngeal vegetations." The adenoid is part of Waldeyer's ring of lymphoid tissue, which is located near the upper respiratory tract's entrance. In early childhood, it serves as the primary site for the immune system's response to inhaled antigens. Historically, the adenoid has been linked to infection, upper airway blockage, and, more recently, the ongoing issue of otitis media with effusion.

The apex of the lymphoid adenoids is oriented toward the nasal septum, while the base is oriented toward the nasopharyngeal roof and posterior wall. They dangle from the roof of the nasopharynx and are oblong in shape. The adenoids are a crucial part of Waldeyer's ring. The adenoid, sometimes referred to as the nasopharyngeal tonsil, is located where the roof and posterior wall of the nasopharynx converge. It is situated just below and above the posterior nasal apertures (choanae) and adjacent to the lymphoid tissue that surrounds the nasopharyngeal openings of the eustachian tube. The Waldeyer's ring with adenoids is seen in

Figure 1.

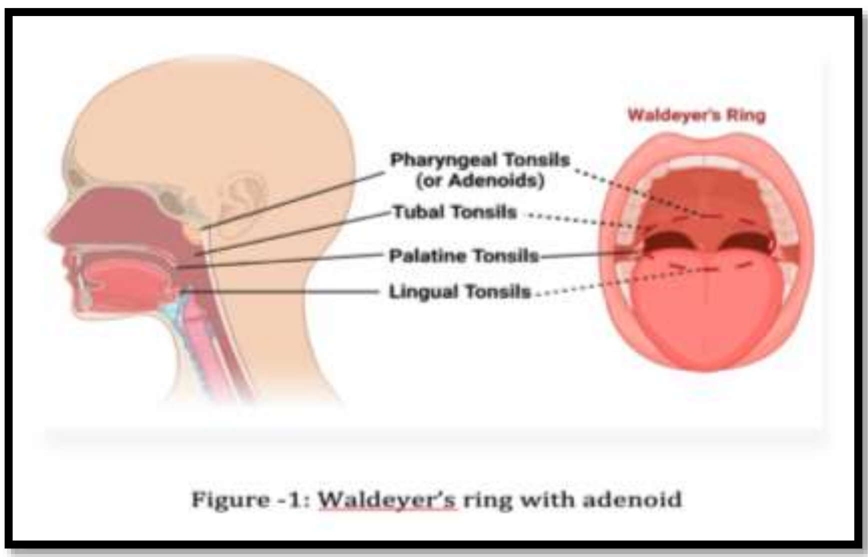


Figure -1: Waldeyer's ring with adenoid

Blood supply and lymphatics:

Blood supply and lymphatics: The basisphenoid artery, ascending pharyngeal artery, ascending palatine artery, pharyngeal branch of the maxillary artery, tonsillar branch of the facial artery, and artery of the pterygoid canal are some of the sources of the adenoids' arterial supply. The pharyngeal plexus, which joins the pterygoid plexus, facilitates venous drainage. These plexuses eventually empty into the facial and internal jugular veins. The lymphatic outflow from the adenoids is directed via the retropharyngeal lymph nodes and the pharyngomaxillary gap lymph nodes.

Embryogenesis of adenoids:

The second neck pouch, when the solid epithelial nucleus pierces the surrounding mesenchyme, is where the tonsils' medial epithelial surface begins. These nuclei disintegrate throughout time to create little invasions known as crypts. Between weeks 16 and 17, lymphocytes and lymphoid stem cells penetrate the deeper layers of connective tissue to produce the follicles and germinal centres. As lymphatic components continue to grow, they

fuse with the deepest connective tissue layers to form thin tonsil capsules. The tonsils grow several branching rings after birth, usually between 10 and 30 per tonsil. Fibrovascular nuclei encircled by lymphoid tissue are found within these crypts. The tonsils' epithelial surface is composed of non-keratinized squamous cell epithelium, whereas the mucosa has lymphatic tissue and a flat, squamous epithelium. The invasive nature of the basement membrane increases the surface area that can be used for direct foreign particle trapping and antigen sampling. In contrast to lymph nodes and the spleen, the palatine tonsils do not have the lymphatic veins required for fluid outflow.[13,14,15].

While the pharyngeal tonsils still include mucous folds, they have fewer crypts than the palatine tonsils. According to histology, the pharyngeal tonsils are primarily made up of pseudostratified ciliated columnar epithelium, with a smaller amount of lymphoid follicles. Connective tissue septa split the tissue into four to six segments, and a capsule separates the pharyngeal tonsils from the surrounding bone. Figure-2 shows the microscopic histological features of adenoids.

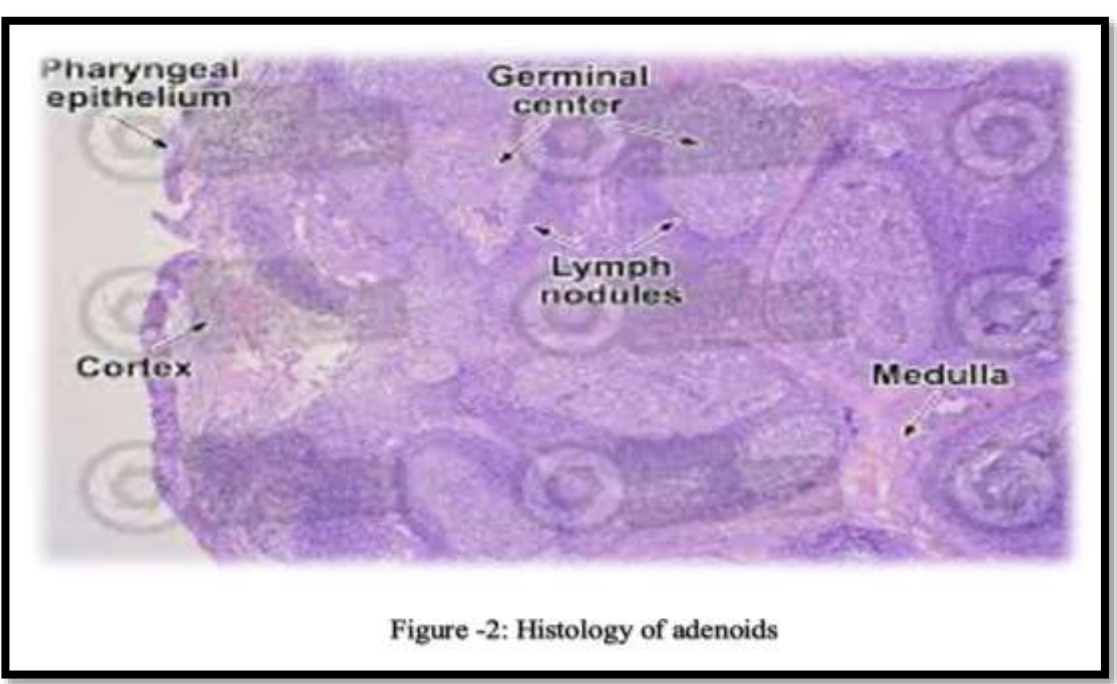


Figure -2: Histology of adenoids

ROLE OF ADENOIDS

The lymphoid tissue of Waldeyer's ring creates antibodies; specifically, the adenoid produces B-cells, which subsequently produce IgG and IgA plasma cells. Young children's exposure to antigens through their lips and noses has a significant impact on their naturally developed immunity. Development of 'immunological memory' in early life is believed to be influenced by adenoid.[16] . Early removal of the adenoid may have negative effects on the immune system[15]. The clinical and structural basis of hypertrophy is the enlargement of the lymphoid tissue's germinal centers and lymphoid follicles[17]. According to research, early adenoidectomy may negatively affect serum IgG antibody formation, impairing pneumococcus protection[18]. However, 4-6 weeks after surgery, there has been a slight drop in IgG, IgA, and IgM levels; however, adenotonsillectomy does not seem to cause a significant immunological deficit in children aged 4–10[19]. This decline is believed to be the immune system's compensating reaction to less prolonged exposure to antigens. No drop in IgE levels has been observed following adenoidectomy, while a decrease in IgG may indicate less antigenic stimulation[20,21]. Since many studies also involve children having tonsillectomy, the overall evidence regarding whether adenoid removal alone impairs immune function is equivocal[22].

Adenoids are present from early fetal development, grow until around the age of 6, and then gradually shrink, typically disappearing completely by the age of 16. As a result of heightened immunological activity, the adenoids enlarge over time, which can lead to adenoid hypertrophy. This enlargement can also occur due to acute or chronic flare-ups caused by viral or bacterial pharyngitis [23,24].

Adenoid hypertrophy is more prevalent in children than in adults since the adenoids gradually recede and decrease during puberty. A recent meta-analysis found that adenoid hypertrophy was present in 34.46% of children and adolescents in a representative, randomized sample.[1,25,26].

PATHOGENESIS OF AH

The adenoid usually enlarges between the ages of 3 and 4 in childhood, as children are more prone to respiratory infections at this stage [27]. As the child matures, the adenoid typically shrinks and may completely disappear during puberty. This early decrease in adenoid size is associated with the rapid expansion of the nasopharyngeal airway. In adults, adenoid tissue is rarely present, and when it is, it is typically in an atrophic condition.

B lymphocytes develop and differentiate at the lymphoid follicle's germinal center (GC). Activated precursor B cells either migrate to the GC and become transitory extrafollicular plasma cells or mature into centroblasts in the dark zone. Centroblasts undergo somatic hypermutations and clonal development before becoming centrocytes in the light zone. At this point, either follicular helper T cells work with follicular dendritic cells (FDCs) to select the cells, or apoptosis is initiated. After that, these cells differentiate further into either plasma cells or long-term memory B cells[28] .

Figure 3 explains the composition of immune cells and the organization of the various human palatine tonsil compartments. [28]

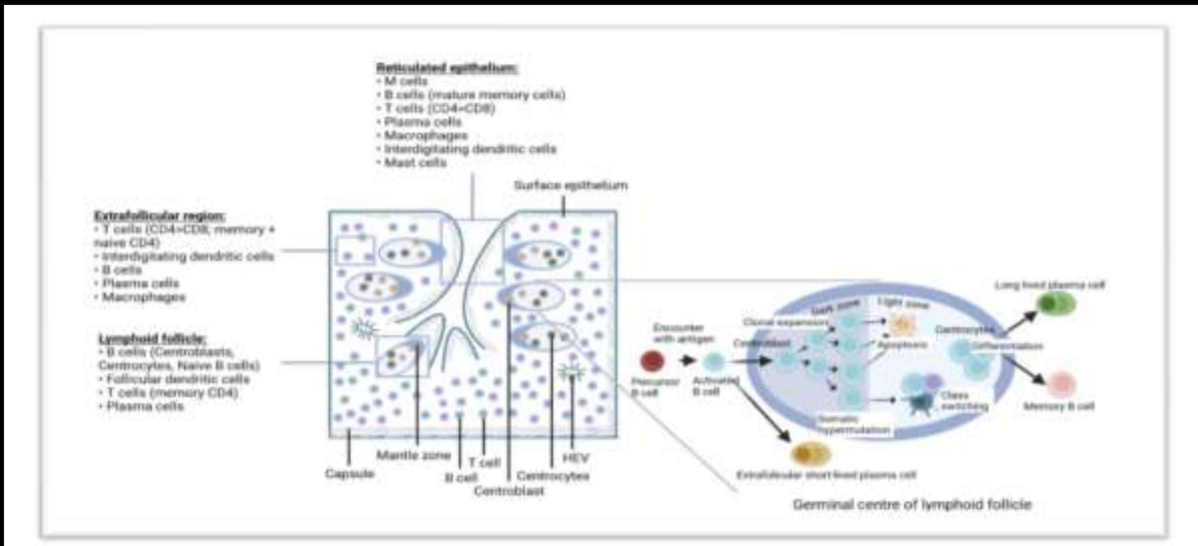


Figure-3 The diagram illustrates the structure and immune cell composition of various compartments within the human palatine tonsils. In the germinal center (GC) of the lymphoid follicle, B cells undergo maturation and differentiation. Activated precursor B cells either become short-lived extrafollicular plasma cells or migrate to the GC, where, in the dark zone, they develop into centroblasts. Following clonal expansion and somatic hypermutations, centroblasts transition into centrocytes in the light zone. Subsequently, these cells either undergo apoptosis or are selected by follicular helper T cells (Tfh) in conjunction with follicular dendritic cells (FDCs) and continue to differentiate into long-term memory B cells or plasma cells.

Our understanding of the causes of AH in children is still lacking. Most likely, they have something to do with immunological reactions, hormones, or genetics[27]. Age, sex, heredity, scrofula, lymphatic temperament, recurrent colds, nasal anomalies, acute infectious fevers, microbes, climate, and socioeconomic position are the primary factors that have been found[29]. Altered cytokine production is one of the immune disturbances observed in conditions like adenoid hypertrophy (AH). For instance, it has been shown that adenoid tissue has an elevated level of interleukin (IL)-32, which may hasten the development of AH by promoting the production of proinflammatory cytokines and inducing pyroptosis in human nasal epithelial cells. The NOD1/2/TLR4/NLRP3 pathway, which includes leucine-rich repeat and pyrin domain-containing proteins, toll-like receptors, and proteins with nucleotide-binding oligomerization domains, mediates this process[30]. Children with AH have been found

to possess higher concentrations of proinflammatory cytokines, such as intercellular adhesion molecule-1, interferon-γ (IFN-γ), high-sensitivity C-reactive protein, IL-1, IL-10, and tumor necrosis factor α (TNF-α)[31]. Genetic factors also play a role, including polymorphisms in genes that code for proteins such as SCGB1D4 (which regulates immune cell chemotaxis in response to IFN-γ), as well as TLR2 and TLR4, which are critical for immune system regulation by recognizing pathogen-associated molecular patterns (PAMPs) on pathogens[32,33]. The immune system and the natural flora of the adenoid are in a balanced state. This balance can be disrupted, nevertheless, by recurring bacterial and viral infections as well as pathogen colonization. Hypertrophic alterations in the adenoids are frequently brought on by allergies or recurrent upper respiratory tract infections. [34,35].

The most prevalent bacteria in adenoid tissue are Staphylococcus aureus, Streptococcus pneumoniae, Streptococcus pyogenes, and Haemophilus influenzae. Chronic infection instances are often associated with anaerobic bacterial infections[36]. Additionally, adenoid hypertrophy (AH) may develop as a result of exposure to gastric acid caused by gastro-oesophageal reflux disorder (GERD), especially in newborns and young children. Another significant risk factor for AH is passive smoking, which has been linked to the condition[37] .

CLINICAL FEATURES

When airways are blocked by adenoids, it can result

- Obstructive sleep apnoea syndrome (OSAS).
- Chronic sinusitis.
- Otitis media externa
- Formation of malocclusions and developmental anomalies in the craniofacial area.
- Errors in articulation and disruptions in speech.
- Disorders of intellectual and physical development.

A thorough paediatric ENT evaluation, with an emphasis on symptoms associated with middle ear problems and nasal blockage, should be part of the medical history. Inquiring specifically about food patterns, sleep issues, and any atopic symptoms is crucial. Additionally, an atopy family history could be important. It is essential to have a thorough history of all medications, whether they are prescribed, over-the-counter, or complementary or alternative. Since conventional coagulation tests may not uncover mild von Willebrand disease, it is crucial to rule out any family history of unusual bleeding or bruising in children being evaluated for adenoidectomy. Children with Down syndrome should also be evaluated for possible heart problems and atlantoaxial instability.

The amount of space in the nasopharynx also affects the symptoms and indicators, besides the adenoid tissue's dimensions. A variety of symptoms, such as general, ear, or nose symptoms, might result from enlarged and inflamed adenoids.

1. NASAL SYMPTOMS

(a) Nasal obstruction is the commonest symptom. This leads to mouth breathing. Nasal obstruction also interferes with feeding or suckling in a child. As respiration and feeding cannot take place simultaneously, a child with adenoid enlargement fails to thrive.

(b) Nasal discharge: It is partly due to choanal obstruction, as the normal nasal secretions cannot drain into nasopharynx and partly due to associated chronic rhinitis. The child often has a wet bubbly nose.

(c) Sinusitis :Chronic maxillary sinusitis is commonly associated with adenoids. It is due to persistence of nasal discharge and infection. Reverse is also true that a primary maxillary sinusitis may lead to infected and enlarged adenoids.

(d) Epistaxis: When adenoids are acutely inflamed, epistaxis can occur with nose blowing.

(e) Voice change. Voice is toneless and loses nasal quality due to nasal obstruction.

2. AURAL SYMPTOMS

(a) Tubal obstruction. Adenoid mass blocks the eustachian tube leading to retracted tympanic membrane and conductive hearing loss.

(b) Recurrent attacks of acute otitis media may occur due to spread of infection via the eustachian tube.

(c) Chronic suppurative otitis media may fail to resolve in the presence of infected adenoids.

(d) Serous otitis media. Adenoids form an important cause of serous otitis media in children. The waxing and waning size of adenoids causes intermittent eustachian tube obstruction with fluctuating hearing loss. Impedance audiometry helps to identify the condition.

3. GENERAL SYMPTOMS

(a) Adenoid facies. Chronic nasal obstruction and mouth breathing lead to characteristic facial appearance called adenoid facies. The child has an elongated face with dull expression, open mouth, prominent and crowded upper teeth and hitched up upper lip.

Nose gives a pinched in appearance due to disuse atrophy of alaenasi (Figure-4). Hard palate in these cases is highly arched as the moulding action of the tongue on palate is lost.

(b) Pulmonary hypertension. Long-standing nasal obstruction due to adenoid hypertrophy can cause pulmonary hypertension and cor pulmonale.

(c) Aprosexia, i.e. lack of concentration.

Adenoid hypertrophy manifests as nasal discharge, mouth breathing, snoring, sleep apnea, hyponasal speech, otitis media with effusion, recurrent otitis media, and rhinosinusitis. Chronic mouth breathing because of adenoid hypertrophy has been shown to produce malocclusion and maxillofacial growth abnormalities. Adenoid hypertrophy results in ADENOID FACIES in children (Figure-4). This consists of longer facial height as well as retrognathic mandible [38] .

Figure-4: Adenoid facies

Clinical examination

Prior to an anterior rhinoscopy, the external nose should be examined. A skin crease in the supratip area may be a sign that you frequently irritate your nose due to rhinitis symptoms.. A halogen light otoscope with a big speculum can be used to perform anterior rhinoscopy on young children.

It is possible to view the adenoid mass in the postnasal area of certain young toddlers by utilizing a mirror. A stiff or flexible nasopharyngoscope is very helpful for inspecting the nasopharynx in a cooperative child.. The size of the adenoids and the degree of damage to the nasopharyngeal airway can be seen on a soft tissue lateral radiograph of the nasopharynx. A thorough nasal examination should always be performed in order to rule out other potential causes of nasal blockage. The clinical grading of adenoid is summarized in table-1. The nasal endoscopy-based adenoid hypertrophy grading shown in figure-5 [39].

Table-1 clinical grading of adenoid size [39]

Grade	Description
I	Adenoid tissue filling 33% of the vertical portion of the choanae
II	Adenoid tissue filling 2/3 to 2/3 of the choanae
III	Adenoid tissue filling 2/3 to almost total obstruction of the choanae
IV	Total blockage of the choanal opening extending into nasopharynx

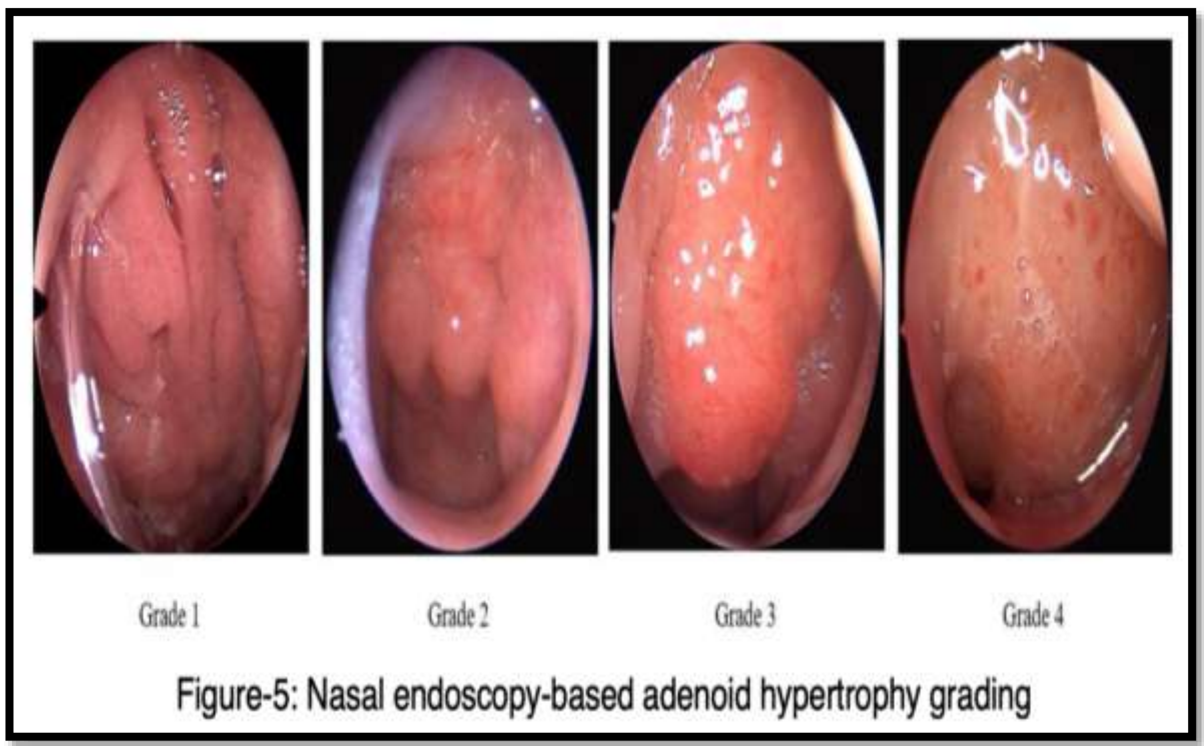


Figure-5: Nasal endoscopy-based adenoid hypertrophy grading

The evaluation of adenoid status involves assessing symptoms, signs, and carrying out particular investigations in order to distinguish adenoid hyperplasia from other conditions that may present with similar symptoms, such as rhinitis, sinusitis, deviated septum, reflux disease, or lymphoproliferative disorders. (as described in Table 2).

