Comparative Study Between Conventional Adenoidectomy and Powered- Shaver Adenoidectomy

Thesis

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Abstract

The patients were operated by either conventional or powered-shaver adenoidectomy, divided into 2 groups, group **A** patients who underwent conventional adenoidectomy, while group **B** patients who underwent powered shaver adenoidectomy.

The results show that powered shaver adenoidectomy is a safe and effective alternative to curette adenoidectomy.It is more complete and accurate.It has less operative time, less intraoperative blood loss.It has less postoperative pain, and fast recovery time.

The widely used conventional curette adenoidectomy was first described, Dissatisfaction with this technique has prompted the use of other methods, including powered- shaver adenoidectomy.

Keywords: POWERED- SHAVER ADENOIDECTOMY- CONVENTIONAL ADENOIDECTOMY

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INTRODUCTION

ADENOIDS, which are nasopharyngeal lymphoid tissue forming part of the Waldeyer ring, were initially described in 1868 by **Meyer** [1].

Present from early gestation, adenoid growth continues until about 6 years of age, after which atrophy occurs. Adenoidal hypertrophy during childhood may both fill the nasopharynx and extend through the posterior choanae into the nose, resulting in nasal airway stenosis, impeding airflow. There is a significant relationship between the endoscopically determined size of obstructive adenoid tissue and symptomatic nasal obstruction in children [2].

Sequelae include mouth breathing and rhinorrhea, sleep-disordered breathing, speech anomalies, feeding difficulties, chronic sinusitis, and craniofacial growth anomalies [3].

These clinical manifestations may be readily remedied with removal of obstructive hypertrophic adenoid tissue to restore airway patency. The widely used conventional curette adenoidectomy was first described in 1885 [1].

Dissatisfaction with this technique has prompted the use of other methods, including powered- shaver adenoidectomy [4].

While there is a perception that shaver adenoidectomy is more effective in clearing adenoid tissue compared with curettage, this has yet to be objectively assessed. We undertook this study to evaluate the adequacy of removal of obstructive adenoid with the traditional curette technique to determine whether endoscopic guided powered-shaver adenoidectomy would attain better clearance [3].

AIM OF THE WORK

The aim of this study is to compare between conventional adenoidectomy and powered-shaver adenoidectomy for efficiency, blood loss intra operative, time of operation, incidence of residual adenoid (Patency), rate of recovery, and incidence recurrence. The study will also show the best technique for different adenoid grading (endoscopic and radiologic) for optimum results.

ANATOMY OF NASOPHARYNX

Boundaries:

The nasopharynx lies above the soft palate and behind posterior nares, which allow free respiratory passage between the nasal cavities and the nasopharynx [5].

The posterior nasal apertures (Choanae) are thus divided medially by the free posterior edge of vomer. Their roof is formed by the body of sphenoid bone with the overlapping flared alae of the vomer and the vaginal process of the medial ptrygoid plate. Their lateral walls are formed by the medial ptrygoid plates and the floor by the free posterior edge the horizontal plate of the palatine bone [5].

Each of posterior nares measures of 25mm vertically and 12mm transversely. Just within these opening lie the posterior ends of the inferior and middle nasal conchae.The walls of nasopharynx are rigid (except for the soft palate) and its cavity is therefore never obliterated, unlike the cavities of the oropharynx and laryngopharynx.The nasal and oral of the pharynx communicate through the pharyngeal isthmus which lies between the posterior border of the soft palate and the posterior pharyngeal wall. Elevation of the soft palate and constriction of the palatopharyngeal sphincter close the isthmus during swallowing. The nasopharynx has a roof, a posterior wall, two lateral walls and a floor [6].

The roof and posterior wall form a continuous concave slope that leads down from the nasal septum to the oropharynx. It is bounded above by mucosa overlying the posterior part of the body of sphenoid, and further back by the basilar part of the occipital bone as for as the pharyngeal tubricle. These two together are termed the basi-sphenoid [6].

Further down, the mucosa overlies the pharyngobasilar fascia and the upper fibres of the superior constrictor, and behind these, the anterior arch of the atlas. The lymphoid mass, the adenoid, lies in the mucosa of the upper part of the roof and posterior wall in the midline. Adenoid is also called as LUSCHKA's tonsil [7].