Cause	*Symptoms*	*Signs*	*Investigations*
Obstruction	-Obligate oral breather -Sleep disordered breathing -Change in tone of voice	-Hyponasality -Adenoid facies	-Endoscopy of the nose and nasopharynx -X-ray lateral view skull -Polysomnography
Infection	-Nasal and postnasal discharge -Halitosis -Recurrent cough (increase at night) -Possible recurrent vomiting and gastric upset	-Nasal and postnasal discharge, clear or colored -Possible cobblestone appearance of posterior pharyngeal wall	-CT scan, nasopharynx and sinuses -24-h pH probe acid monitoring

Table-2: Evaluation of adenoid

The **typical findings of adenoid on lateral skull** X-ray will often show an enlarged, obstructing mass in the nasopharyngeal area, with associated narrowing of the airway, which is the hallmark of adenoid hypertrophy as shown in figure-6 and figure-7.

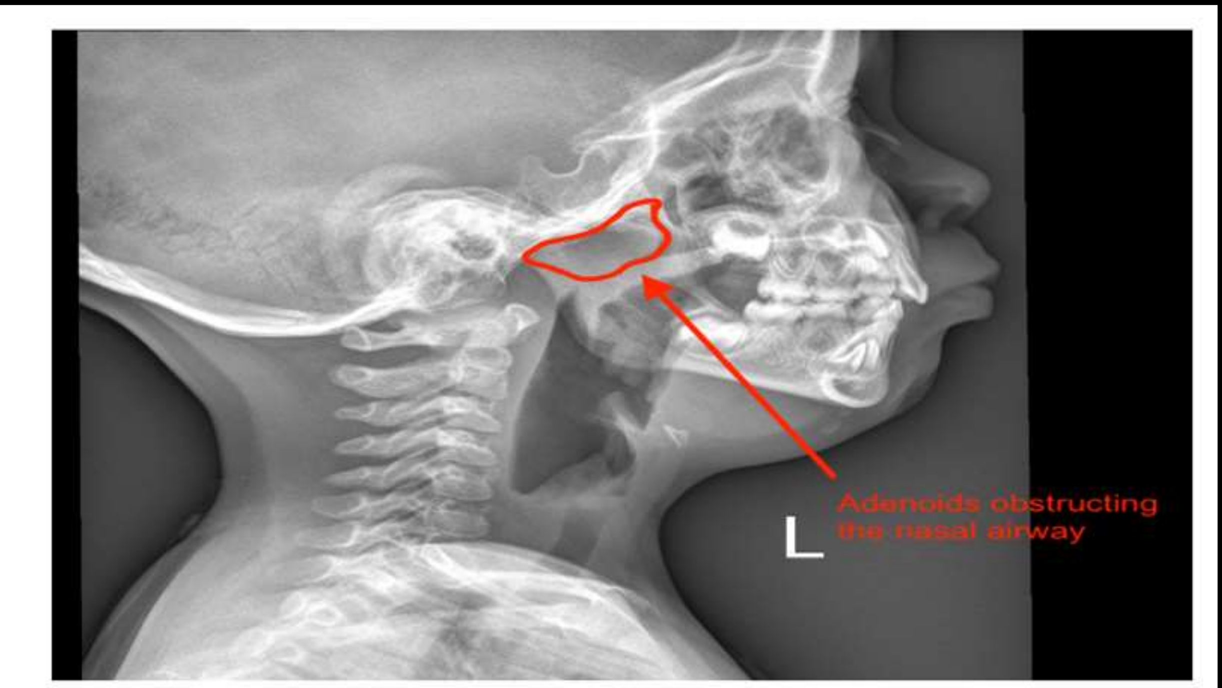


Figure-6 Enlarged adenoids (red arrows) in a 7-year-old girl. There is very little breathing space in the nasopharynx.

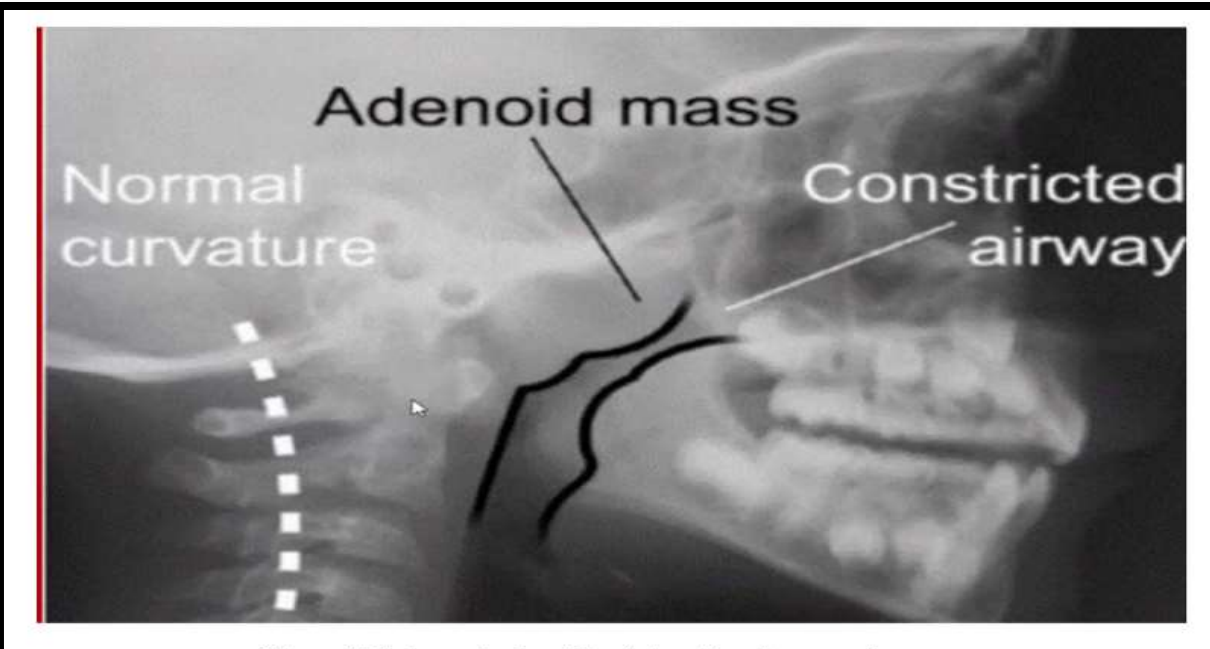


Figure-7 Enlarged adenoids obstructing the nasopharynx.

PRE-OPERATIVE INVESTIGATIONS

Routine pre-operative tests are not necessary for children classified as ASA grade 1 or 2 before adenoidectomy. However, when applicable, special tests are needed for diseases such congenital heart disease, thalassemia, sickle-cell disease, and Down syndrome. Local pediatric recommendations should be followed for managing type 2 diabetes mellitus in children who are having elective surgery.

DIFFERENTIAL DIAGNOSIS

The primary signs of adenoid hypertrophy are obstruction of the nose and malfunction of the Eustachian tube. Therefore, other causes of these non-specific symptoms include choanal atresia, pyriform aperture stenosis, allergic rhinitis, acute or chronic sinusitis, nasal polyposis, intranasal encephalocele, nasal dermoid, nasopharyngeal neoplasm, acute otitis media, chronic serous otitis media, cholesteatoma, nasopharyngeal malignancy, inverting papilloma, and Human immunodeficiency virus infection.When a young adult or adult exhibits substantial and symptomatic adenoid tissue, the doctor should be more inclined to rule out neoplastic aetiology in addition to other systemic aetiologies like HIV or mononucleosis..

Complications of adenoid hypertrophy:

Untreated adenoid enlargement can result in sleep-disordered breathing and/or persistent middle ear effusion, which are frequently associated with complications of adenoid hypertrophy. Due to conductive hearing loss brought on by a persistent middle ear effusion, children with this syndrome are susceptible to speech, language, and/or learning challenges. Furthermore, adenoid hypertrophy increases the risk of sleep apnea and sleep-disordered breathing, which have been linked to mental health conditions including depression and

attention-deficit/hyperactivity disorder (ADHD) and can result in behavioral issues, bedwetting, and pulmonary hypertension.[40,41,42] .

For acute and chronic infectious adenoid hypertrophy, the first line of treatment is medical management with antibiotics. Amoxicillin is effective for uncomplicated acute adenoiditis, but for chronic or recurrent infections, An inhibitor of beta-lactamases, like clavulanic acid, must be used. Those who are allergic to penicillin's can use azithromycin or clindamycin instead. Nasal steroids have been proposed as an extra therapeutic alternative, and some short-term success has been documented; nevertheless, there is conflicting evidence about their overall efficacy. The reduction in adenoid size with these medications depends on consistent, long-term daily use [43,44,45].

Patients who have symptomology of underlying inhalant allergy, may benefit from anti histamine therapy and intranasal steroids. When suspected, allergy evaluation is warranted to determine immunologic desensitization. Chronic symptoms can be reversed by surgical intervention i.e, ADENOIDECTOMY.

Under general anaesthesia, an adenoid curette is used to remove nasopharyngeal lymphatic tissue during an adenoidectomy. In 1868, Danish physician William Meyer performed the treatment for the first time. Meyer also suggested using a ring knife for the adenoidectomy[46] and developed posterior rhinoscopy to diagnose adenoid hypertrophy. The first contemporary adenoid curette[46] was described by Jacob Gottstein in 1885[46].

Currently, otitis media with effusion, sleep apnoea, nasal obstruction, and recurrent otitis media are the most frequent causes of adenoidectomy in patients with proven adenoid hypertrophy.

Over the years, surgical techniques and instruments have significantly advanced. The traditional method using an adenoid curette or adenotome has been enhanced with the introduction of endoscopic sinus surgery tools, improving patient outcomes and raising surgeon satisfaction.[47]. The integration of modern technology into surgical methods has advanced significantly over the past century. There are various types of adenoidectomy, including the conventional curettage method, endoscopic-assisted, power-assisted, and microdebrider techniques.

When doing a traditional curettage adenoidectomy, the surgeon palpates the adenoid tissue without looking directly at the operative site. Sometimes, the adenoids extend into the choana, making complete removal challenging with just an adenoid curette. Intraoperative bleeding can occur due to residual tissue, making its removal particularly difficult. Figure-8 shows the classical curette technique.

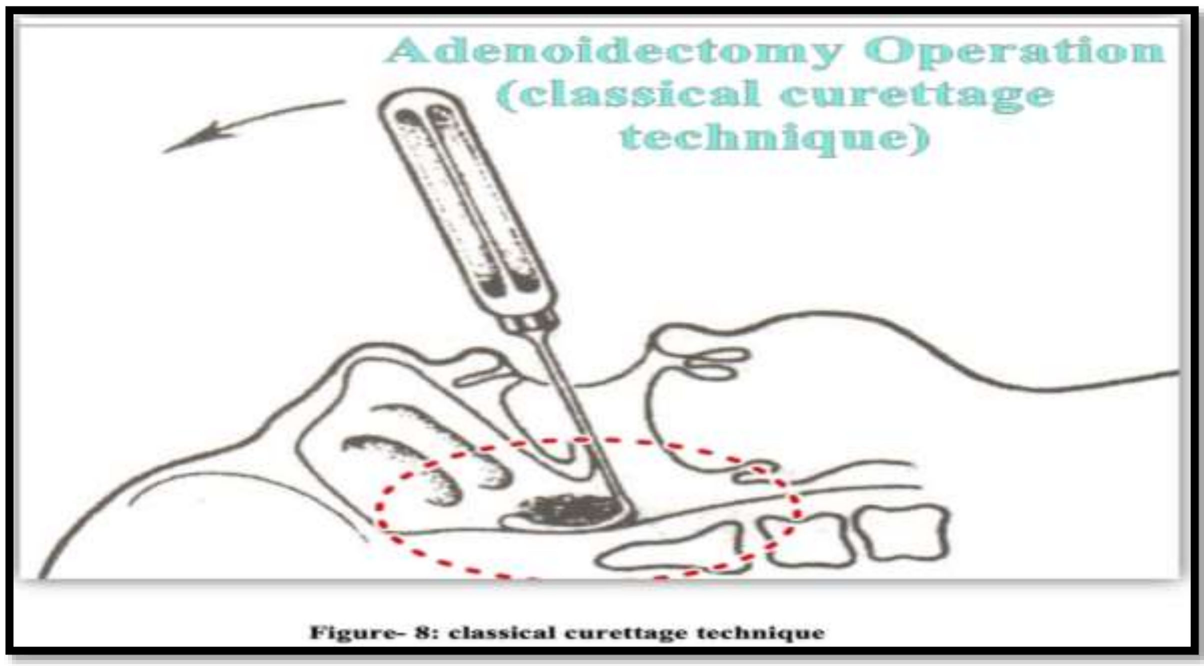


Figure- 8: classical curettage technique

In 2002, Havas and Lowinger were the first to examine the adenoid tissue with intranasal extension obstructing the choana under endoscopic view following a conventional adenoidectomy[48]. Following endoscopic adenoidectomy, recurrence is essentially nonexistent.[49]

Trans nasal endoscopy enhances the management of adenoidectomy by reducing pain, blood loss, recovery time, and surgical duration, thus guaranteeing a more thorough elimination of the adenoid tissue. It is an effective technique for evaluating any remaining adenoid tissue after a conventional curettage adenoidectomy. Figure-9 and 10 shows the endoscopy assisted adenoidectomy.

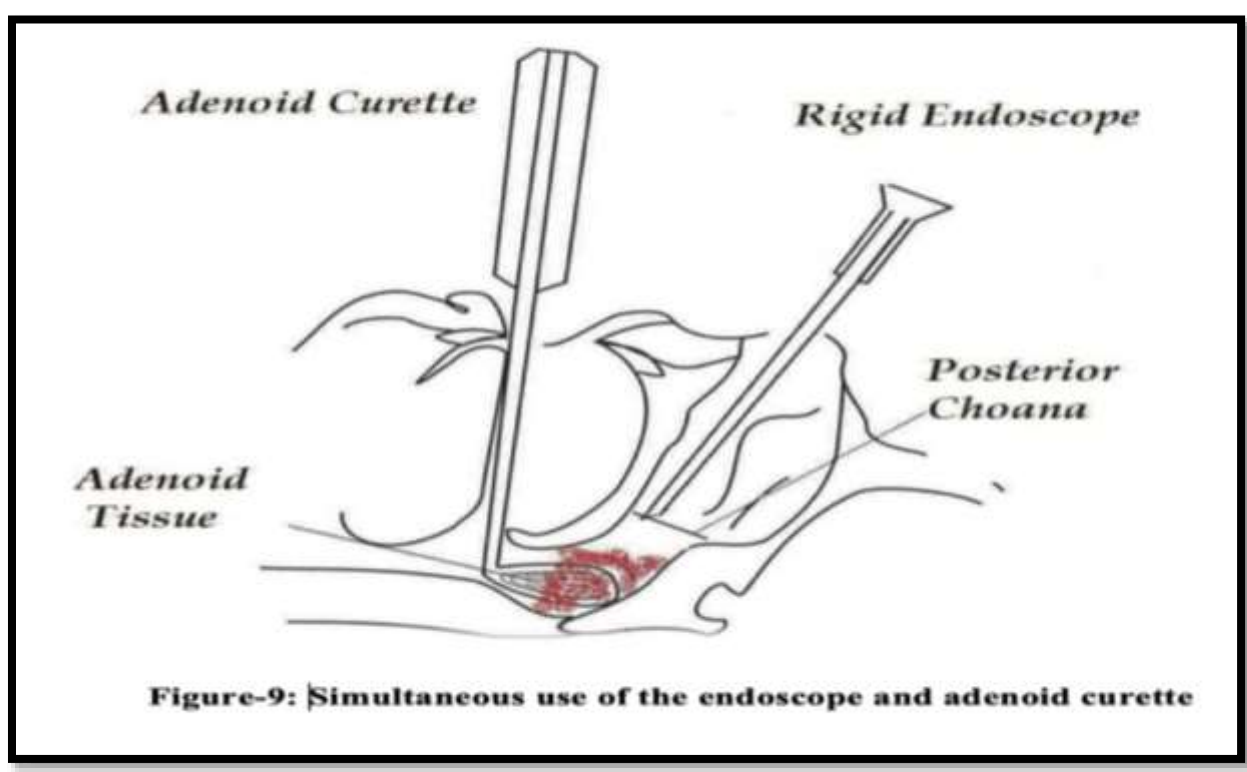


Figure-9: Simultaneous use of the endoscope and adenoid curette

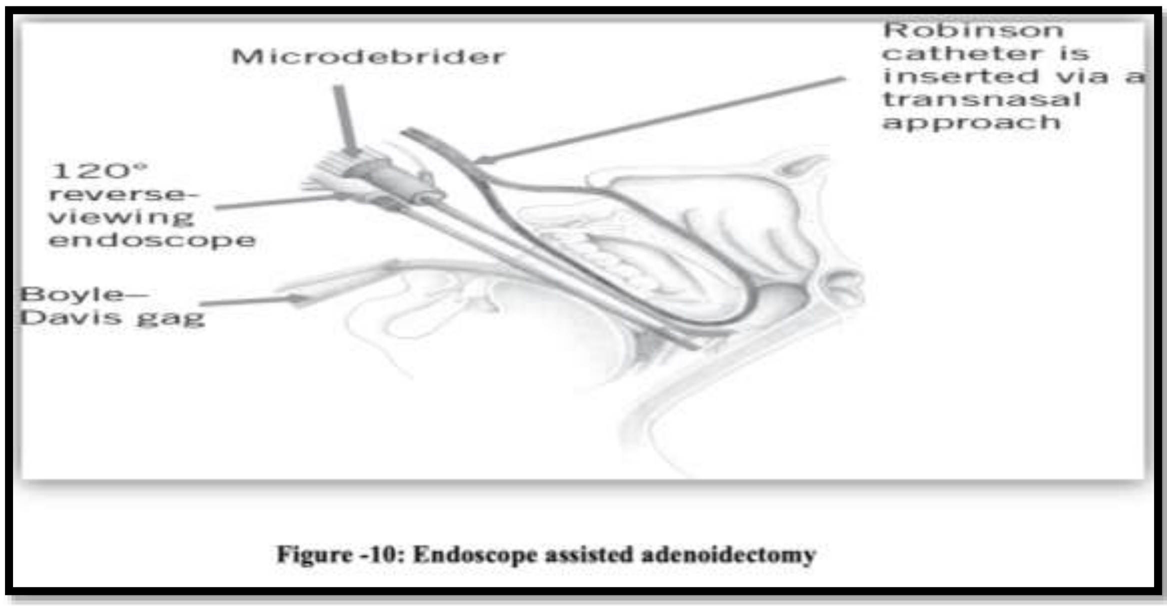


Figure -10: Endoscope assisted adenoidectomy

Surgical techniques

The patients were put in the Rose position with a pillow under their shoulders after being intubated orally while under general anaesthesia. During the procedure, a surgical cover kept the mouth and nostrils open, and a Crowe-Davis retractor acted as a mouth gag. The adenoid tissue was extracted by repeatedly carrying out the curettage process with an adenoid curette and the traditional curettage approach. Using a laryngeal mirror and digital palpation, residual tissue was examined. A 10 mm injector was used to irrigate the region through the nose with regular saline after it was determined that all of the adenoid tissue had been removed. After that, moistened gauze pads were inserted from the mouth into the nasopharynx, and for a few minutes, light pressure was given. After the adenoidectomy, a tonsillectomy was carried out if required.

A 0, 2.7 mm rigid fiber-optic endoscope with a video attachment was used to evaluate the nasal cavity and nasopharynx prior to the endoscopic adenoidectomy with a microdebrider. The process was carried out using the XPS Xomed Powered System, a microdebrider with a 2.9

mm Tricut blade inclined at 15° and straight-through suction irrigation. With automatic watering, the microdebrider was run in oscillating mode at 3000 rpm. The microdebrider cannula was moved from the mouth into the nasopharynx using the transnasal endoscopic view. The careful excision of adenoid tissue started in the choanal region and the nasopharyngeal posterior wall. The torus tubarius was carefully identified and safeguarded. After the tissue was removed, gauze pads soaked in ordinary saline were placed into the nasopharynx through the mouth and compressed for several minutes. If the bleeding didn't cease, coblator cautery was used. When tonsillectomy was required, the adenoidectomy was followed by the dissection procedure.

Surgical procedure

In order to perform an adenoidectomy, the patient must be under general anaesthesia and intubated either by orotracheal intubation or a laryngeal mask. Usually, the patient is placed with their head and neck extended in the Rose posture. In order to facilitate the removal of the adenoid bed, some otolaryngologists may employ shoulder support. This method may, however, raise the possibility of harming the posterior pharyngeal wall.

Using an adenoid curette, adenoidectomy was carried out in the traditional manner. The endoscopic method, on the other hand, uses an endoscope and an oscillating micro-debrider (Stryker: Hummer type) with saline irrigation that may work at till 2400 rpm to scrape and shave off the adenoid tissue using adenoidectomy blades. To stop the bleeding from the raw adenoid bed, bipolar cautery was used. To view the procedure, 2.7mm and 4mm nasal endoscopes were utilized.; access was usually

obtained through the opposing nostril. The operating ends of the instruments were visible when a 45–70 degree slanted scope was placed through the mouth cavity if the contralateral side could not be used[50].

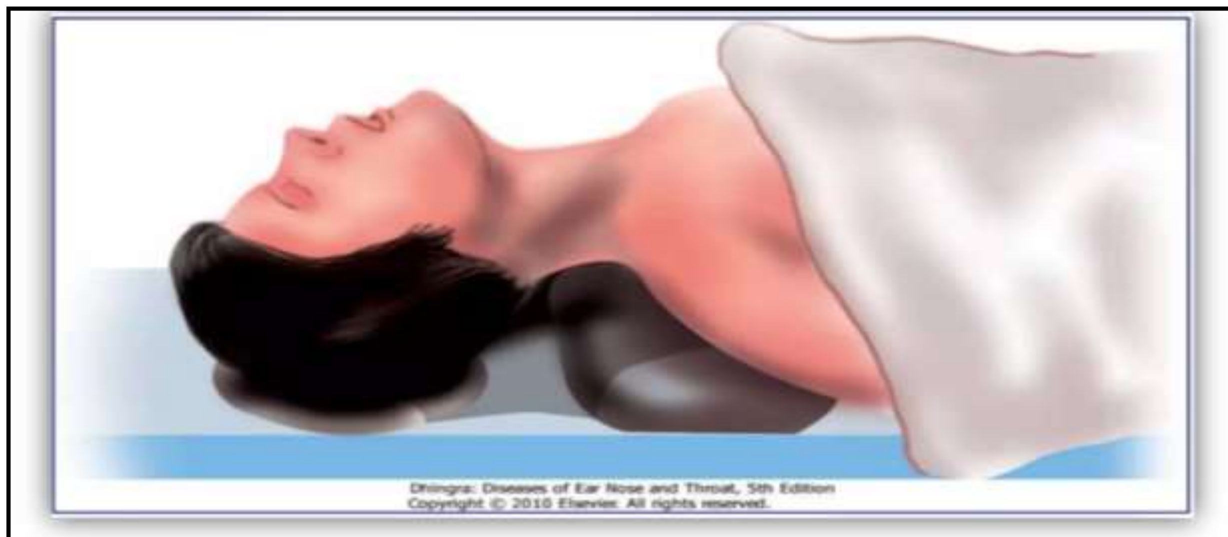


Figure-11: Rose's position for adenoidectomy. Neck is extended by a sand bag under the shoulders and the head is supported on a ring.

Steps of Operation

Conventional adenoidectomy:

The Boyle-Davis mouth gag is used. The nasopharynx should always be examined prior to the adenoids being removed in order to verify the diagnosis, assess the size of the adenoids mass, and push the lateral adenoid masses towards the midline. Digital palpation and retracting the soft palate with the tongue depressor's curved end are two methods for doing this. To engage the adenoids, a "adenoid curette with guard" of the proper size is inserted into the nasopharynx until its free edge hits the nasal septum's posterior border. It is then forced rearward. To prevent harm to the odontoid process, the head should be gently bent at this level.

Adenoid curette:

An adenoid curette is a surgical tool used to excise adenoid tissue during an adenoidectomy. It is available in two primary types: one with a guard (or cage) to secure the tissue and prevent aspiration, and one without a guard, allowing for more direct removal of the tissue. The figure-12 shows adenoid curette instrument.

During the adenoidectomy procedure, the patient is kept in a neutral supine position with their mouth open using a mouth gag. Like a dagger, the curette is held in place by the handle. After that, it is placed behind and above the soft palate in the oral cavity. Using a smooth, shaving action, the curette captures and removes the adenoid tissue.

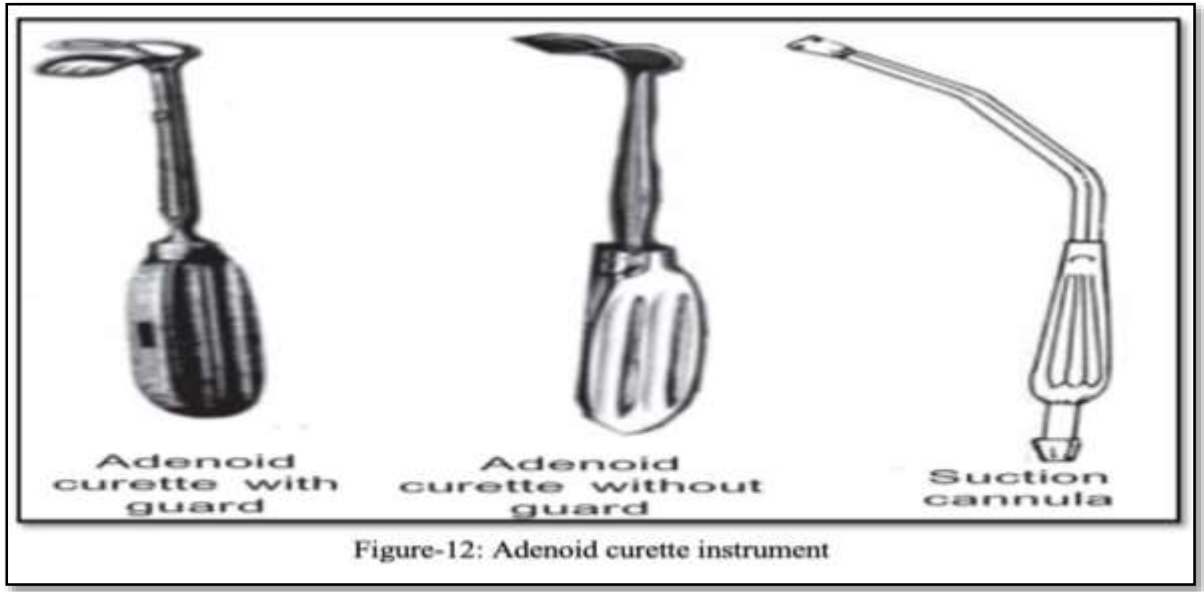


Figure-12: Adenoid curette instrument

Adenoids are removed by a gently sweeping motion. Smaller curettes are used in a similar manner to remove lateral lumps, and punch forceps are used to remove any remaining tiny tags of lymphoid tissue. Packing the region for a while creates hemostasis. Under the eye, persistent bleeders electrocoagulate. A postnasal pack is applied for a full day if the bleeding is still uncontrollable.

Endoscopic Adenoidectomy:

Previously, adenoidectomy was done in a blind fashion. The process can now be seen with a nasal endoscope. These days, a debrider operated under endoscopic control may remove adenoids with greater precision. After curettage, it is essential to identify any remaining adenoid tissue by finger probing and endoscopic examination. Hemostasis is achieved, and After decongestion, the endoscope is subsequently placed inside the nose. Under direct vision, any adenoid remnants (AD) are removed from the nasopharynx by inserting the Blakesley nasal forceps (BF) into the oral cavity as shown in figure-14. It is possible to change the instruments' locations. In this scenario, the Blakesley forceps (BF) is introduced via one nostril and directed to the adenoid (AD) in the nasopharynx. With its other end leaving the oropharynx, a catheter is inserted into the opposite nostril (not seen in the diagram). The soft

palate is pulled upward using this catheter. After that, the endoscope is inserted via the oropharynx to view the adenoid while it is being removed. As an alternative to using an endoscope, the index finger can be utilized to guide the forceps during removal and palpate for adenoid remains[51].

The figures-12 and 13 showing adenoidectomy using endoscope.

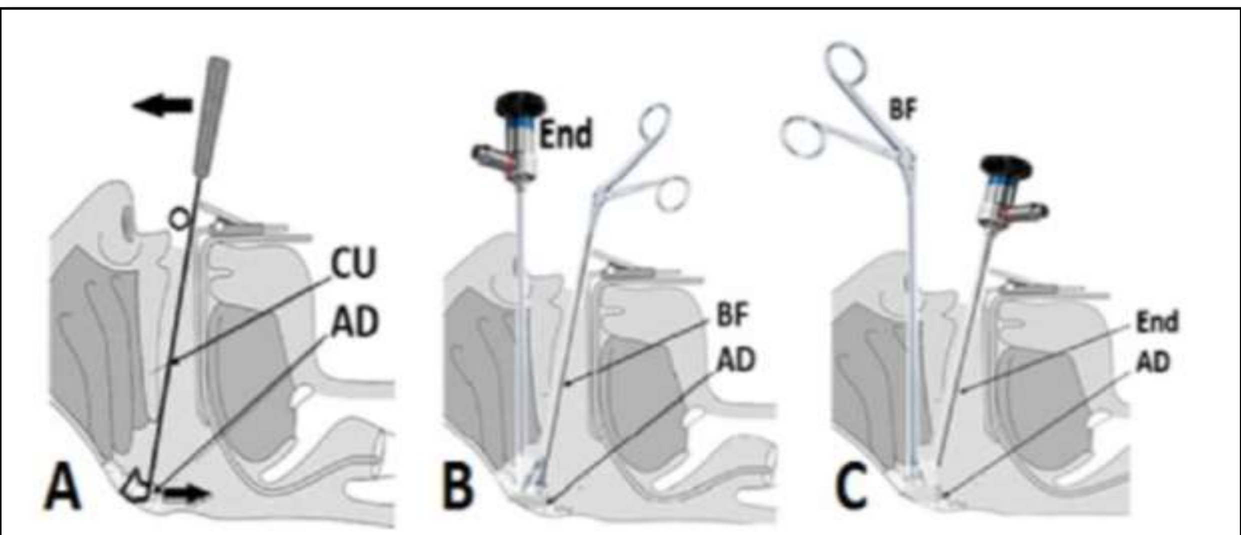


Figure-13 : A-Adenoidectomy (AD) using the curette (CU). B-Endoscopic adenoidectomy. C-The instruments' places could be reversed. End: endoscope -BF: Blakesley nasal forceps - AD adenoid remnants.

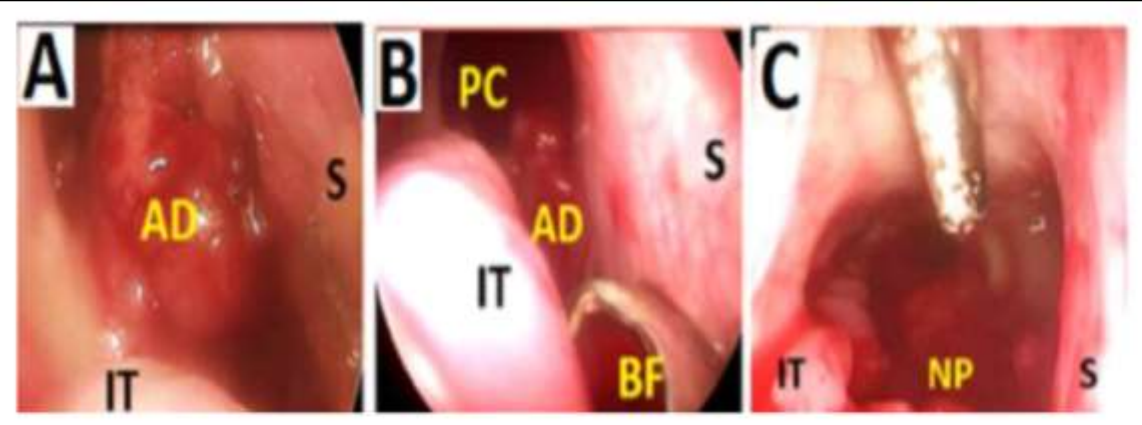


Figure-14: A-Preoperative view of large adenoids (AD) (picture was inverted upside down as the patient was in adenoidectomy position). The adenoid was seen filling nasopharynx, IT: inferior turbinate, S: nasal septum. B-View after curettage: small adenoid tissue (AD) was missed at the posterior choana (PC) being removed by Blakesley forceps (BF). C-After endoscopic excision the nasopharynx (NP) was seen free of adenoid tissue.

After the adenoidectomy procedure is finished, a rigid nasal endoscopy is performed via the nose using a 0° telescope to check the operating field and nasopharynx for the following:

- The residual adenoidal tissue in the nasal septum's posterior wall, the lateral pharyngeal wall, the posterior pharyngeal wall, or the roof of the nasopharynx above the choana;
- damage to the posterior or lateral pharyngeal walls;
- bleeding at the location of the adenoidectomy

According to the literature, eustachian tube (ET) dysfunction is a major contributing factor to the development of otitis media with effusion (OME)[52]. The fibro cartilaginous and bony eustachian tube connects the lateral wall of the nasopharynx to the anteroinferior portion of the middle ear cleft. Its primary purposes are mucociliary clearance and middle ear ventilation to balance middle ear pressure with ambient pressure.

The middle ear pressure (MEP), which is controlled by the nasopharynx, and the middle ear pressure differential cause the ET to open. When eustachian tube dysfunction (ETD) disrupts passive gas exchange and pressure equalization through the middle ear mucosa, effusion may build up. The incapacity of the active muscular forces involved in swallowing, upper airway infections, increased pressures in the surrounding tissue, and/or structural restrictions in the nasopharynx can all impair the ET's capacity to open passively. OME and adenoid hypertrophy (AH) have been linked in a number of pediatric investigations, indicating that AH may block the ET opening at the level of the torus tubarius[52]. Furthermore, the ET may become inflamed as a result of recurring infections in the adenoids, which would limit its functionality. Otalgia and auditory fullness are symptoms of eustachian tube dysfunction, an early consequence following adenoidectomy. It typically appears during curettage adenoidectomy.

The main cause of Eustachian tube dysfunction is mechanical blockage of the tubal opening. Because of this blockage, the middle ear cannot properly ventilate, which can result in pressure imbalances and possible fluid buildup. Eustachian tube dysfunction can also be caused by inflammation in the nasopharynx and inadequate swallowing. In order to promote middle ear health and address eustachian tube function, adenoidectomy is commonly performed[53].

An objective audiological test called tympanometry is performed to evaluate eustachian tube function and middle ear pressure. It's a valuable tool in evaluating the effectiveness of adenoidectomy in restoring normal eustachian tube function. The most reliable method to assess Eustachian tube pressures is tympanometry which is of different types. The figures-15,16 and 17 showing tympanometry and various graphs.

Type A:

This indicates a normal middle ear function. The peak is in the middle of the graph, and the range of air pressure values falls within normal limits.

Type As: This indicates a stiffened eardrum or less compliant middle ear system. The peak is still in the middle, but the range of air pressure values is narrower than normal.

Type Ad:

This indicates a flaccid eardrum or a highly compliant middle ear system. The peak is in the middle, but the range of air pressure values is wider than normal.

Type B:

This indicates middle ear pathology such as fluid, perforation or infection. There is no peak in the tympanogram, and the air pressure values are low.

Type C:

This indicates negative middle ear pressure. It indicates Eustachian tube dysfunction. The peak is shifted to the left side of the graph, indicating that the eardrum is being pulled inward due to negative pressure.

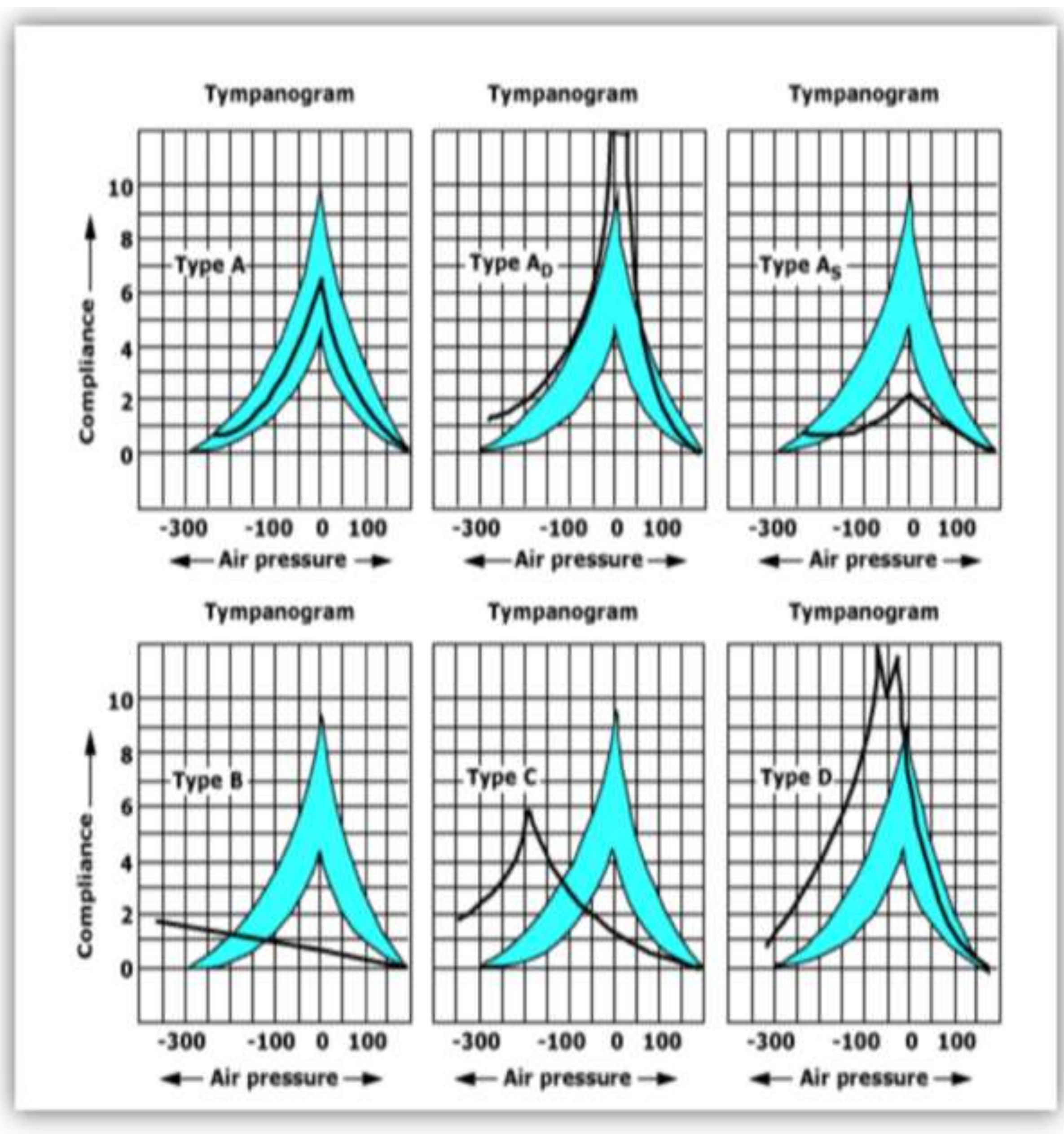


Figure-15: Types of tympanograms on tympanometry

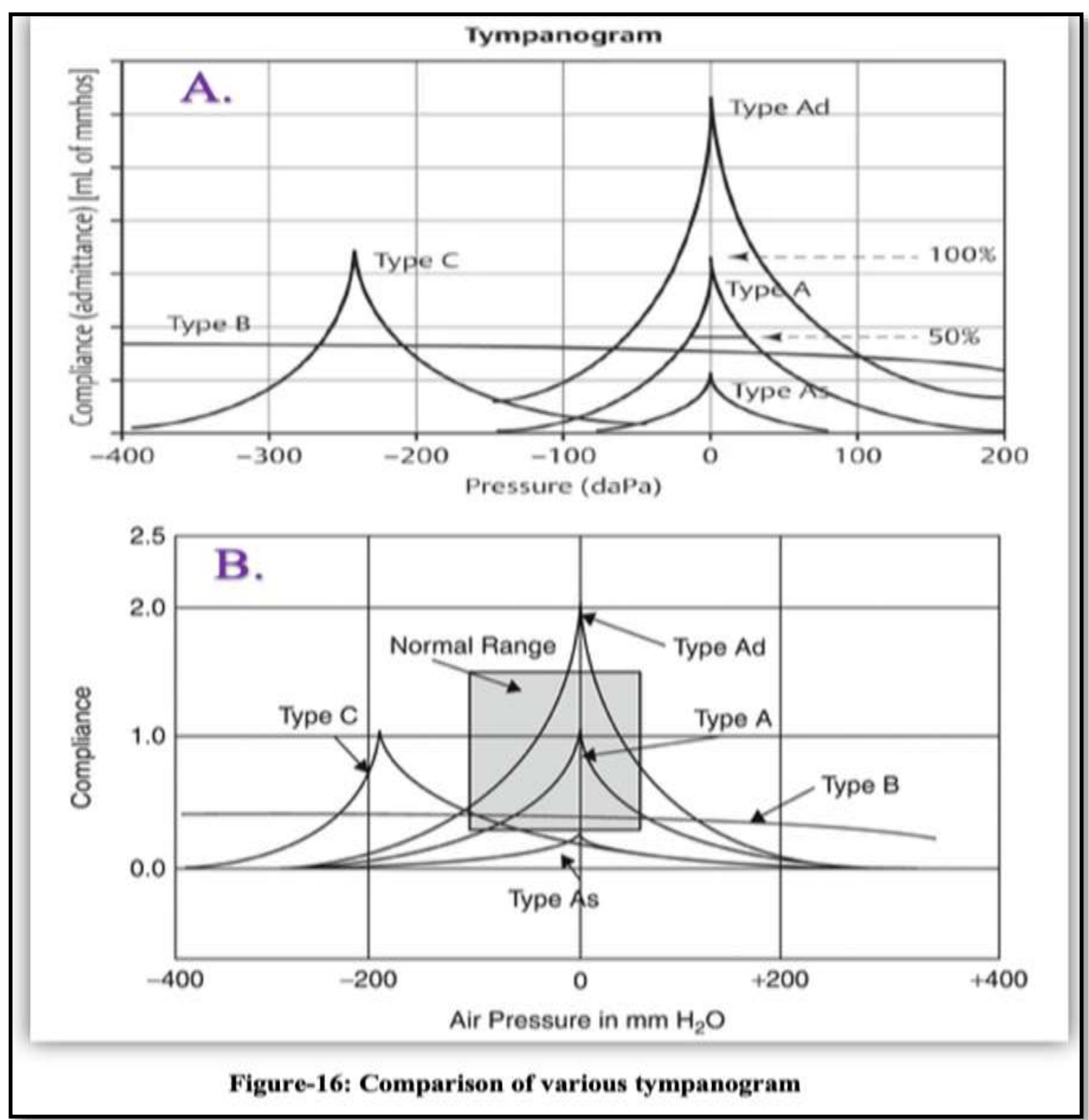


Figure-16: Comparison of various tympanogram

Over time, the technique for adenoidectomy has advanced, and several surgical methods are now available. In addition to the traditional curettage technique, options such as powered adenoidectomy, radiofrequency ablation, and electrocautery have been developed. Despite these alternatives, the curettage method remains the most widely used globally. Earlier studies reported recurrence rates of between 8% and 40%, but with the introduction of newer techniques, this rate has decreased to less than 1%. However, the increased cost and the need for specialized expertise are significant factors limiting the widespread use of these newer techniques[54]. Better control can be achieved by comparing the middle ear pressures of curettage and endoscopic aided adenoidectomy.