The lateral walls of the nasopharynx display a number of important features. On either side each receives the opening of the pharyngotympanic tube (also termed the auditory or Eustachian tube), situated 10- 12 mm behind and little below the level of the posterior end of the inferior nasal concha. The tubal aperture is approximately triangular in shape, and is bounded above and behind by the tubal elevation which consists of mucosa overlying the protruding pharyngeal end of the cartilage of the pharyngotympanic tube. A vertical mucosal fold, the salpingopharyngeal fold, descends from the tubal elevation behind the aperture and covers salpingopharyngeus in the wall of the pharynx and a smaller salpingopalatine fold extends from the anterosuperior of the tubal elevation of the soft palate in front of aperture. AS levator veli palatini enters the soft palate it produces an elevation of the mucosa immediately below the tubal opening. A small mass of lymphoid tissue, the tubal tonsil lies in the mucosa immediately behind the opening of the pharyngotympanic tube, called tubal tonsil, also called as **Gerlach's tonsil** [7].

Further behind the tubal elevation there is a variable depression in the lateral wall, the pharyngeal recess (**fossa of Rosenmuller**) [8].

The fossa of Rosenmuller passes laterally above the upper edge of the superior constrictor muscle and corresponds to the position of the **Sinus of Morgagni** [6].

The shape of the fossa shows wide variation. The size and configuration depends on the amount of adenoid tissue and the prevertebral muscle bulk. In the elderly, the loss of prevertebral muscle bulk results in a shallow and wide recess. In children, the recess may be obliterated by adenoid tissue. The fossa of Rosenmuller may appear asymmetrical. This is due to unequal air distension or an unequal amount of lymphoid tissue. The opening of the Eustachian tube, however, is usually symmetrical both on endoscopy and on cross sectional imaging [9].

The stiff pharyngobasilar fascia maintains the shape of the nasopharynx. This tough aponeurosis is the cranial extension of the superior constrictor muscle from the level of the hard palate to the skull base. This fascia separates pharyngeal mucosal space (PMS) from the deep spaces of the face. It decreases in volume with age but may persist into adulthood. Lymphoid tissues are located superficially and never penetrate the underlying muscle [10].

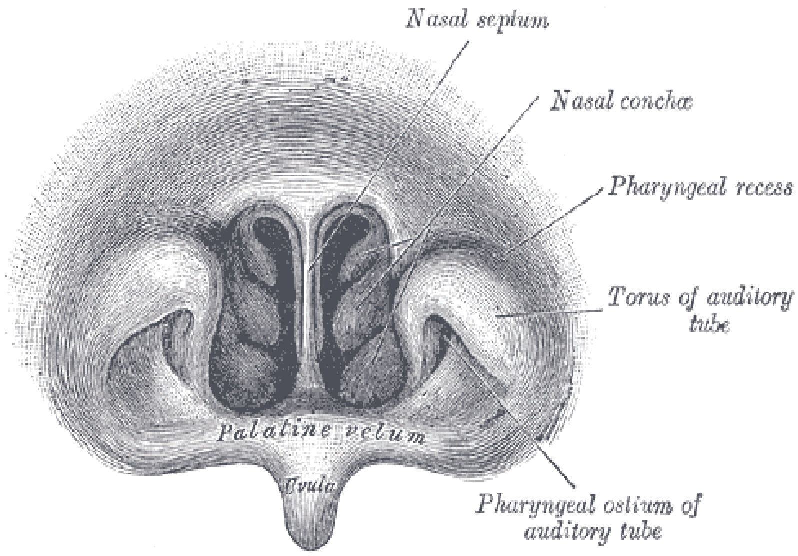

Figure (1): Shows the anatomy of the nasopharynx Henry Gray. Anatomy of the Human Body.1918 [10].

The Para pharyngeal space (PPS) separates the PMS of the nasopharynx from the masticator space (MS). The PPS also separates the nasopharynx from the parotid space (PS) laterally and the carotid space (CS) posteriolaterally. Posterior to the nasopharynx is the retropharyngeal space (RPS). Within the RPS are the retropharyngeal nodes which form the first echelon nodes of the nasopharynx. They are usually not seen but may occasionally be identified as discrete 3–5-mm nodules [10].