MATERIALS AND METHODS

MATERIALA AND METHODS

STUDY DESIGN:

Prospective cross-sectional study

SOURCE OF DATA:

From May2023 to Oct 2024, all patients aged 3 to 18 who met the inclusion and exclusion criteria for this study had adenoidectomy at R.L.Jalappa Hospital and Research Centre, which is affiliated with Sri Devaraj Urs Medical College, Tamaka, and Kolar.

Duration Of Study:

May 2023 – Oct 2024

INCLUSION CRITERIA:

After meeting the inclusion and exclusion criteria, all patients between the ages of 3 and 18 who were willing to participate in the study had adenoidectomy at R.L.Jalappa Hospital and Research Center, which is affiliated with Sri Devaraj Urs Medical College, Tamaka, and Kolar.

EXCLUSION CRITERIA:

- Those patients who lost follow up after recruiting into the study
- Those patients who withdrew consent
- Those patients who died within follow up period

Sample Size Calculation:

The sample size formula used is:

$$n_1 = \frac{(Z_{\alpha/2} + Z_{1-\beta})^2 \bar{p}\bar{q}(r+1)}{r(p_1 - p_2)^2}$$

where $n_2 = r\, n_1$

n_1 = number of exposed (Curettage adenoidectomy)

n_2 = number of unexposed (endoscopic-assisted adenoidectomy)

$Z_{\alpha/2}$ = standard normal deviate for two-tailed test based on alpha level (relates to the confidence
interval level)

Z_β = standard normal deviate for one-tailed test based on beta level (relates to the power level)

r = ratio of unexposed to exposed

p1 = proportion of exposed with outcomes and q1 = 1-p1

p2 = proportion of unexposed with outcomes and q2 = 1-p2

$$\bar{p} = \frac{p_1 + rp_2}{r+1} \text{ and } \bar{q} = 1 - \bar{p}$$

The minimum sample size needed to compare the proportion with ET dysfunction was determined to be 23 patients undergoing Curettage adenoidectomy and 23 patients undergoing Endoscopic-assisted adenoidectomy (a total of 46 subjects), assuming alpha error of 0.01 (99% Confidence limit) and power of 90% (Beta=0.10). The final sample size would be 26 patients in each group (52 participants overall), since the study includes follow-up for up to 30 days and the sample size is inflated to allow for loss to follow-up (10%).

METHODOLOGY

Patients were divided into two groups—group A and group B—by random selection. Endoscopic aided adenoidectomy was performed on Group B, while curettage adenoidectomy was performed on Group A. We selected 26 patients for each group using a straightforward random sampling technique. Participants in the study were chosen based on when they visited

the ENT outpatient clinic. The guardians of the patients completed an informed consent form after the ethical committee approved it.

Before surgery, the middle ear pressure levels in both patient groups were tracked using tympanometry. Preoperative tympanometry was performed the day prior to surgery. An audiologist used tympanometry to monitor the patients' middle ear pressure levels before surgery and on the first and thirty days after surgery. The device used a probe tone frequency of 226 Hz with a positive and negative pressure sweep between +200 and -400 daPa. Prior to the test, both ears were inspected, and the external ear canal's ear cerumen was extracted. Preoperative tympanometry was performed the day prior to the surgery. Tympanometry was conducted once more on the first- and thirty-days following surgery. Type B and type C graphs and tympanogram tests with middle ear pressure of −100 or below were considered pathologic and suggestive of Eustachian tube dysfunction.

Under strict precautions, patient is positioned, parts painted and draped. Nasal packing is done. Rigid endoscopy is done to evaluate adenoid hypertrophy.

based on the Cassano et al.[55] approach, which involved dividing endoscopic pictures of choanal apertures into four grades, ranging from the nasal floor to the upper choanal boundary.

The following are the sizes of hypertrophic adenoid tissue [55]:

Grade 1: Only the upper portion of the choana is obstructed (less than 25%);

Grade 2: The upper half of the choana is obstructed (less than 50%).

Grade 3: Partial involvement of the tube ostium & blockage extending to the rhinopharynx (<75%)

Grade 4: Total blockage of the choana

Adenoidectomy was performed under general anesthesia by Conventional curettage method or endoscopic assisted adenoidectomy. The nasopharynx of both groups will be reexamined after surgery using rigid nasal endoscope inserted through nose. Location of the residual adenoid tissue is examined like posterior end of nasal septum, close to torus tubarius, on pharyngeal roof near choanal openings. After surgery all patients in both the groups were given standard analgesics (paracetamol, aceclofenac or ibuprofen) and antibiotics (amoxicillin + clavulanic acid according to hospital antibiotic policy) The tympanometry post-surgery and remnant tissue if present were documented and compared between group A and group B.

FOLLOWUP PERIOD :

POST OP DAY 1

POST OP DAY 30

STATISTICAL METHODS:

The data was entered using Microsoft Excel, and the analysis was conducted using the Statistical Package for Social Science (SPSS) standard version 20. All continuous variables were summarized using either the mean (SD) or the median (IQR), depending on whether the distribution was normal. Categorical variables were summarized using proportions. Continuous variables were compared across study groups (endoscopic-assisted adenoidectomy and curettage adenoidectomy) using the independent samples t-test for normally distributed variables. When analysing continuous data that did not have a normal distribution, the Mann Whitney U test was employed. The Chi square test was used to compare categorical characteristics between the study groups (endoscopically assisted adenoidectomy and curettage

adenoidectomy). Friedman test with post-hoc test for pairwise comparison in time was used to compare middle ear pressure between baseline and POD-1 and POD-30. Statistical significance will be determined by a P-value of less than 0.05.

Graphical representation of data:

Several graph forms, including pie charts, bar diagrams, and line graphs, were created using Microsoft Word and Excel. A p value (probability that the result is true) of less than 0.05 was considered statistically significant, in accordance with the presumption of all statistical test criteria.

RESULTS

RESULTS

Through random selection, patients were split into two groups, A and B. Group A underwent curettage adenoidectomy, while Group B underwent endoscopically assisted adenoidectomy. Total of **26 patients** were enrolled to each group comparison of nasopharyngeal assessment and tympanometric evaluation of eustachian tube dysfunction following conventional and endoscopic assisted adenoidectomy.

With a greater percentage of patients in the 1–10 year age range in both groups (61.5% in the conventional group and 73.1% in the endoscopic-assisted group), the age distribution between the two groups was comparatively similar. The age distribution between the groups was not substantially different, according to the p-value of 0.375.

The endoscopic-assisted group had a greater percentage of males (65.4%), while the conventional group had a higher percentage of females (61.5%) compared to the endoscopic-assisted group (34.6%). Although it is nearly statistically significant, the p-value of 0.052 indicates that there was no significant difference in the gender distribution between the two groups.

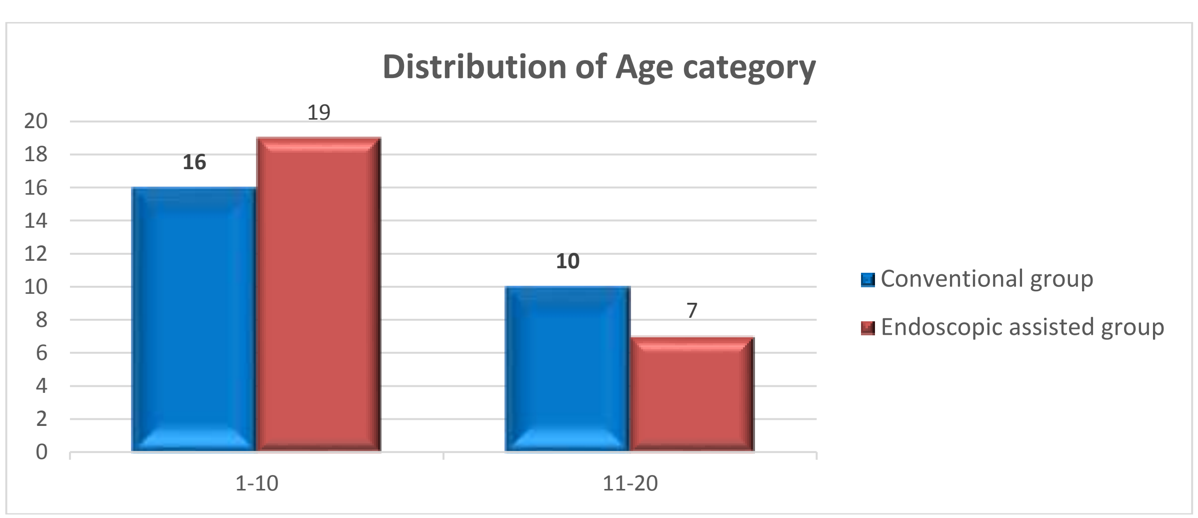
Socioeconomic Status

The socioeconomic position of the two groups differed significantly. While the majority of patients in the traditional group (76.9%) were from low socioeconomic backgrounds, the majority of patients in the endoscopic-assisted group (88.5%) were from high socioeconomic backgrounds. A highly significant difference in socioeconomic position between the two groups is indicated by the p-value of less than 0.001.

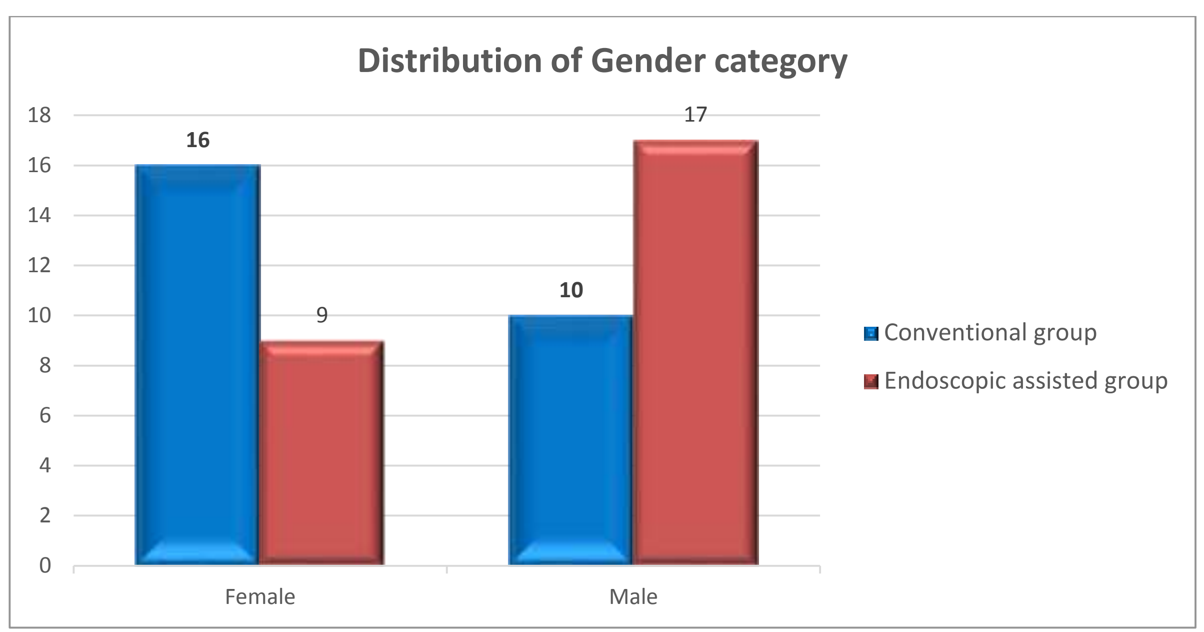
Table-3: Distribution of cases according to Demographic details of the two groups

Demographic details			Group		Total	P value
			Conventional group	Endoscopic assisted group		
Age category	1-10	Count	16	19	35	0.375
		%	61.5%	73.1%	67.3%	
	11-20	Count	10	7	17	
		%	38.5%	26.9%	32.7%	
Gender	Female	Count	16	9	25	0.052
		%	61.5%	34.6%	48.1%	
	Male	Count	10	17	27	
		%	38.5%	65.4%	51.9%	
Socio-economic status	High	Count	6	23	29	**<0.001**
		%	23.1%	88.5%	55.8%	
	Low	Count	20	3	23	
		%	76.9%	11.5%	44.2%	

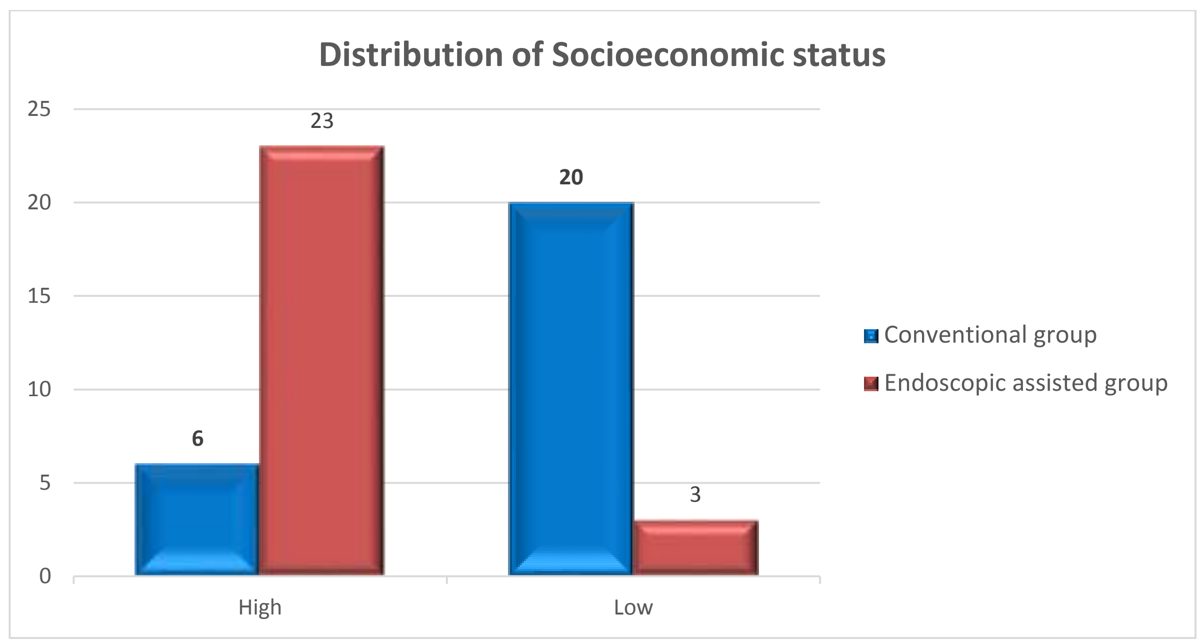
Graph-1: Distribution of cases according to age category among two groups



Graph-2: Distribution of cases according to gender category among two groups



Graph-3: Distribution of cases according to socioeconomic status among two groups



Clinical features:

The symptom distribution across both groups appears relatively similar, with snoring being the most common symptom followed by rhinorrhoea and post-nasal drip. Only **1 patient** (3.8%) in the conventional group reported chronic cough, and no patients in the endoscopic-assisted group reported this symptom. The very low occurrence of chronic cough in both groups suggests that it is not a common symptom in this patient population.

Post-Nasal Drip was present in **19.2%** of the conventional group and **23.1%** of the endoscopic-assisted group. It was the most common symptom in both groups but was present in slightly more patients in the endoscopic-assisted group. **Rhinorrhoea (Runny Nose)** was present in **26.9%** of the conventional group and **23.1%** of the endoscopic-assisted group. The difference between the groups is minimal, indicating that this symptom was fairly common across both groups. The most common symptom, snoring, was seen in 50% of patients in the conventional group and 53.8% of patients in the group that received endoscopic assistance. This suggests that snoring is a frequent symptom in patients undergoing adenoidectomy, regardless of the surgical technique used.

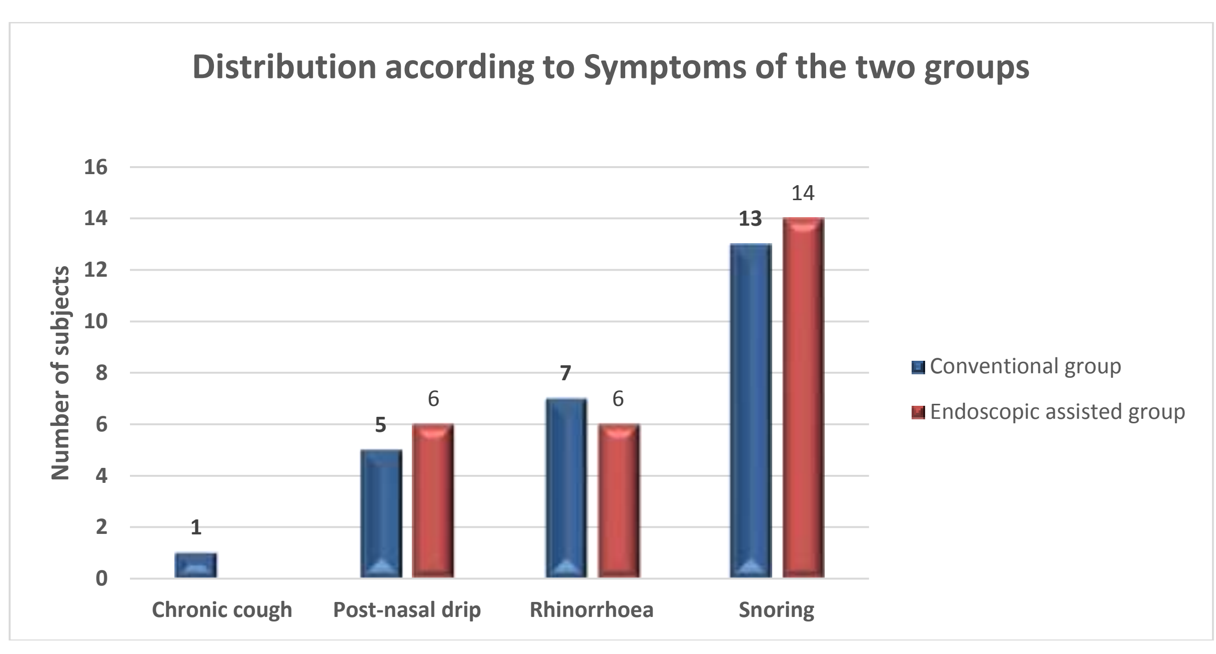
The distribution of symptoms between the traditional and endoscopic-assisted groups does not differ significantly, according to the p-value of 0.752. This suggests that the type of surgical technique (conventional vs. endoscopic-assisted) does not have a significant impact on the presence of these symptoms prior to surgery.

Table-4: Distribution of cases according to Symptoms of the two groups

Symptoms		Group		Total
		Conventional group	Endoscopic assisted group	
Chronic cough	Count	1	0	1
	%	3.8%	0.0%	1.9%
Post-nasal drip	Count	5	6	11
	%	19.2%	23.1%	21.2%
Rhinorrhoea	Count	7	6	13
	%	26.9%	23.1%	25.0%
Snoring	Count	13	14	27
	%	50.0%	53.8%	51.9%
Total	Count	26	26	52
	%	100.0%	100.0%	100.0%

P value is 0.752

Graph-4: Distribution of cases according to symptoms among two groups



Adenoids grading

The distribution of adenoid grades between the two groups is fairly similar, with Grade 3 adenoids being the most common in both groups.

None of the patients in the traditional group had Grade 1 adenoids, whereas 1 patient (3.8%) in the endoscopic-assisted group did. This suggests that Grade 1 adenoids were quite uncommon in both groups, with the endoscopic group experiencing a small incidence. Only two patients (7.7%) in the endoscopic-assisted group had Grade 2 adenoids, compared to five patients (19.2%) in the conventional group. This suggests a slightly higher prevalence of Grade 2 adenoids in the conventional group compared to the endoscopic-assisted group.

With 16 patients (61.5%) in the conventional group and 19 patients (73.1%) in the endoscopic-assisted group, grade 3 adenoid hypertrophy was the most prevalent grade and accounted for 67.3% of the overall patient population. Both groups had a high proportion of Grade 3 adenoids, with a slightly higher prevalence in the endoscopic-assisted group. Grade 4 adenoids were found in four patients (15.4%) in the endoscopic-assisted group and five patients (19.2%) in the traditional group. The proportion of Grade 4 adenoids was relatively similar between the two groups.

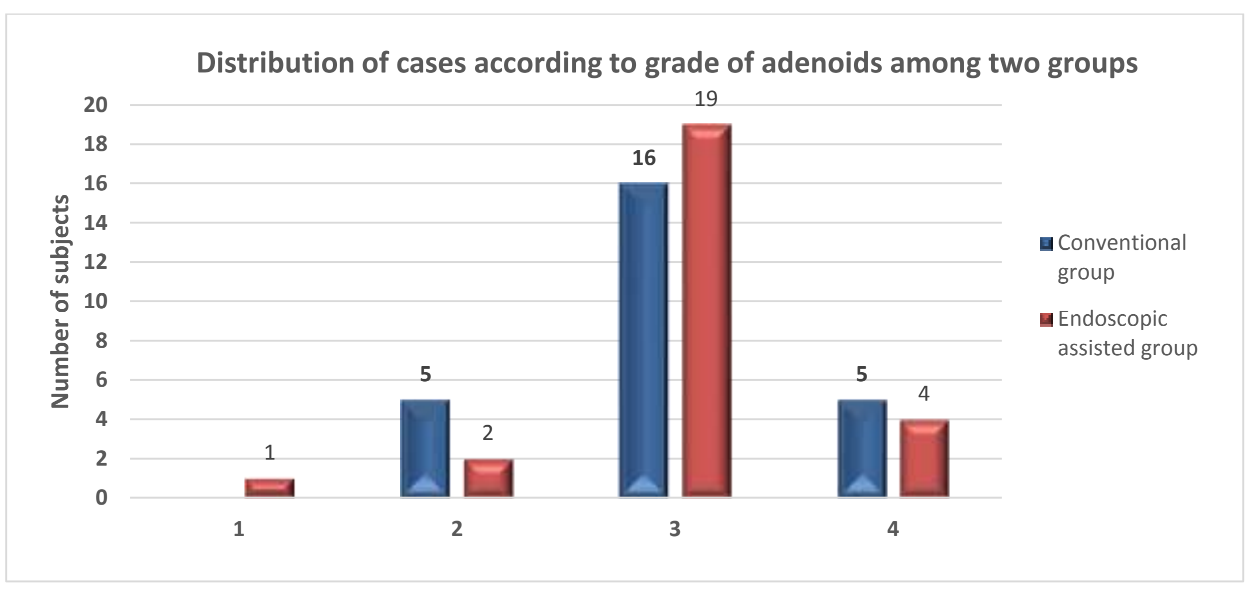
The distribution of adenoidal grades between the conventional and endoscopic-assisted groups does not differ significantly, according to the p-value of 0.448.

Table-5: Distribution of cases according to grade of adenoids among two groups

GRADE OF ADENOIDS		Group		Total
		Conventional group	Endoscopic assisted	
1	Count	0	1	1
	%	0.0%	3.8%	1.9%
2	Count	5	2	7
	%	19.2%	7.7%	13.5%
3	Count	16	19	35
	%	61.5%	73.1%	67.3%
4	Count	5	4	9
	%	19.2%	15.4%	17.3%
Total	Count	26	26	52
	%	100.0%	100.0%	100.0%

P value is 0.448

Graph-5: Distribution of cases according to grade of adenoids among two groups



Hearing Threshold

Preoperative Hearing Threshold:

In both groups, a sizable portion reported hearing threshold impairments: 92.3% in the standard group and 88.5% in the endoscopic-assisted group. Prior to surgery, normal hearing was present in only 7.7% of patients in the traditional group and 11.5% in the endoscopic-assisted group. The percentage of patients with compromised hearing thresholds before surgery did not differ significantly between the two groups, according to the p-value of 0.638.

1st Day Postoperative Hearing Threshold:

Abnormal hearing thresholds were seen in 46.2% of patients in the endoscopic-assisted group and 65.4% of patients in the traditional group on the first postoperative day after surgery. Despite a trend toward better hearing thresholds in the endoscopic-assisted group, the p-value of 0.163 indicates that the difference in abnormal hearing thresholds on day 1 between the two groups was not statistically significant.

30th Day Postoperative Hearing Threshold:

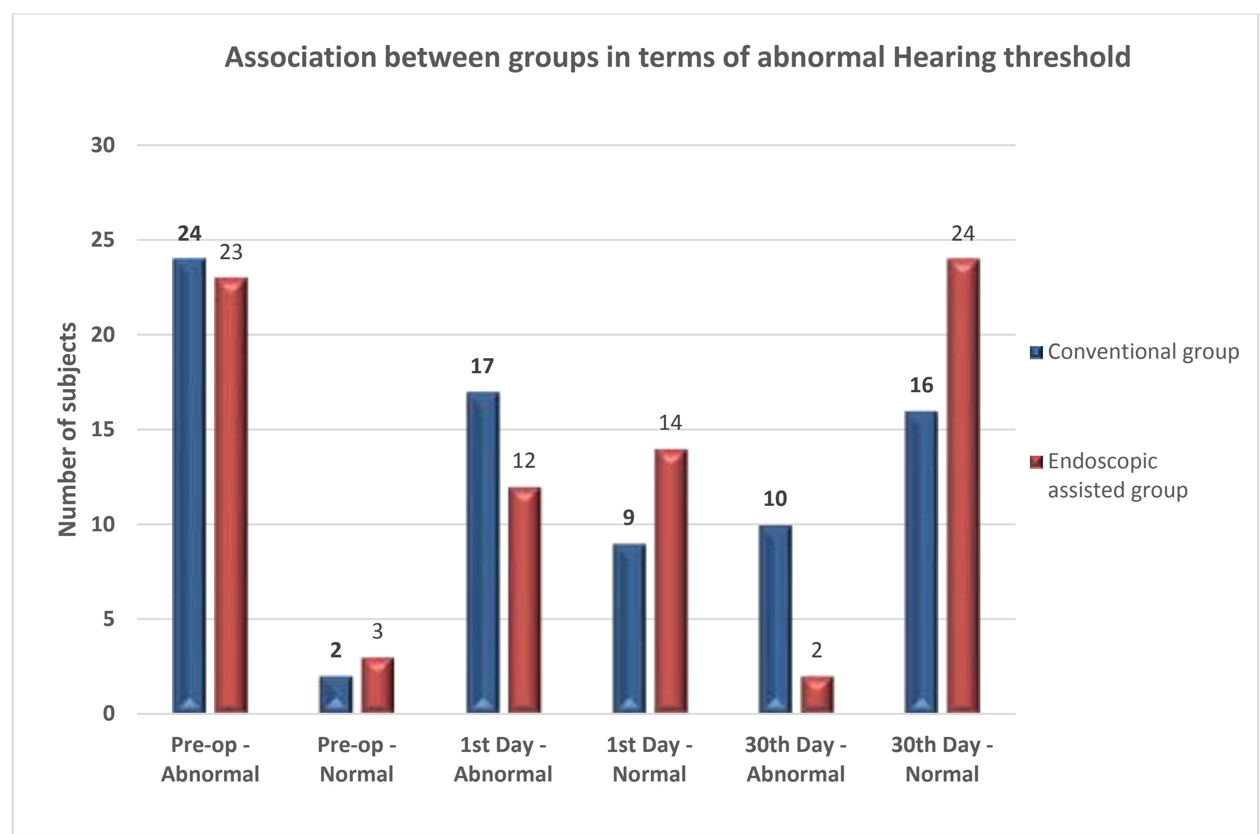
Both groups' hearing levels had significantly improved by the 30th day following surgery. Only 7.7% of the endoscopic-assisted group had impaired hearing thresholds, compared to 38.5% of the traditional group. The endoscopic-assisted adenoidectomy group had noticeably superior hearing outcomes at the 30-day mark, as indicated by the significant difference between the two groups (p-value of 0.008).

Both groups' preoperative hearing thresholds were comparable, and most patients had abnormal hearing prior to surgery. On the first postoperative day, there was no discernible difference between the two groups, despite the endoscopic-assisted group's slightly better hearing outcomes. After 30 days following surgery, the endoscopic-assisted group's hearing results were much better than those of the standard group, with fewer patients exhibiting hearing threshold impairments. Comparing endoscopic-assisted adenoidectomy to traditional adenoidectomy, the p-value of 0.008 for the 30th day indicates that the former is linked to a better recovery in hearing thresholds.

Table-6: Association between groups in terms of abnormal Hearing threshold

Hearing threshold			Group		Total	P value
			Conventional group	Endoscopic assisted		
Pre-op	Abnormal	Count	24	23	47	0.638
		%	92.3%	88.5%	90.4%	
	Normal	Count	2	3	5	
		%	7.7%	11.5%	9.6%	
1st Day	Abnormal	Count	17	12	29	0.163
		%	65.4%	46.2%	55.8%	
	Normal	Count	9	14	23	
		%	34.6%	53.8%	44.2%	
30th Day	Abnormal	Count	10	2	12	**0.008**
		%	38.5%	7.7%	23.1%	
	Normal	Count	16	24	40	
		%	61.5%	92.3%	76.9%	

Graph-6: Association between groups in terms of abnormal Hearing threshold



Hearing compliance

Preoperative Abnormal Compliance:

In contrast to roughly 61.5% of patients in the traditional group, 69.2% of patients in the endoscopic-assisted group had abnormal compliance prior to surgery. The p-value of 0.560 indicates that there is no appreciable difference in aberrant compliance before surgery between the two groups. This implies that preoperative aberrant compliance levels were comparable for both groups.

1st Day Postoperative Abnormal Compliance:

Only 46.2% of patients in the endoscopic-assisted group had aberrant compliance on the first postoperative day, compared to 65.4% of patients in the conventional group. This suggests that the group receiving endoscopic assistance recovered more quickly in terms of compliance. The p-value of 0.109 shows that, despite a trend toward higher compliance in the endoscopic-assisted group, this difference is not statistically significant.

30th Day Postoperative Abnormal Compliance:

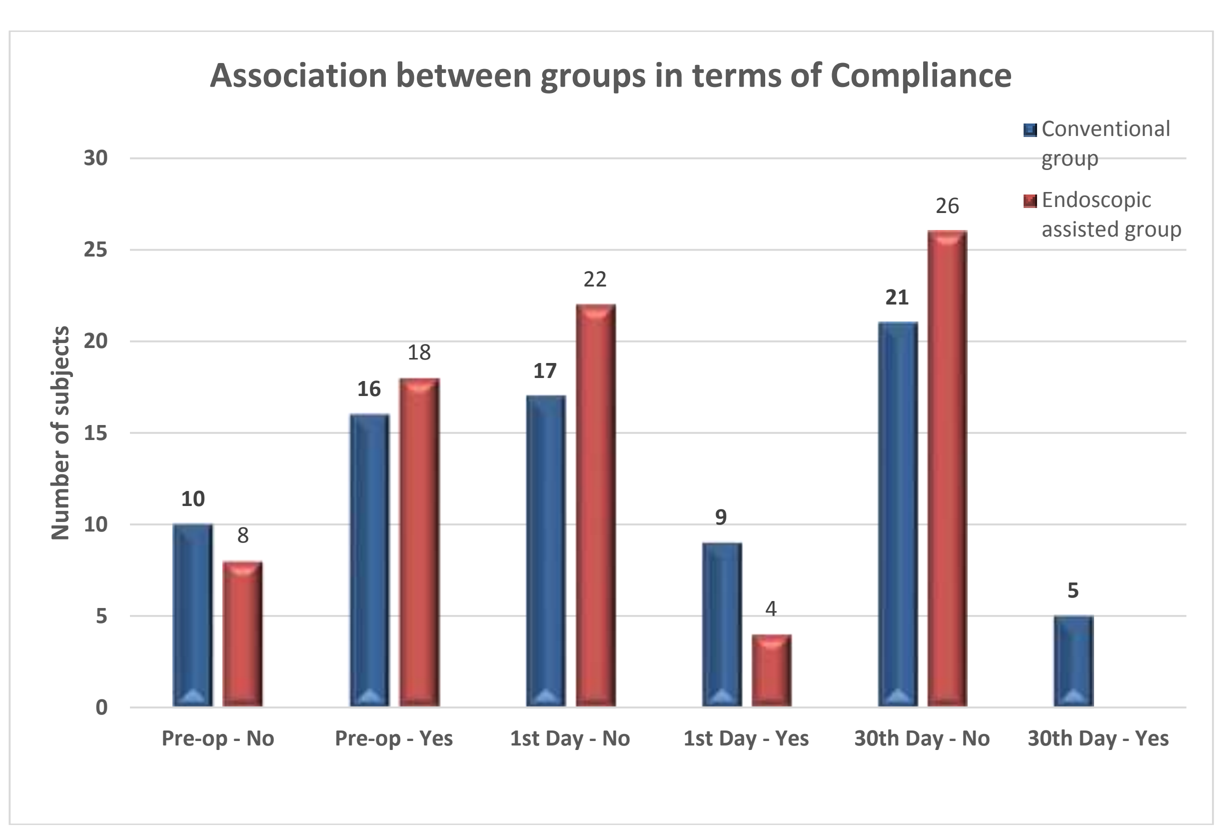
There was a noticeable difference between the two groups by the 30th day following surgery. 19.2% of patients in the traditional group experienced abnormal compliance, compared to none in the endoscopic-assisted group. The p-value of 0.019 indicates that this difference is statistically significant, indicating that, after 30 days, the endoscopic-assisted group recovered significantly better than the standard group in terms of compliance.

The preoperative compliance levels of the two groups appeared to be similar, as indicated by the p-value of 0.560. Although the difference was not statistically significant (p-value = 0.109), there was a trend toward improved compliance in the endoscopic-assisted group on the first postoperative day. The endoscopic-assisted group exhibited considerably improved compliance after 30 days after surgery; none of the patients in this group displayed abnormal compliance, while 19.2% of the traditional group did (p-value = 0.019). This suggests that endoscopic-assisted adenoidectomy is associated with a higher recovery in terms of compliance at the 30-day postoperative mark as compared to standard adenoidectomy.

Table-7: Association between groups in terms of abnormal Compliance

Abnormal Compliance			Group		Total	P value
			Conventional group	Endoscopic assisted		
Pre-op	No	Count	10	8	18	0.560
		%	38.5%	30.8%	34.6%	
	Yes	Count	16	18	34	
		%	61.5%	69.2%	65.4%	
1st Day	No	Count	17	22	39	0.109
		%	65.4%	84.6%	75.0%	
	Yes	Count	9	4	13	
		%	34.6%	15.4%	25.0%	
30th Day	No	Count	21	26	47	**0.019**
		%	80.8%	100.0%	90.4%	
	Yes	Count	5	0	5	
		%	19.2%	0.0%	9.6%	

Graph-7: Distribution of cases according to abnormal Compliance among two groups



Peak middle ear pressure

Preoperative impaired middle ear peak pressure

There was no appreciable difference between the two groups' high prevalence of middle ear peak pressure impairment before surgery (p = 0.510). The statistics showed that middle ear pressures were affected in 80.8% of patients in the conventional group and 73.1% of patients in the endoscopic group.

Postoperative Day 1 impaired middle ear peak pressure :

A statistically significant difference (p = 0.012) was seen between the groups on the first day after surgery. A far higher percentage of patients (88.5%) in the endoscopic-assisted group had normal middle ear peak pressures than in the traditional group (57.7%). This suggests that the endoscopic approach aids in the quicker restoration of middle ear function in the early postoperative phase.

Postoperative Day 30 impaired middle ear peak pressure:

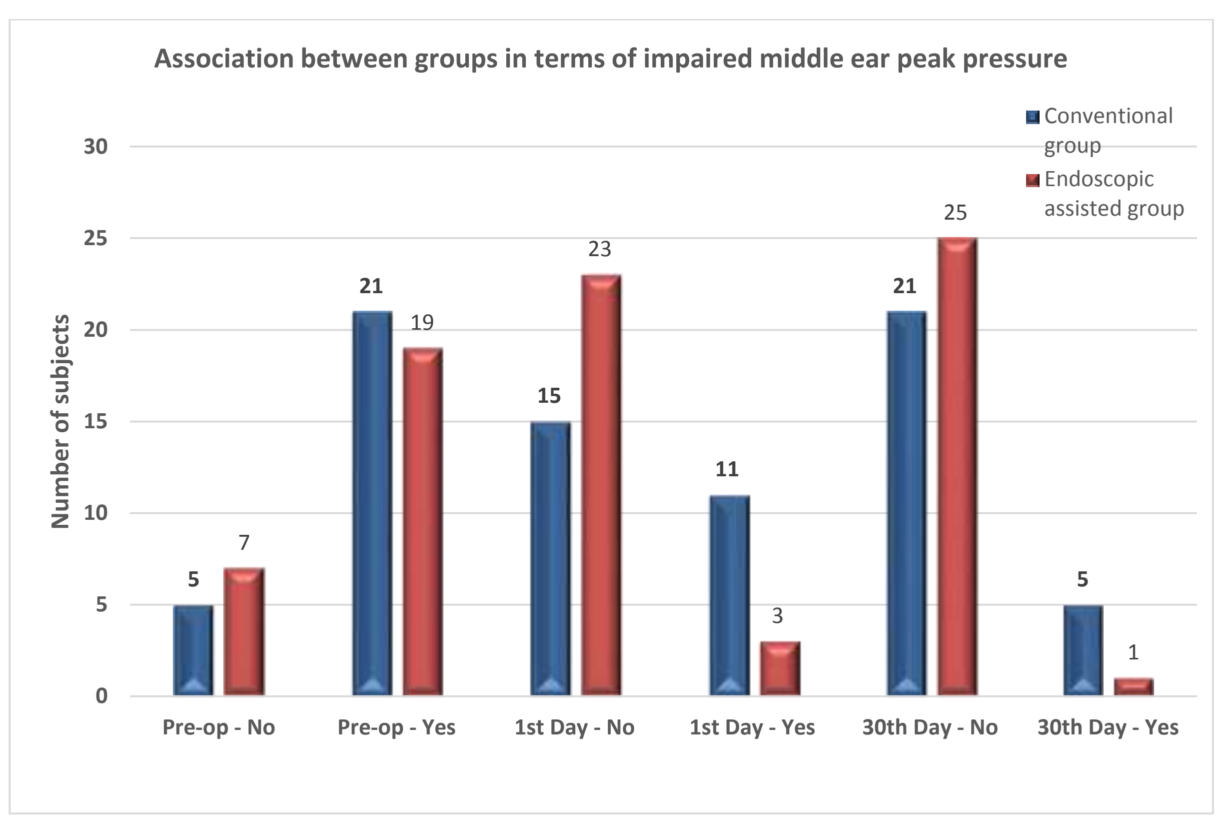
On Day 30, both groups' middle ear peak pressures showed a significant improvement; nevertheless, no statistically significant difference was seen between them (p = 0.083). Both groups showed significant improvement by the 30th day, although the endoscopic-assisted adenoidectomy offers a quicker recovery. The endoscopic group had a higher percentage of patients (96.2%) with normal middle ear peak pressures than the traditional group (80.8%).

On postoperative Day 1, a significantly higher proportion of patients with endoscopic-assisted adenoidectomy attain normal middle ear pressure than those in the traditional group, suggesting a quicker recovery of middle ear peak pressure. Although both groups gradually improved, the group that had endoscopic support recovered faster and more significantly, highlighting the benefits of this approach for improving middle ear health and Eustachian tube function following surgery. Although the two groups' 30-day long-term results were similar, the endoscopic group's overall performance continued to improve.

Table-8: Association between groups in terms of impaired middle ear peak pressure

Impaired Middle ear peak pressure			Group		Total	P value
			Conventional group	Endoscopic assisted		
Pre-op	No	Count	5	7	12	0.510
		%	19.2%	26.9%	23.1%	
	Yes	Count	21	19	40	
		%	80.8%	73.1%	76.9%	
1st Day	No	Count	15	23	38	**0.012**
		%	57.7%	88.5%	73.1%	
	Yes	Count	11	3	14	
		%	42.3%	11.5%	26.9%	
30th Day	No	Count	21	25	46	0.083
		%	80.8%	96.2%	88.5%	
	Yes	Count	5	1	6	
		%	19.2%	3.8%	11.5%	

Graph-8: Distribution of cases according to impaired middle ear peak pressure



Tympanogram findings:

Preoperative Tympanogram Findings:

A considerable percentage of both groups had abnormal tympanograms before surgery: 84.6% in the traditional group and 80.8% in the endoscopic-assisted group. Only a small proportion of patients had normal preoperative tympanograms (15.4% in the conventional group and 19.2% in the endoscopic-assisted group). The p-value of 0.714 indicates that there is no significant difference between the two groups' pre-operative tympanogram data. Both groups were similarly affected by abnormal tympanograms.

1st Day Postoperative Tympanogram Findings:

The endoscopic-assisted group's tympanogram results significantly improved on the first postoperative day, with 84.6% of them having normal tympanograms compared to just 57.7% of the conventional group. The p-value of 0.032 indicates a statistically significant difference between the two groups, with the endoscopic-assisted group showing better tympanogram results on the first postoperative day.