Blood supply:

It is provided by the ascending palatine branch of the facial artery, ascending pharyngeal artery, pharyngeal branch of the internal maxillary artery, and ascending cervical branch of the thyrocervical trunk. Venous drainage is to the pharyngeal plexus, to the pterygoid plexus, and ultimately into the internal jugular and facial veins [11].

Lymphatic drainage:

The nasopharynx has an extensive submucosal lymphatic plexus. The first order drainage sites are the retropharyngeal nodes situated in the retropharyngeal space between the posterior nasopharyngeal pharyngobasilar fascia and the prevertebral fascia. The node of Rouviere forms the main and constant lateral group. It lies anterior to the lateral mass of the atlas at the lateral border of the longus capitis muscle, anteromedial to the internal carotid artery. Efferent vessels then drain to the upper most deep internal jugular chain at the skull base. The nodes then drain downwards posteriorly to the accessory nerve group and wall, anteriorly to the jugulodigastric group [12].

Sensory innervations:

Much of the mucosa of the nasopharynx behind the pharyngotympanic tube is supplied by the pharyngeal branch of the pteyrigopalatine ganglion which traverses the palatovaginal canal with a pharyngeal branch of the maxillary artery. The maxillary nerve is thought to transmit the principal sensory supply from the pharyngotympanic tube and middle ear cavity, presumably through its pharyngeal branch [8].

The pharyngeal orifice of the Eustachian tube is innervated by a branch of the otic capsule, the splenopalatine nerve and the pharyngeal plexus. The levator vili palatine muscle receives its innervations from the nucleus ambigus through the vagus nerve [13].

The salpingopharyngeus muscle is innervated by the pharyngeal plexus from the pharyngeal branch of the vagus nerve and its contraction assist in opening the Eustachian tube [14].

Lining epithelium of nasopharynx:

The nasopharyngeal epithelium anteriorly is ciliated, peuostratified respiratory in type, with goblet cells. The ducts of mucosal and submucosal seromucous glands open onto its surface. Posteriorly the respiratory epithelium changes to non-keratinized stratified Squamous epithelium which continues into the oropharynx, and laryngopharynx. The transitional zone between the two types of epithelium consists of columnar epithelium with short microvilli instead of cilia. Superiorly this zone meets the nasal septum, laterally it crosses the orifice of the pharyngotympanic tube, and it passes posteriorly at the union of the soft palate and the lateral wall. There are numerous mucousglands around the tubal orifices [8].

In infancy the nasopharyngeal epithelium is columnar ciliated but in adults most of the epithelium has undergone squamous metaplasia, leaving areas of columnar epithelium only in relation to the fossa of Rosenmuller [15].

Embryology:

The buccal cavity develops mainly from ventral growth of the upper pharyngeal arches. The rostral growth of the embryo and the formation of the head fold cause the pericardial area and buccophayrngeal membrane to come to lie on the ventral surface of the embryo. Further expansion of the forebrain dorsally, and the bulging of the pericardium ventrally, together with enlargement of the facial processes laterally, means that the buccopharyngeal membrane becomes depressed at the base of a hollow, the stomodeum or primitive buccal cavity[16].

At the end of the fourth week the buccopharyngeal membrane breaks downs so that communications established between the stomodeum and the cranial end of the foregut (future nasopharynx and oropharynx respectively) [16].

The tonsils (including pharyngeal tonsil or adenoid) are lymphoid organs that essentially develop from three sources: first, an epithelial component arising from the lining of the primitive oronasal cavity; second, this epithelium grows into, and is enveloped by, a connective tissue or mesenchymal stroma; third, the region is infiltrated by lymphoidal cells. The resultant organ is composed of a resident population of lymphoid cells in association with amore or less elaborate epithelial framework (the crypts) that has grown into, and been enveloped by, mesenchymal tissue.The pharyngeal tonsils (or adenoids) develop in close association with mucous glands. As early as the third month of development, glandular primordial are visible as solid buds or cords of cells surrounded by blood vessels and an increasing number of discrete lymphoid cells in a loose mesenchyme. During the fourth