30th Day Postoperative Tympanogram Findings:

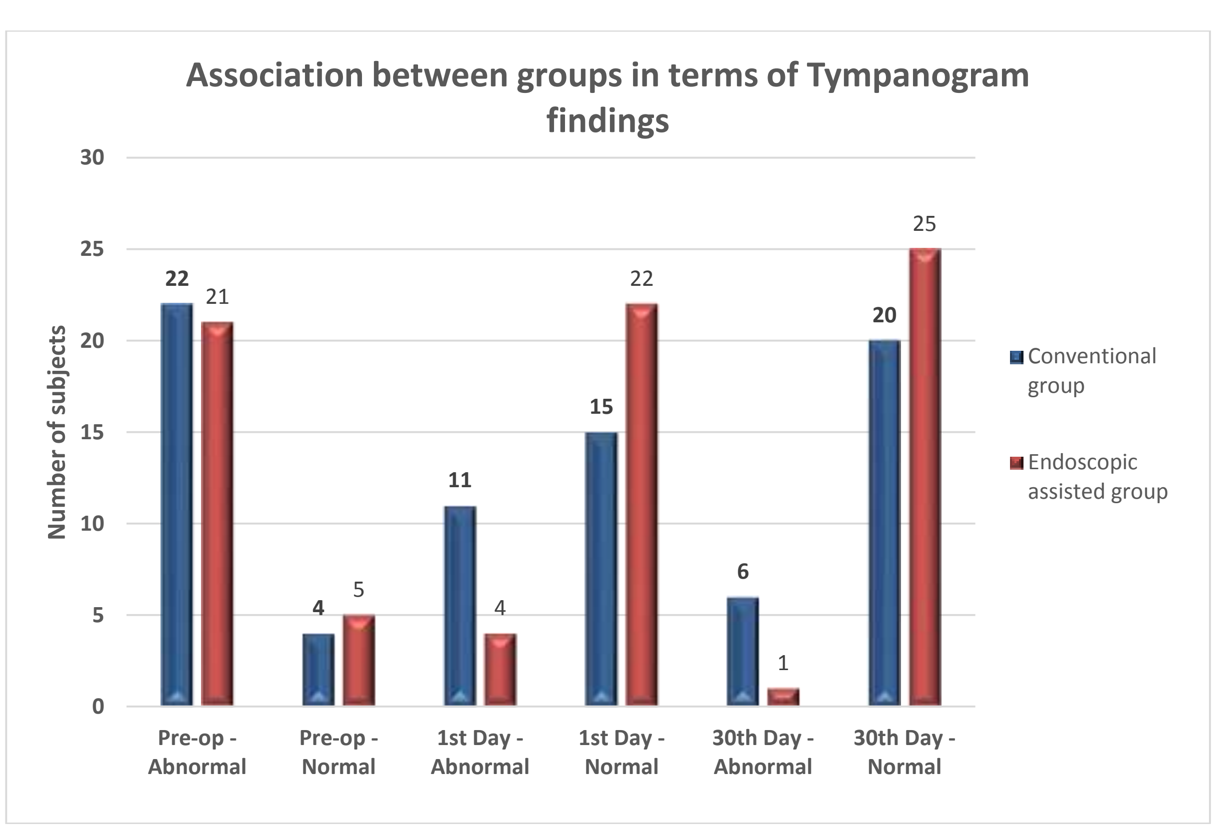
Both groups' tympanogram results significantly improved by 30 days after surgery. Only 3.8% of the endoscopic-assisted group experienced aberrant tympanograms, compared to 23.1% of the conventional group.The group that received endoscopic assistance recovered better in terms of tympanogram results at 30 days, as indicated by the p-value of 0.042, which shows a statistically significant difference between the two groups.

There was a large percentage of abnormal tympanograms in both groups, and the preoperative tympanogram results were similar. The p-value of 0.714 indicates that there was no appreciable difference prior to surgery. The tympanogram results of the endoscopic-assisted group were significantly better than those of the conventional group, as evidenced by the p-value of 0.032 on the first postoperative day. By 30 days following surgery, only 3.8% of patients in the endoscopic-assisted group exhibited abnormal tympanograms, while 23.1% of patients in the traditional group did so (p-value = 0.042). This represents a considerably improved outcome in terms of tympanogram findings. At both the first and thirty days following surgery, the endoscopic-assisted group's tympanogram results were noticeably better overall, indicating a more favorable recovery in terms of middle ear function.

Table-9: Association between groups in terms of Tympanogram findings

Tympanogram findings			Group		Total	P value
			Conventional group	Endoscopic assisted		
Pre-op	Abnormal	Count	22	21	43	0.714
		%	84.6%	80.8%	82.7%	
	Normal	Count	4	5	9	
		%	15.4%	19.2%	17.3%	
1st Day	Abnormal	Count	11	4	15	**0.032**
		%	42.3%	15.4%	28.8%	
	Normal	Count	15	22	37	
		%	57.7%	84.6%	71.2%	
30th Day	Abnormal	Count	6	1	7	**0.042**
		%	23.1%	3.8%	13.5%	
	Normal	Count	20	25	45	
		%	76.9%	96.2%	86.5%	

Graph-9: Distribution of cases according to symptoms among two groups



Postoperative Transnasal Endoscopic Examination for Residual Remnants:

Following surgery, the post-op transnasal endoscopic examination revealed residual remains in 61.5% of patients in the traditional group and no remnants in endoscopic assistance .The p-value of 0.012 indicates a statistically significant difference between the two groups which implies that the group that received endoscopic assistance fared much better in terms of the absence of residual remains. Trans nasal endoscopic examination verified that the endoscopic-assisted adenoidectomy group had less postoperative residual remains than the group that underwent traditional adenoidectomy. The endoscopic-assisted approach is linked to a more complete removal of adenoid tissue, which improves surgical results in terms of complete tissue removal, according to the statistical significance (p-value = 0.012).

Location of Remnants:

The p-value of 0.038, which denotes a statistically significant difference between the two groups, shows that the endoscopic-assisted group performed better in terms of complete removal of adenoid tissue and less remaining remnants near the pharyngeal roof.

The higher proportion of patients with no leftovers (100% in the group receiving endoscopic assistance compared to 38.46% in the group receiving conventional treatment) suggests that the endoscopic-assisted adenoidectomy technique led to more thorough removal of adenoid tissue overall and fewer residual remnants, especially close to the pharyngeal roof. The endoscopic-assisted approach is more successful in obtaining a complete excision of adenoid tissue, resulting in fewer leftover vestiges after surgery, according to the statistically significant p-value (0.038).

DISCUSSION

DISCUSSION

In paediatric otolaryngology, adenoidectomy is still one of the most generally done procedures. It is frequently recommended for recurring infections, nasal blockage, and Eustachian tube dysfunction (ETD). Treatment for chronic adenoiditis focuses on restoring a patent nasopharyngeal airway and removing the blockage in the eustachian tube, which is caused by the ratio of the adenoids to the size of the nasopharyngeal airway. To achieve favorable post-operative outcomes, the optimal strategy should remove the obstruction and leave little to no tissue in the nasopharynx.

The effects of adenoidectomy on middle ear function are poorly understood, despite the fact that it has been the focus of many investigations. Therefore This study compared the nasopharyngeal clearance, Eustachian tube function, and hearing results of endoscopic-assisted adenoidectomy versus traditional curettage adenoidectomy. Since endoscopic powered adenoidectomy improves vision and causes less damage to surrounding structures, it is currently universally accepted as the standard procedure in many countries [56].

Although the symptom profiles and preoperative tympanometry readings were similar in both groups, socioeconomic status differed significantly ($p < 0.001$). A higher number of patients undergoing endoscopic-assisted adenoidectomy belonged to a higher socioeconomic group, possibly reflecting accessibility and affordability of more advanced surgical options.

according to El-Bahrawy A T et al.[57], Snoring was the most prevalent symptom in our study, affecting 50% of patients in the traditional group and 53.8% in the endoscopic-assisted group. According to studies by Juneja et al.[58] and Prakash et al.[59], Grade 3 adenoid hypertrophy was

the most common grade, making up 67.3% of the overall patient population, with 16 patients (61.5%) in the conventional group and 19 patients (73.1%) in the endoscopic-assisted group.

Eustachian Tube Dysfunction and Tympanometric Evaluation

Due to adenoid biofilms and mechanical blockage of the eustachian tube opening, Children who have adenoid hypertrophy may experience reduced middle ear function and hearing loss. The most commonly reported tympanometric features are the kind of tympanogram and, less commonly, middle ear pressure linked to adenoid expansion, according to a thorough review of the literature[60,61].

Tympanometry is a reliable and objective method to assess middle ear pressure and compliance, directly reflecting Eustachian tube function. Our study showed **significantly better postoperative tympanometry outcomes** in the endoscopic-assisted group on follow up tests.. On Day 1, 84.6% of the endoscopic-assisted group had normal tympanograms compared to 57.7% in the conventional group ($p = 0.032$). By Day 30, only 3.8% of the endoscopic group continued to show abnormal findings, as opposed to 23.1% in the conventional group (p-value was 0.042).

Our results are consistent with the study by **Yildirim et al.**[62] who reported a quicker recovery in middle ear pressure and improved tympanometric outcomes following endoscopic adenoidectomy compared to curettage methods. The enhanced visualization during endoscopic surgery allows for better preservation of the torus tubarius and more thorough elimination of the obstructive adenoid tissue adjacent to the Eustachian tube opening, leading to earlier and more complete resolution of ETD.

Similar results were obtained by Enache et al.,[63] in a retrospective study , at the second review three months after surgery, 109 children (91.60%) showed complete recovery of middle ear function with normal Eustachian tube activity, while 43.70% of the children showed normal Eustachian tube function at one month..[63] In a research by Somayaji et al.,[64] Six weeks after surgery, there was a considerable improvement in the MEP and hearing threshold based on PTA and tympanometry[64]. The postoperative Type A tympanogram showed that OME had fully resolved in 15 of the 16 children. Tuohimaa and Palva et al. [65] discovered comparable results in a study. A study by Zaman and Borah et al.[66] found that following adenoidectomy, the MEP dramatically improved.

Hearing Threshold and Compliance

Both groups had a significant prevalence of poor hearing thresholds and compliance before to surgery, which is consistent with chronic ETD brought on by adenoid hypertrophy. In the endoscopic group, aberrant hearing thresholds were present in 7.7% of patients by the 30th postoperative day, as compared to 38.5% in the conventional group (p- value was 0.008). Similarly, by Day 30, all patients in the endoscopic group had reverted to normal compliance, but 19.2% of patients in the conventional group still had abnormal compliance (p = 0.019).

These results support prior findings by **El-Anwar et al.,[67]** who emphasized that endoscopic adenoidectomy results in better auditory outcomes and reduced postoperative middle ear pathology[2]. It is likely due to the more precise tissue removal under direct visualization, especially around critical anatomical landmarks like the Eustachian tube orifice.

A randomized controlled experiment with 20 participants indicated that endoscopic adenoidectomy was more effective than traditional adenoidectomy for improving hearing**[68]** .

Endoscopic adenoidectomy was found to reduce the air-bone gap by 8.9 dB compared to 7.8 dB. Capaccio et al. have previously observed similar findings [69].

Residual Adenoid Tissue

The incomplete removal of adenoid tissue is a significant disadvantage of traditional curettage adenoidectomy, especially in difficult-to-reach places like the torus tubarius and nasopharyngeal roof. Our study found that 61.5% of patients in the conventional group had residual adenoid tissue postoperatively and no remnants in endoscopic assisted. Residual adenoid tissue may cause recurrent infection, affecting middle ear function even after surgery [70,71,72].

Ghosh et al.,[73] also reported a similar pattern, where endoscopic techniques significantly reduced the incidence of residual adenoids, especially around the Eustachian tube area. Incomplete removal in the conventional group often correlates with persistent or recurrent symptoms, including nasal obstruction, snoring, and ETD.

Rodigruez et al. and Murray et al.,[74,75] carried out several trials that demonstrated that, when viewed directly, endoscopically Cleaning adenoid tissue is more successful with assisted powered shaver adenoidectomy. As a result, there is less blood loss, less time spent in the operating room, more complete adenoid tissue excision, and less postoperative pain.

Using a microdebrider and endoscopic assisted adenoidectomy, the adenoid remnants along , the upper part of the nasopharynx, the choanae, and the peritubal region can be readily observed and completely removed. Furthermore, there is a decreased risk of damage to the Eustachian

Tube, pharyngeal muscles, which reduces surgical scarring. Another effective method of haemorrhage control is to directly identify the bleeding areas. [76,77] .

Anatomical Site of Residual Tissue

The most frequent site for residual adenoid tissue in the conventional group was the **pharyngeal roof (42.31%)**, followed by the area near the torus tubarius (19.23%). The endoscopic approach allowed better visualization and removal from these regions, reinforcing its superiority in ensuring complete adenoidectomy.

Regarding the function of the Eustachian tube, hearing enhancement, completeness of adenoid tissue removal, the results of this study provide compelling evidence for the clinical benefit of endoscopic-assisted adenoidectomy. Consequently, an adenoidectomy that is both safe and successful is endoscopic-assisted adenoidectomy. By using an endoscope for viewing, a complete adenoidectomy can be performed and complications can be prevented. In several instances, blind adenoid curettage was linked to greater amounts of remaining adenoid tissue. Although the technique requires more resources and training, the long-term benefits and lower rate of residual tissue may reduce the need for revision surgeries and lead to improved quality of life.

SUMMARY

SUMMARY

Adenoidectomy is a common surgical procedure in children with nasal obstruction, snoring, or Eustachian tube dysfunction (ETD). Although endoscopic-assisted adenoidectomy provides improved visibility and precision, conventional curettage adenoidectomy has long been the accepted method. The purpose of this study is to compare the two methods with regard to surgical results, residual tissue presence, and Eustachian tube function.

A prospective observational study was conducted at R.L. Jalappa Hospital and Research Center between May 2023- October 2024 to compare endoscopic-assisted adenoidectomy with standard curettage adenoidectomy in children ages 3 to 18. The study's objectives were to use transnasal endoscopy to determine the existence and location of remaining adenoid tissue and tympanometry to evaluate postoperative Eustachian tube function. 52 patients in all were split into two groups at random; Group A had a traditional adenoidectomy, while Group B had an endoscopically assisted adenoidectomy. Tympanometry and hearing assessments were performed preoperatively, and on postoperative days 1 and 30. No significant preoperative differences in symptoms or age distribution. Socioeconomic status differed significantly, with more high-SES patients in the endoscopic group ($p < 0.001$). Endoscopic group showed significantly better tympanogram results on Day 1 (p value was 0.032) and Day 30 (p value was 0.042). Faster normalization of middle ear pressure observed in the endoscopic group ($p = 0.012$ on Day 1). It found that **Hearing Threshold was** Significant improvement in endoscopic group by Day 30 (7.7% abnormal) vs. conventional group (38.5%) ($p = 0.008$). All patients in the endoscopic group had normal compliance by Day 30 ($p = 0.019$). Significantly no remnants in the endoscopic group vs. conventional (61.5%) ($p = 0.012$). Most common remnant location: pharyngeal roof in conventional group (42.31%).

The findings revealed that endoscopic-assisted adenoidectomy resulted in significantly better outcomes in terms of middle ear pressure normalization, hearing thresholds, and tympanometric compliance, particularly by the 30th postoperative day. Additionally, the endoscopic group had no residual adenoid remnants and more complete tissue removal, especially near the pharyngeal roof and torus tubaris. While both groups showed similar symptom profiles preoperatively, the endoscopic-assisted technique was superior in ensuring a thorough adenoidectomy and faster resolution of Eustachian tube dysfunction.

These results support the adoption of endoscopic-assisted adenoidectomy as a preferred surgical technique for achieving improved postoperative outcomes and minimizing residual pathology. Compared to traditional curettage, endoscopic-assisted adenoidectomy is better in terms of better visualization and more complete adenoid removal, faster and more effective recovery of Eustachian tube function, Improved hearing thresholds and middle ear compliance and fewer postoperative residual adenoids. It is recommended that endoscopic-assisted techniques be adopted more widely, especially in patients with coexisting ETD or hearing impairment.

CONCLUSION

CONCLUSION

This study demonstrates that **endoscopic assisted adenoidectomy** is significantly more effective compared to conventional curettage adenoidectomy in managing Eustachian tube dysfunction and ensuring complete removal of adenoid tissue. Patients who had endoscopic operations experienced faster and more significant improvements in middle ear pressure, tympanometric compliance, and hearing thresholds, especially by the 30th postoperative day. Furthermore, the rate of **residual adenoid tissue** was significantly lower in the endoscopic group, with better visualization enabling more precise removal—especially in anatomically challenging regions such as the **pharyngeal roof and torus tubaris.** Although both techniques were similarly effective in alleviating preoperative symptoms, the endoscopic approach offered **better surgical outcomes and long-term recovery** in terms of middle ear function. Based on these findings, endoscopic-assisted adenoidectomy should be considered the **preferred method**, particularly in cases associated with Eustachian tube dysfunction or recurrent middle ear pathology. Wider adoption of this technique could lead to improved patient outcomes, fewer postoperative complications, and reduced need for revision surgeries.

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ANNEXURE

PROFORMA (ANNEXURE-I)

S.NO.	**COMPONENTS**	Date :
1.	**CASE NO.**	
2.	**AGE**	
3.	**GENDER**	
4.	**UHID**	
5.	**CHIEF COMPLAINTS** • NASAL OBSTRUCTION • MOUTH BREATHING	
11.	**PRE-OPERATIVE** • GRADE OF ADENOID HYPERTROPHY	
14.	**SURGERY DONE**	
15.	**SURGERY DATE**	
18.	**POST OPERATIVE** • LOCATION OF REMNANT TISSUE	
19.	TYMPANOMETRY • PREOP • POSTOPDAY 1 • 1 MONTH	

PATIENT INFORMATION SHEET

(ANNEXURE-II)

Name of the study:

Comparison Of Nasopharyngeal Asessment and Tympanometric Evaluation Of Eustachian Tube Dysfunction Following Conventional And Endoscopic Assisted Adenoidectomy

Principal Investigator's Name: Dr B.Sriparna Swathi

The purpose of this study is To compare nasopharyngeal asessment and eustachian tube pressures following conventional and endoscopic assisted adenoidectomy.We are enrolling people diagnosed with adenoid hypertrophy to take part in this study, however based on criteria list, eligible participants will be chosen among the interested ones. Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you agree to participate in this study, you will have to undergo 1.Adenoidectomy.2 Rigid nasal endoscopy3.Tympanometry 4.Complete Blood Count, coagulation profile, serology (HIV, HbsAg, HCV), renal function test, blood grouping and typing. By participating in this research you will contribute in predicting the amount of residual tissue in different grades of adenoids for better outcome of treatment. However, patients in the future may benefit as a result of knowledge gained from this study. You will not be charged extra for any of the procedures performed during the research study. Your participation in this study will not put you at any risk.

All information collected from you will be strictly confidential & will not be disclosed to anyoutsider. This information collected will be used for research purpose. This information will not reveal your identity & this study have been reviewed by central ethical committee.

For any further clarification you are free to contact the Principal investigator, Dr B.Sriparna Swathi-9949308210

There is no compulsion to participate in this study, further you are at the liberty to withdraw from the study at anytime if you wish to do so. Your treatment aspect will not be affected if you not wish to participate. You are required to sign only if you voluntarily agree to participate in proposed study. A copy of this document will be given to you for your information.

For further information contact,

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ರೋಗಿಯ ಮಾಹಿತಿ ಹಾಳೆ

ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿಯ ಹೆಸರು: ಡಾ. ಬಿ.ಶ್ರೀಪರ್ಣ ಸ್ವಾತಿ

ಅಧ್ಯಯನದ ಹೆಸರು - ನಾಸೊಫಾರ್ಂಜಿಯಲ್ ಮೌಲ್ಯಮಾಪನದ ಹೋಲಿಕೆ ಮತ್ತು ಯುಸ್ಟಾಚಿಯನ್ ಟ್ಯೂಬ್ ಅಪಸಾಮಾನ್ಯ ಕ್ರಿಯೆಯ ಟೈಂಪನೋಮೆಟ್ರಿಕ್ ಮೌಲ್ಯಮಾಪನ ಸಾಂಪ್ರದಾಯಿಕ ಮತ್ತು ಎಂಡೋಸ್ಕೋಪಿಕ್ ಅಸಿಸ್ಟೆಡ್ ಅಡೆನಾಯ್ಡೆಕ್ಟಮಿಯನ್ನು ಅನುಸರಿಸುವುದು.

ಸಾಂಪ್ರದಾಯಿಕ ಮತ್ತು ಎಂಡೋಸ್ಕೋಪಿಕ್ ಅಸಿಸ್ಟೆಡ್ ಅಡೆನೊಯ್ಡೆಕ್ಟಮಿ ನಂತರ ನಾಸೊಫಾರ್ಂಜಿಯಲ್ ಮೌಲ್ಯಮಾಪನ ಮತ್ತು ಯುಸ್ಟಾಚಿಯನ್ ಟ್ಯೂಬ್ ಒತ್ತಡವನ್ನು ಹೋಲಿಸುವುದು ಈ ಅಧ್ಯಯನದ ಉದ್ದೇಶವಾಗಿದೆ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಅಡೆನಾಯ್ಡ್ ಹೈಪರ್ಟ್ರೋಫಿ ರೋಗನಿರ್ಣಯ ಮಾಡಿದ ಜನರನ್ನು ನಾವು ಸೇರಿಸುತ್ತಿದ್ದೇವೆ, ಆದಾಗ್ಯೂ ಮಾನದಂಡಗಳ ಪಟ್ಟಿಯನ್ನು ಆಧರಿಸಿ, ಅರ್ಹ ಭಾಗವಹಿಸುವವರನ್ನು ಆಸಕ್ತರಲ್ಲಿ ಆಯ್ಕೆ ಮಾಡಲಾಗುತ್ತದೆ. ಬಿಡಿ. ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ನಿಮ್ಮ ಭಾಗವಹಿಸುವಿಕೆಯು ಸಂಪೂರ್ಣವಾಗಿ ಸ್ವಯಂಪ್ರೇರಿತವಾಗಿದೆ. ಭಾಗವಹಿಸಬೇಕೋ ಬೇಡವೋ ಎಂಬುದು ನಿಮ್ಮ ಆಯ್ಕೆ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಸಮ್ಮತಿಸಿದರೆ, ನೀವು 1.ಅಡೆನಾಯ್ಡೆಕ್ಟಮಿ.2 ರಿಜಿಡ್ ಮೂಗಿನ ಎಂಡೋಸ್ಕೋಪಿ3.ಟೈಂಪನೋಮೆಟ್ರಿ 4.ಸಂಪೂರ್ಣ ರಕ್ತದ ಎಣಿಕೆ, ಹೆಪ್ಪುಗಟ್ಟುವಿಕೆ ಪ್ರೊಫೈಲ್, ಸೆರೋಲಾಜಿ (HIV, HbsAg, HCV), ಮೂತ್ರಪಿಂಡದ ಕಾರ್ಯ ಪರೀಕ್ಷೆ, ರಕ್ತದ ಗುಂಪು ಮತ್ತು ಟೈಪಿಂಗ್ . ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ಭಾಗವಹಿಸುವ ಮೂಲಕ ಚಿಕಿತ್ಸೆಯ ಉತ್ತಮ ಫಲಿತಾಂಶಕ್ಕಾಗಿ ಅಡೆನಾಯ್ಡ್‌ಗಳ ವಿವಿಧ ಶ್ರೇಣಿಗಳಲ್ಲಿ ಉಳಿದಿರುವ ಅಂಗಾಂಶದ ಪ್ರಮಾಣವನ್ನು ಊಹಿಸಲು ನೀವು ಕೊಡುಗೆ ನೀಡುತ್ತೀರಿ. ಆದಾಗ್ಯೂ, ಈ ಅಧ್ಯಯನದಿಂದ ಪಡೆದ ಜ್ಞಾನದ ಪರಿಣಾಮವಾಗಿ ಭವಿಷ್ಯದಲ್ಲಿ ರೋಗಿಗಳು ಪ್ರಯೋಜನ ಪಡೆಯಬಹುದು. ಸಂಶೋಧನಾ ಅಧ್ಯಯನದ ಸಮಯದಲ್ಲಿ ನಡೆಸಿದ ಯಾವುದೇ ಕಾರ್ಯವಿಧಾನಗಳಿಗೆ ನಿಮಗೆ ಹೆಚ್ಚುವರಿ ಶುಲ್ಕ ವಿಧಿಸಲಾಗುವುದಿಲ್ಲ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ನಿಮ್ಮ ಭಾಗವಹಿಸುವಿಕೆಯು ನಿಮಗೆ ಯಾವುದೇ ಅಪಾಯವನ್ನುಂಟು ಮಾಡುವುದಿಲ್ಲ.

ನಿಮ್ಮಿಂದ ಸಂಗ್ರಹಿಸಲಾದ ಎಲ್ಲಾ ಮಾಹಿತಿಯು ಕಟ್ಟುನಿಟ್ಟಾಗಿ ಗೌಪ್ಯವಾಗಿರುತ್ತದೆ ಮತ್ತು ಯಾವುದೇ ಹೊರಗಿನವರಿಗೆ ಬಹಿರಂಗಪಡಿಸಲಾಗುವುದಿಲ್ಲ. ಸಂಗ್ರಹಿಸಿದ ಈ ಮಾಹಿತಿಯನ್ನು ಸಂಶೋಧನಾ ಉದ್ದೇಶಕ್ಕಾಗಿ ಬಳಸಲಾಗುತ್ತದೆ. ಈ ಮಾಹಿತಿಯು ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸುವುದಿಲ್ಲ ಮತ್ತು ಈ ಅಧ್ಯಯನವನ್ನು ಕೇಂದ್ರ ನೈತಿಕ ಸಮಿತಿಯು ಪರಿಶೀಲಿಸಿದೆ.

ಯಾವುದೇ ಹೆಚ್ಚಿನ ಸ್ಪಷ್ಟೀಕರಣಕ್ಕಾಗಿ ನೀವು ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿ ಡಾ. ಬಿ.ಶ್ರೀಪರ್ಣ ಸ್ವಾತಿ-9949308210 ಅವರನ್ನು ಸಂಪರ್ಕಿಸಲು ಮುಕ್ತರಾಗಿದ್ದೀರಿ.

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಯಾವುದೇ ಬಲವಂತವಿಲ್ಲ, ಮುಂದೆ ನೀವು ಹಾಗೆ ಮಾಡಲು ಬಯಸಿದರೆ ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಅಧ್ಯಯನದಿಂದ ಹಿಂದೆ ಸರಿಯಲು ನಿಮಗೆ ಸ್ವಾತಂತ್ರ್ಯವಿದೆ. ನೀವು ಭಾಗವಹಿಸಲು ಬಯಸದಿದ್ದರೆ ನಿಮ್ಮ ಚಿಕಿತ್ಸೆಯ ಅಂಶವು ಪರಿಣಾಮ ಬೀರುವುದಿಲ್ಲ. ಉದ್ದೇಶಿತ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಒಪ್ಪಿಕೊಂಡರೆ ಮಾತ್ರ ನೀವು ಸಹಿ ಮಾಡಬೇಕಾಗುತ್ತದೆ. ನಿಮ್ಮ ಮಾಹಿತಿಗಾಗಿ ಈ ಡಾಕ್ಯುಮೆಂಟ್‌ನ ನಕಲನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುತ್ತದೆ.

ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿಯ ಹೆಸರು: ಡಾ. ಬಿ.ಶ್ರೀಪರ್ಣ ಸ್ವಾತಿ

ಮೊಬೈಲ್ ಸಂಖ್ಯೆ : 9949308210

ಇಮೇಲ್ ಐಡಿ : sriparnaswathi25@gmail.com

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH, TAMAKA, KOLAR - 563101.

INFORMED CONSENT FORM

(ANNEXURE -III)

INFORMED WRITTEN CONSENT FORM

Name of the study:

Comparison Of Nasopharyngeal Assessment And Tympanometry Evaluation Of Eustachian Tube Dysfunction Following Conventional And Endoscopic Assisted Adenoidectomy

.I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction.I consent voluntarily to participate as a participant in this research.

Name of Participant__________________

Signature of Participants ____________________ Date ________________

For illiterate -

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Name of witness______________________ AND Thumb print of participant

Signature of witness _______________________ Date _________________________

Statement by the researcher/person taking consent
I have accurately read out the information sheet to the potential participant with the best of my ability. I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.
A copy of this ICF has been provided to the participant.

Print Name of Researcher taking the consent_________________________

Signature of Researcher taking the consent___________________________

Date___________

Principal Investigator's Name : Dr. B.Sriparna Swathi

Mobile Number : 9949308210 Email Id : sriparnaswathi25@gmail.com

ಶ್ರೀ ದೇವರಾಜ್ ಅರಸ್ ಉನ್ನತ ಶಿಕ್ಷಣ ಮತ್ತು ಸಂಶೋಧನೆಯ ಅಕಾಡೆಮಿ,

ತಮಕಾ, ಕೋಲಾರ - 563101.

ಲಿಖಿತ ಒಪ್ಪಿಗೆ ನಮೂನೆಯನ್ನು ತಿಳಿಸಲಾಗಿದೆ

ಅಧ್ಯಯನದ ಹೆಸರು - ನಾಸೊಫಾರ್ಂಜಿಯಲ್ ಮೌಲ್ಯಮಾಪನದ ಹೋಲಿಕೆ ಮತ್ತು ಯುಸ್ಟಾಚಿಯನ್ ಟ್ಯೂಬ್ ಅಪಸಾಮಾನ್ಯ ಕ್ರಿಯೆಯ ಟೈಂಪನೋಮೆಟ್ರಿಕ್ ಮೌಲ್ಯಮಾಪನ ಸಾಂಪ್ರದಾಯಿಕ ಮತ್ತು ಎಂಡೋಸ್ಕೋಪಿಕ್ ಅಸಿಸ್ಟೆಡ್ ಅಡೆನಾಯ್ಡೆಕ್ಟಮಿಯನ್ನು ಅನುಸರಿಸುವುದು. ನಾನು ಮೇಲಿನ ಮಾಹಿತಿಯನ್ನು ಓದಿದ್ದೇನೆ, ಅಥವಾ ಅದನ್ನು ನನಗೆ ಓದಲಾಗಿದೆ. ನಾನು ಅದರ ಬಗ್ಗೆ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲು ಅವಕಾಶವನ್ನು ಹೊಂದಿದ್ದೇನೆ ಮತ್ತು ನಾನು ಕೇಳಿದ ಯಾವುದೇ ಪ್ರಶ್ನೆಗಳಿಗೆ ನನ್ನ ತೃಪ್ತಿಗೆ ಉತ್ತರಿಸಲಾಗಿದೆ. ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ಪಾಲ್ಗೊಳ್ಳುವವನಾಗಿ ಭಾಗವಹಿಸಲು ನಾನು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಸಮ್ಮತಿಸುತ್ತೇನೆ.

ಭಾಗವಹಿಸುವವರ ಹೆಸರು________________

ಭಾಗವಹಿಸುವವರ ಸಹಿ ________________ ದಿನಾಂಕ ______________

ಅನಕ್ಷರಸ್ಥರಿಗೆ -

ಸಂಭಾವ್ಯ ಪಾಲ್ಗೊಳ್ಳುವವರಿಗೆ ಒಪ್ಪಿಗೆಯ ನಮೂನೆಯ ನಿಖರವಾದ ಓದುವಿಕೆಯನ್ನು ನಾನು ನೋಡಿದ್ದೇನೆ ಮತ್ತು ವ್ಯಕ್ತಿಯು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲು ಅವಕಾಶವನ್ನು ಹೊಂದಿದ್ದೇನೆ. ವ್ಯಕ್ತಿಯು ಮುಕ್ತವಾಗಿ ಒಪ್ಪಿಗೆ ನೀಡಿದ್ದಾರೆ ಎಂದು ನಾನು ದೃಢೀಕರಿಸುತ್ತೇನೆ.

ಸಾಕ್ಷಿಯ ಹೆಸರು__________________ ಮತ್ತು ಭಾಗವಹಿಸುವವರ ಹೆಬ್ಬೆರಳು

ಸಾಕ್ಷಿಯ ಸಹಿ __________________ ದಿನಾಂಕ ____________________

ಒಪ್ಪಿಗೆಯನ್ನು ತೆಗೆದುಕೊಳ್ಳುವ ಸಂಶೋಧಕ/ವ್ಯಕ್ತಿಯ ಹೇಳಿಕೆ

ಸಂಭಾವ್ಯ ಭಾಗವಹಿಸುವವರಿಗೆ ನನ್ನ ಸಾಮರ್ಥ್ಯದ ಅತ್ಯುತ್ತಮ ಮಾಹಿತಿಯೊಂದಿಗೆ ನಾನು ಮಾಹಿತಿ ಹಾಳೆಯನ್ನು ನಿಖರವಾಗಿ ಓದಿದ್ದೇನೆ. ಅಧ್ಯಯನದ ಕುರಿತು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲು ಭಾಗವಹಿಸುವವರಿಗೆ ಅವಕಾಶ ನೀಡಲಾಗಿದೆ ಎಂದು ನಾನು ದೃಢೀಕರಿಸುತ್ತೇನೆ ಮತ್ತು ಭಾಗವಹಿಸುವವರು ಕೇಳಿದ ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೆ ಸರಿಯಾಗಿ ಮತ್ತು ನನ್ನ ಸಾಮರ್ಥ್ಯಕ್ಕೆ ತಕ್ಕಂತೆ ಉತ್ತರಿಸಲಾಗಿದೆ. ಸಮ್ಮತಿಯನ್ನು ನೀಡುವಂತೆ ವ್ಯಕ್ತಿಯನ್ನು ಒತ್ತಾಯಿಸಲಾಗಿಲ್ಲ ಮತ್ತು ಒಪ್ಪಿಗೆಯನ್ನು ಮುಕ್ತವಾಗಿ ಮತ್ತು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ನೀಡಲಾಗಿದೆ ಎಂದು ನಾನು ದೃಢೀಕರಿಸುತ್ತೇನೆ.

ಈ ICF ನ ಪ್ರತಿಯನ್ನು ಭಾಗವಹಿಸುವವರಿಗೆ ಒದಗಿಸಲಾಗಿದೆ.

ಸಮ್ಮತಿಯನ್ನು ತೆಗೆದುಕೊಳ್ಳುವ ಸಂಶೋಧಕರ ಹೆಸರನ್ನು ಮುದ್ರಿಸಿ____________________

ಒಪ್ಪಿಗೆಯನ್ನು ತೆಗೆದುಕೊಳ್ಳುವ ಸಂಶೋಧಕರ ಸಹಿ______________________

ದಿನಾಂಕ__________

ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿಯ ಹೆಸರು: ಡಾ. ಬಿ.ಶ್ರೀಪರ್ಣ ಸ್ವಾತಿ

ಮೊಬೈಲ್ ಸಂಖ್ಯೆ : 9949308210 ಇಮೇಲ್ ಐಡಿ : sriparnaswathi25@gmail.com

ASSENT FORM

ANNEXURE IV

Name of the study - **COMPARISION OF NASOPHARYNGEAL ASSESSMENT AND TYMPANOMETRIC EVALUATION OF EUSTACHIAN TUBE DYSFUNCTION FOLLOWING CONVENTIONAL AND ENDOSCOPIC ASSISTED ADENOIDECTOMY**

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to let my child participate as a participant in this research.

Name of Participant__________________

Name of Participants parents or guardians___________________

Signature of Participants parents or guardians ___________________ Date ________________

For illiterate -

I have witnessed the accurate reading of the consent form to the potential participant, parents or guardians, and they has had the opportunity to ask questions. I confirm that the parents or guardians has given consent freely.

Name of witness_____________________ AND Thumb print of participant

Signature of witness ______________________ Date ________________________

Statement by the researcher/person taking consent
I have accurately read out the information sheet to the potential participant's parents or guardians with the best of my ability. I confirm that the participant's parents or guardians was given an opportunity to ask questions about the study, and all the questions asked by the participants parents or guardians have been answered correctly and to the best of my ability. I confirm that the participants parents or guardians has not been coerced into giving consent, and the consent has been given freely and voluntarily.
A copy of this ICF has been provided to the participants parents or guardians.

Name of Researcher taking the consent________________________

Signature of Researcher taking the consent__________________________
Date___________
Principal Investigator's Name : Dr. B.Sriparna Swathi

ಶ್ರೀ ದೇವರಾಜ್ ಅರಸ್ ಉನ್ನತ ಶಿಕ್ಷಣ ಮತ್ತು ಸಂಶೋಧನೆಯ ಅಕಾಡೆಮಿ,

ತಮಕಾ, ಕೋಲಾರ - 563101.

ಅಸೆಂಟ್ ಫಾರ್ಮ್

ಅಧ್ಯಯನದ ಹೆಸರು - ನಾಸೊಫಾರ್ಂಜಿಯಲ್ ಮೌಲ್ಯಮಾಪನದ ಹೋಲಿಕೆ ಮತ್ತು ಯುಸ್ಟಾಚಿಯನ್ ಟ್ಯೂಬ್ ಅಪಸಾಮಾನ್ಯ ಕ್ರಿಯೆಯ ಟೈಂಪನೋಮೆಟ್ರಿಕ್ ಮೌಲ್ಯಮಾಪನ ಸಾಂಪ್ರದಾಯಿಕ ಅಡೆನಾಯ್ಡೆಕ್ಟಮಿ ಮತ್ತು ಎಂಡೋಸ್ಕೋಪಿಕ್ ಅಸಿಸ್ಟೆಡ್ ಅಡೆನಾಯ್ಡೆಕ್ಟಮಿ

ನಾನು ಮೇಲಿನ ಮಾಹಿತಿಯನ್ನು ಓದಿದ್ದೇನೆ ಅಥವಾ ಅದನ್ನು ನನಗೆ ಓದಿದ್ದೇನೆ. ಅದರ ಬಗ್ಗೆ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲು ನನಗೆ ಅವಕಾಶವಿದೆ ಮತ್ತು ನಾನು ಕೇಳಿದ ಯಾವುದೇ ಪ್ರಶ್ನೆಗಳಿಗೆ ನನ್ನ ತೃಪ್ತಿಗೆ ಉತ್ತರಿಸಲಾಗಿದೆ. ನನ್ನ ಮಗು ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ಪಾಲ್ಗೊಳ್ಳುವಂತೆ ನಾನು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಸಮ್ಮತಿಸುತ್ತೇನೆ.

ಭಾಗವಹಿಸುವವರ ಹೆಸರು________________

ಭಾಗವಹಿಸುವವರ ಪೋಷಕರು ಅಥವಾ ಪೋಷಕರ ಹೆಸರು ________________

ಭಾಗವಹಿಸುವವರ ಪೋಷಕರು ಅಥವಾ ಪೋಷಕರ ಸಹಿ ________________ ದಿನಾಂಕ________________

ಅನಕ್ಷರಸ್ಥರಿಗೆ –

ಸಂಭಾವ್ಯ ಪಾಲ್ಗೊಳ್ಳುವವರಿಗೆ, ಪೋಷಕರು ಅಥವಾ ಪೋಷಕರಿಗೆ ಒಪ್ಪಿಗೆಯ ನಮೂನೆಯ ನಿಖರವಾದ ಓದುವಿಕೆಯನ್ನು ನಾನು ನೋಡಿದ್ದೇನೆ ಮತ್ತು ಅವರು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲು ಅವಕಾಶವನ್ನು ಹೊಂದಿದ್ದಾರೆ. ಪೋಷಕರು ಅಥವಾ ಪೋಷಕರು ಮುಕ್ತವಾಗಿ ಒಪ್ಪಿಗೆ ನೀಡಿದ್ದಾರೆ ಎಂದು ನಾನು ದೃಢೀಕರಿಸುತ್ತೇನೆ.

ಸಾಕ್ಷಿಯ ಹೆಸರು________________ ಮತ್ತು ಭಾಗವಹಿಸುವವರ ಹೆಬ್ಬೆರಳು

ಸಾಕ್ಷಿಯ ಸಹಿ ________________ ದಿನಾಂಕ ________________

ಒಪ್ಪಿಗೆಯನ್ನು ತೆಗೆದುಕೊಳ್ಳುವ ಸಂಶೋಧಕ/ವ್ಯಕ್ತಿಯ ಹೇಳಿಕೆ

ಸಂಭಾವ್ಯ ಭಾಗವಹಿಸುವವರ ಪೋಷಕರು ಅಥವಾ ಪೋಷಕರಿಗೆ ನನ್ನ ಸಾಮರ್ಥ್ಯದ ಅತ್ಯುತ್ತಮ ಮಾಹಿತಿಯೊಂದಿಗೆ ನಾನು ಮಾಹಿತಿ ಹಾಳೆಯನ್ನು ನಿಖರವಾಗಿ ಓದಿದ್ದೇನೆ. ಭಾಗವಹಿಸುವವರ ಪೋಷಕರು ಅಥವಾ ಪೋಷಕರಿಗೆ ಅಧ್ಯಯನದ ಕುರಿತು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲು ಅವಕಾಶವನ್ನು ನೀಡಲಾಗಿದೆ ಎಂದು ನಾನು ದೃಢೀಕರಿಸುತ್ತೇನೆ ಮತ್ತು ಭಾಗವಹಿಸುವವರ ಪೋಷಕರು ಅಥವಾ ಪೋಷಕರು ಕೇಳಿದ ಎಲ್ಲಾ ಪ್ರಶ್ನೆಗಳಿಗೆ ಸರಿಯಾಗಿ ಮತ್ತು ನನ್ನ ಸಾಮರ್ಥ್ಯಕ್ಕೆ ತಕ್ಕಂತೆ ಉತ್ತರಿಸಲಾಗಿದೆ. ಭಾಗವಹಿಸುವವರ ಪೋಷಕರು ಅಥವಾ ಪೋಷಕರನ್ನು ಒಪ್ಪಿಗೆ ನೀಡುವಂತೆ ಒತ್ತಾಯಿಸಲಾಗಿಲ್ಲ ಮತ್ತು ಒಪ್ಪಿಗೆಯನ್ನು ಮುಕ್ತವಾಗಿ ಮತ್ತು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ನೀಡಲಾಗಿದೆ ಎಂದು ನಾನು ದೃಢೀಕರಿಸುತ್ತೇನೆ.

ಈ ICF ನ ಪ್ರತಿಯನ್ನು ಭಾಗವಹಿಸುವ ಪೋಷಕರಿಗೆ ಅಥವಾ ಪೋಷಕರಿಗೆ ಒದಗಿಸಲಾಗಿದೆ.

ಒಪ್ಪಿಗೆಯನ್ನು ತೆಗೆದುಕೊಳ್ಳುವ ಸಂಶೋಧಕರ ಹೆಸರು________________

ಒಪ್ಪಿಗೆಯನ್ನು ತೆಗೆದುಕೊಳ್ಳುವ ಸಂಶೋಧಕರ ಸಹಿ________________

ದಿನಾಂಕ__________

ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿಯ ಹೆಸರು: ಡಾ. ಬಿ.ಶ್ರೀಪರ್ಣ ಸ್ವಾತಿ

ಮೊಬೈಲ್ ಸಂಖ್ಯೆ : 9949308210 ಇಮೇಲ್ ಐಡಿ : sriparnaswathi25@gmail.com

KEY TO MASTERCHART:

M-MALE

F-FEMALE

MASTERCHART

	UHID	AGE	SEX	SOCIOECONOMIC STATUS	symptoms	TYPE OF SURGERY	DATE OF SURGEY	GRADE OF ADENOIDS	PRE OP PTA HEARING THRESHOLD >15dB	POPDAY1 PTA HEARING THRESHOLD >15dB	POP DAY30 PTA HEARING THRESHOLD >15dB	PRE- OP TYMPANOMETRY RIGHT EAR (da pa)	PRE- OP TYMPANOMETRY LEFT EAR (da pa)	Post op day1 TYMPANOMETRY RIGHT EAR (da pa)	post op day1 TYMPANOMETRY LEFT EAR (da pa)	Post op day 30 TYMPANOMETRY RIGHT EAR (da pa)	post op day30 TYMPANOMETRY LEFT EAR (da pa)	PRE-OP ABNORMAL PEAK COMPLIANCE	POD 1 ABNORMAL PEAK COMPLIANCE	POD 30 ABNORMAL PEAK COMPLIANCE	pre op Impaired Peak middle ear pressure	PODAY1 Impaired Peak middle ear pressure	POD30 Impaired Peak middle ear pressure	PRE- OP TYMPANOMETRY RIGHT EAR GRAPH (da pa)	PRE- OP TYMPANOMETRY LEFT EAR GRAPH (da pa)	pre op tympanogram abnormal graph	POST- OP DAY1 TYMPANOMETRY RIGHT EAR GRAPH (da pa)	POST- OP DAY1 TYMPANOMETRY LEFT EAR GRAPH (da pa)	po day1 tympanogram abnormal graph	POST- OP DAY 30 TYMPANOMETRY RIGHT EAR GRAPH (da pa)	POST- OP DAY 30 TYMPANOMETRY LEFT EAR GRAPH (da pa)	po day 30 tympanogram abnormal graph	POST OP Trans nasal endoscopic examination for residual RAMNANTs
CASE 2	281897	9	F	LOW	ost-nasal dr	Conventiona	15-09-2023	3	ABNORMAL	ABNORMAL	ABNORMAL	-54	-40	-200	-192	-200	-192	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 4	282755	17	M	LOW	rhinorrhoea	conventiona	25-09-2023	2	ABNORMAL	NORMAL	NORMAL	-36	0	-60	-25	-60	-25	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 6	292066	11	M	LOW	ost-nasal dr	Conventiona	01-11-2023	3	ABNORMAL	ABNORMAL	NORMAL	-30	-80	1	-6	1	-6	YES	NO	NO	YES	YES	NO	B	B	B	B	B	B	A	A	A	yes
CASE 7	296520	7	F	HIGH	snoring	Conventiona	01-11-2023	3	ABNORMAL	NORMAL	NORMAL	-16	-98	-25	-12	-25	-12	NO	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	no
CASE 9	273269	14	F	LOW	rhinorrhoea	Conventiona	13-11-2023	3	ABNORMAL	ABNORMAL	NORMAL	-16	-2	4	-4	4	-4	YES	YES	NO	YES	YES	NO	B	B	B	A	A	A	A	A	A	yes
CASE 10	273272	11	F	LOW	rhinorrhoea	Conventiona	13-11-2023	2	NORMAL	NORMAL	NORMAL	16	-70	-340	-133	-340	-133	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	yes
CASE 11	313937	6	M	LOW	ost-nasal dr	Conventiona	02-12-2023	2	ABNORMAL	NORMAL	NORMAL	-17	-50	-313	-9	-313	-9	NO	NO	NO	NO	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 12	318925	5	F	LOW	rhinorrhoea	Conventiona	23-12-2023	2	ABNORMAL	NORMAL	NORMAL	2	-70	-1	-7	-1	-7	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 14	323652	9	F	LOW	hronic coug	Conventiona	28-12-2023	3	ABNORMAL	ABNORMAL	NORMAL	2	-194	2	-194	2	-194	YES	YES	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 15	329988	12	F	LOW	ost-nasal dr	Conventiona	02-01-2024	3	ABNORMAL	NORMAL	NORMAL	-4	0	-317	-6	-317	-6	YES	NO	NO	YES	YES	NO	C	C	C	C	C	C	A	A	A	no
CASE 19	341167	17	F	LOW	rhinorrhoea	Conventiona	30-01-2024	2	NORMAL	ABNORMAL	NORMAL	-112	3	-89	0	-89	0	NO	NO	NO	NO	NO	NO	C	C	C	A	A	A	A	A	A	yes
CASE 20	341677	5	F	LOW	snoring	Conventiona	31-01-2024	4	ABNORMAL	ABNORMAL	ABNORMAL	-49	-232	-20	4	-20	4	YES	YES	YES	YES	YES	YES	B	B	B	B	B	B	B	B	B	yes
CASE 21	341057	17	M	HIGH	snoring	Conventiona	03-02-2024	4	ABNORMAL	ABNORMAL	ABNORMAL	-36	-80	-23	2	-23	2	YES	YES	YES	YES	YES	YES	C	C	C	C	C	C	C	C	C	yes
CASE 22	338901	6	M	LOW	snoring	Conventiona	06-02-2024	4	ABNORMAL	ABNORMAL	ABNORMAL	-27	-49	-3	-36	-3	-36	YES	YES	YES	YES	YES	YES	C	C	C	C	C	C	C	C	C	no
CASE 23	345171	5	F	LOW	snoring	Conventiona	06-02-2024	3	ABNORMAL	ABNORMAL	ABNORMAL	-37	-98	0	-54	0	-54	YES	YES	NO	YES	YES	NO	C	C	C	C	C	C	A	A	A	no
CASE 24	332867	7	M	HIGH	rhinorrhoea	Conventiona	10-02-2024	3	ABNORMAL	NORMAL	NORMAL	-128	-3	-300	-39	-300	-39	YES	NO	NO	YES	YES	NO	C	C	C	A	A	A	A	A	A	yes
CASE 26	320751	17	F	LOW	snoring	Conventiona	13-02-2024	3	ABNORMAL	NORMAL	NORMAL	-30	0	-35	-111	-35	-111	YES	YES	NO	YES	YES	NO	B	B	B	B	B	B	A	A	A	no
CASE 27	347690	10	F	LOW	snoring	Conventiona	15-02-2024	4	ABNORMAL	ABNORMAL	ABNORMAL	-40	-50	-98	-98	-98	-98	YES	YES	YES	YES	YES	YES	B	B	B	B	B	B	B	B	B	yes
CASE 29	348274	8	M	HIGH	snoring	Conventiona	28-02-2024	3	ABNORMAL	ABNORMAL	NORMAL	-10	-4	-37	-4	-37	-4	NO	NO	NO	YES	NO	NO	C	C	C	C	C	C	C	C	C	yes
CASE 30	350264	4	M	LOW	snoring	Conventiona	27-02-2024	3	ABNORMAL	ABNORMAL	NORMAL	-2	3	-98	-7	-98	-7	YES	NO	NO	YES	NO	NO	B	B	B	B	B	B	A	A	A	no
CASE 32	363595	8	F	LOW	rhinorrhoea	conventiona	05-04-2024	3	ABNORMAL	NORMAL	NORMAL	-40	-30	-47	-39	-47	-39	NO	NO	NO	YES	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 34	398406	7	F	LOW	snoring	Conventiona	27-04-2024	3	ABNORMAL	ABNORMAL	ABNORMAL	-23	0	-10	-47	-10	-47	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	no
CASE 37	412690	9	M	LOW	ost-nasal dr	Conventiona	04-05-2024	3	ABNORMAL	ABNORMAL	ABNORMAL	-9	-115	-6	-39	-6	-39	NO	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
case 47	492884	12	F	HIGH	snoring	Conventiona	05-09-2024	3	ABNORMAL	ABNORMAL	NORMAL	-45	-22	-109	1	-109	1	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
case 50	480560	10	F	LOW	snoring	Conventiona	18-09-2024	3	ABNORMAL	ABNORMAL	ABNORMAL	-46	1	1	2	1	2	NO	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	yes
CASE 1	270923	3	M	HIGH	rhinorrhoea	scopic assi	14-09-2023	3	abnormal	abnormal	normal	-54	-40	-200	-192	-200	-192	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 3	282756	14	F	HIGH	rhinorrhoea	scopic assi	25-09-2023	1	normal	normal	normal	-36	0	-60	-25	-60	-25	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 5	283049	10	M	HIGH	ost-nasal dr	scopic assi	10-10-2023	3	abnormal	normal	normal	-30	-80	1	-6	1	-6	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 8	60815	6	M	HIGH	snoring	scopic assi	04-11-2023	4	abnormal	abnormal	abnormal	-16	-98	-25	-12	-25	-12	NO	NO	NO	NO	NO	NO	C	C	C	A	A	A	A	A	A	no
CASE 13	324261	11	M	HIGH	rhinorrhoea	scopic assi	22-12-2023	3	abnormal	normal	normal	-16	-2	4	-4	4	-4	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 16	334996	9	M	HIGH	snoring	scopic assi	12-01-2024	3	abnormal	abnormal	normal	16	-70	-340	-133	-340	-133	NO	NO	NO	YES	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 17	310517	5	M	HIGH	rhinorrhoea	scopic assi	17-01-2024	3	abnormal	normal	normal	-17	-50	-313	-9	-313	-9	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 18	339663	9	M	HIGH	ost-nasal dr	scopic assi	24-01-2024	3	abnormal	normal	normal	2	-70	-1	-7	-1	-7	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 25	343668	17	M	HIGH	snoring	scopic assi	12-02-2024	4	abnormal	abnormal	normal	2	-194	2	-194	2	-194	YES	YES	NO	YES	NO	NO	B	B	B	B	B	B	A	A	A	no
CASE 28	352255	7	M	HIGH	snoring	scopic assi	16-02-2024	4	abnormal	abnormal	normal	-4	0	-317	-6	-317	-6	YES	YES	NO	YES	NO	NO	C	C	C	C	C	C	A	A	A	no
CASE 31	356511	7	M	HIGH	snoring	scopic assi	28-02-2024	2	normal	normal	normal	-112	3	-89	0	-89	0	NO	NO	NO	NO	NO	NO	C	C	C	A	A	A	A	A	A	no
CASE 33	139981	12	M	HIGH	ost-nasal dr	scopic assi	24-04-2024	2	normal	normal	normal	-49	-232	-20	4	-20	4	NO	NO	NO	NO	NO	NO	B	B	B	A	A	A	A	A	A	no
CASE 35	387241	7	F	HIGH	snoring	scopic assi	29-04-2024	4	abnormal	abnormal	normal	-36	-80	-23	2	-23	2	YES	YES	NO	YES	YES	YES	C	C	C	C	C	C	C	C	C	yes
CASE 36	400165	7	M	HIGH	snoring	scopic assi	30-04-2024	3	abnormal	normal	normal	-27	-49	-3	-36	-3	-36	YES	YES	NO	YES	YES	NO	C	C	C	C	C	C	A	A	A	no
CASE 38	409648	7	F	HIGH	ost-nasal dr	scopic assi	06-05-2024	3	abnormal	abnormal	abnormal	-37	-98	0	-54	0	-54	YES	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	no
CASE 39	402872	9	F	HIGH	snoring	scopic assi	06-05-2024	3	abnormal	abnormal	normal	-128	-3	-300	-39	-300	-39	YES	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	yes
CASE 40	464231	10	F	HIGH	snoring	scopic assi	10-07-2024	3	abnormal	abnormal	normal	-30	0	-35	-111	-35	-111	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	no
case 41	464364	13	M	LOW	rhinorrhoea	scopic assi	26-07-2024	3	abnormal	normal	normal	-40	-50	-98	-98	-98	-98	YES	NO	NO	YES	YES	NO	B	B	B	A	A	A	A	A	A	yes
case 42	474701	7	M	HIGH	snoring	scopic assi	27-07-2024	3	abnormal	normal	normal	-10	-4	-37	-4	-37	-4	YES	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	no
case 43	450904	8	F	HIGH	rhinorrhoea	scopic assi	27-07-2024	3	abnormal	normal	normal	-2	3	-98	-7	-98	-7	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	no
case 44	452858	10	F	HIGH	snoring	scopic assi	02-08-2024	3	abnormal	normal	normal	-40	-30	-47	-39	-47	-39	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
case 45	482668	8	M	HIGH	snoring	scopic assi	21-08-2024	3	abnormal	abnormal	normal	-23	0	-10	-47	-10	-47	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	no
case 46	489158	14	M	LOW	ost-nasal dr	scopic assi	27-08-2024	3	abnormal	normal	normal	-9	-115	-6	-39	-6	-39	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	no
case 48	492864	14	F	LOW	snoring	scopic assi	05-09-2024	3	abnormal	normal	normal	-45	-22	-109	1	-109	1	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
case 49	394335	9	M	HIGH	ost-nasal dr	scopic assi	14-09-2024	3	abnormal	abnormal	normal	-46	1	1	2	1	2	YES	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	no

Case No.	UHID	AGE	SEX	SOCIOECONOMIC STATUS	symptoms	TYPE OF SURGERY	DATE OF SURGEY	GRADE OF ADENOIDS	PRE OP PTA HEARING THRESHOLD >15dB	POPDAY1 PTA HEARING THRESHOLD >15dB	POP DAY30 PTA HEARING THRESHOLD >15dB	PRE-OP ABNORMAL PEAK COMPLIANCE	POD 1 ABNORMAL PEAK COMPLIANCE	POD 30 ABNORMAL PEAK COMPLIANCE	pre op Impaired Peak middle ear pressure	PODAY1 Impaired Peak middle ear pressure	POD30 Impaired Peak middle ear pressure	PRE- OP TYMPANOMETRY RIGHT EAR GRAPH (da pa)	PRE- OP TYMPANOMETRY LEFT EAR GRAPH (da pa)	pre op tympanogram abnormal graph	POST- OP DAY1 TYMPANOMETRY RIGHT EAR GRAPH (da pa)	POST- OP DAY1 TYMPANOMETRY LEFT EAR GRAPH (da pa)	po day1 tympanogram abnormal graph	POST- OP DAY 30 TYMPANOMETRY RIGHT EAR GRAPH (da pa)	POST- OP DAY 30 TYMPANOMETRY LEFT EAR GRAPH (da pa)	po day 30 tympanogram abnormal graph	POST OP Trans nasal endoscopic examination for residual RAMNANTS
CASE 2	281897	9	F	LOW	post-nasal drip	Conventional	15-09-2023	3	ABNORMAL	ABNORMAL	ABNORMAL	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 4	282755	17	M	LOW	rhinorrhoea	conventional	25-09-2023	2	ABNORMAL	NORMAL	NORMAL	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 6	292066	11	M	LOW	post-nasal drip	Conventional	01-11-2023	3	ABNORMAL	ABNORMAL	NORMAL	YES	NO	NO	YES	YES	NO	B	B	B	B	B	B	A	A	A	yes
CASE 7	296520	7	F	HIGH	snoring	Conventional	01-11-2023	3	ABNORMAL	NORMAL	NORMAL	NO	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	no
CASE 9	273269	14	F	LOW	rhinorrhoea	Conventional	13-11-2023	3	ABNORMAL	ABNORMAL	NORMAL	YES	YES	NO	YES	YES	NO	B	B	B	A	A	A	A	A	A	yes
CASE 10	273272	11	F	LOW	rhinorrhoea	Conventional	13-11-2023	2	NORMAL	NORMAL	NORMAL	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	yes
CASE 11	313937	6	M	LOW	post-nasal drip	Conventional	02-12-2023	2	ABNORMAL	NORMAL	NORMAL	NO	NO	NO	NO	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 12	318925	5	F	LOW	rhinorrhoea	Conventional	23-12-2023	2	ABNORMAL	NORMAL	NORMAL	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 14	323652	9	F	LOW	chronic cough	Conventional	28-12-2023	3	ABNORMAL	ABNORMAL	NORMAL	YES	YES	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 15	329988	12	F	LOW	post-nasal drip	Conventional	02-01-2024	3	ABNORMAL	NORMAL	NORMAL	YES	NO	NO	YES	YES	NO	C	C	C	C	C	C	A	A	A	no
CASE 19	341167	17	F	LOW	rhinorrhoea	Conventional	30-01-2024	2	NORMAL	ABNORMAL	NORMAL	NO	NO	NO	NO	NO	NO	C	C	C	A	A	A	A	A	A	yes
CASE 20	341677	5	F	LOW	snoring	Conventional	31-01-2024	4	ABNORMAL	ABNORMAL	ABNORMAL	YES	YES	YES	YES	YES	YES	B	B	B	B	B	B	B	B	B	yes
CASE 21	341057	17	M	HIGH	snoring	Conventional	03-02-2024	4	ABNORMAL	ABNORMAL	ABNORMAL	YES	YES	YES	YES	YES	YES	C	C	C	C	C	C	C	C	C	yes
CASE 22	338901	6	M	LOW	snoring	Conventional	06-02-2024	4	ABNORMAL	ABNORMAL	ABNORMAL	YES	YES	YES	YES	YES	YES	C	C	C	C	C	C	C	C	C	no
CASE 23	345171	5	F	LOW	snoring	Conventional	06-02-2024	3	ABNORMAL	ABNORMAL	ABNORMAL	YES	YES	NO	YES	YES	NO	C	C	C	C	C	C	A	A	A	no
CASE 24	332867	7	M	HIGH	rhinorrhoea	Conventional	10-02-2024	3	ABNORMAL	NORMAL	NORMAL	YES	NO	NO	YES	YES	NO	C	C	C	A	A	A	A	A	A	yes
CASE 26	320751	17	F	LOW	snoring	Conventional	13-02-2024	3	ABNORMAL	NORMAL	NORMAL	YES	YES	NO	YES	YES	NO	B	B	B	B	B	B	A	A	A	no
CASE 27	347690	10	F	LOW	snoring	Conventional	15-02-2024	4	ABNORMAL	ABNORMAL	ABNORMAL	YES	YES	YES	YES	YES	YES	B	B	B	B	B	B	B	B	B	yes
CASE 29	348274	8	M	HIGH	snoring	Conventional	28-02-2024	3	ABNORMAL	ABNORMAL	NORMAL	NO	NO	NO	YES	NO	NO	C	C	C	C	C	C	C	C	C	yes
CASE 30	350264	4	M	LOW	snoring	Conventional	27-02-2024	3	ABNORMAL	ABNORMAL	NORMAL	YES	NO	NO	YES	NO	NO	B	B	B	B	B	B	A	A	A	no
CASE 32	363595	8	F	LOW	rhinorrhoea	conventional	05-04-2024	3	ABNORMAL	NORMAL	NORMAL	NO	NO	NO	YES	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 34	398406	7	F	LOW	snoring	Conventional	27-04-2024	3	ABNORMAL	ABNORMAL	ABNORMAL	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	no
CASE 37	412690	9	M	LOW	post-nasal drip	Conventional	04-05-2024	3	ABNORMAL	ABNORMAL	ABNORMAL	NO	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
case 47	492884	12	F	HIGH	snoring	Conventional	05-09-2024	3	ABNORMAL	ABNORMAL	NORMAL	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
case 50	480560	10	F	LOW	snoring	Conventional	18-09-2024	3	ABNORMAL	ABNORMAL	ABNORMAL	NO	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	yes
CASE 1	270923	3	M	HIGH	rhinorrhoea	oscopic assis	14-09-2023	3	abnormal	abnormal	normal	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 3	282756	14	F	HIGH	rhinorrhoea	oscopic assis	25-09-2023	1	normal	normal	normal	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 5	283049	10	M	HIGH	post-nasal drip	oscopic assis	10-10-2023	3	abnormal	normal	normal	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 8	60815	6	M	HIGH	snoring	oscopic assis	04-11-2023	4	abnormal	abnormal	abnormal	NO	NO	NO	NO	NO	NO	C	C	C	A	A	A	A	A	A	no
CASE 13	324261	11	M	HIGH	rhinorrhoea	oscopic assis	22-12-2023	3	abnormal	normal	normal	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
CASE 16	334996	9	M	HIGH	snoring	oscopic assis	12-01-2024	3	abnormal	abnormal	normal	NO	NO	NO	YES	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 17	310517	5	M	HIGH	rhinorrhoea	oscopic assis	17-01-2024	3	abnormal	normal	normal	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 18	339663	9	M	HIGH	post-nasal drip	oscopic assis	24-01-2024	3	abnormal	normal	normal	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
CASE 25	343668	17	M	HIGH	snoring	oscopic assis	12-02-2024	4	abnormal	abnormal	normal	YES	YES	NO	YES	NO	NO	B	B	B	B	B	B	A	A	A	no
CASE 28	352255	7	M	HIGH	snoring	oscopic assis	16-02-2024	4	abnormal	abnormal	normal	YES	YES	NO	YES	NO	NO	C	C	C	C	C	C	A	A	A	no
CASE 31	356511	7	M	HIGH	snoring	oscopic assis	28-02-2024	2	normal	normal	normal	NO	NO	NO	NO	NO	NO	C	C	C	A	A	A	A	A	A	no
CASE 33	139981	12	M	HIGH	post-nasal drip	oscopic assis	24-04-2024	2	normal	normal	normal	NO	NO	NO	NO	NO	NO	B	B	B	A	A	A	A	A	A	no
CASE 35	387241	7	F	HIGH	snoring	oscopic assis	29-04-2024	4	abnormal	abnormal	normal	YES	YES	NO	YES	YES	YES	C	C	C	C	C	C	C	C	C	yes
CASE 36	400165	7	M	HIGH	snoring	oscopic assis	30-04-2024	3	abnormal	normal	normal	YES	YES	NO	YES	YES	NO	C	C	C	C	C	C	A	A	A	no
CASE 38	409648	7	F	HIGH	post-nasal drip	oscopic assis	06-05-2024	3	abnormal	abnormal	abnormal	YES	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	no
CASE 39	402872	9	F	HIGH	snoring	oscopic assis	06-05-2024	3	abnormal	abnormal	normal	YES	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	yes
CASE 40	464231	10	F	HIGH	snoring	oscopic assis	10-07-2024	3	abnormal	abnormal	normal	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	no
case 41	464364	13	M	LOW	rhinorrhoea	oscopic assis	26-07-2024	3	abnormal	normal	normal	YES	NO	NO	YES	YES	NO	B	B	B	A	A	A	A	A	A	yes
case 42	474701	7	M	HIGH	snoring	oscopic assis	27-07-2024	3	abnormal	normal	normal	YES	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	no
case 43	450904	8	F	HIGH	rhinorrhoea	oscopic assis	27-07-2024	3	abnormal	normal	normal	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	no
case 44	452858	10	F	HIGH	snoring	oscopic assis	02-08-2024	3	abnormal	normal	normal	NO	NO	NO	NO	NO	NO	A	A	A	A	A	A	A	A	A	no
case 45	482668	8	M	HIGH	snoring	oscopic assis	21-08-2024	3	abnormal	abnormal	normal	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	no
case 46	489158	14	M	LOW	post-nasal drip	oscopic assis	27-08-2024	3	abnormal	normal	normal	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	no
case 48	492864	14	F	LOW	snoring	oscopic assis	05-09-2024	3	abnormal	normal	normal	YES	NO	NO	YES	NO	NO	B	B	B	A	A	A	A	A	A	yes
case 49	394335	9	M	HIGH	post-nasal drip	oscopic assis	14-09-2024	3	abnormal	abnormal	normal	YES	NO	NO	YES	NO	NO	C	C	C	A	A	A	A	A	A	no