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Tonsillectomy – A Scientific Analysis

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Abstract

Background: Tonsillectomy is an operative measure in which the tonsils are removed completely. It is commonly performed surgery in Pediatric age group and less frequently in adults. There are certain absolute and relative indications for tonsillectomy. The outcome of the surgery is said to be doubtful in preventing recurrent throat pain. *Aim:* The aim of this article is to prevent and to reduce the risk of surgical intervention for Tonsils through advancement in Ayurveda conservative line of management. *Materials and Methods:* The Anatomical, Patho-Physiological and treatment modalities aspects of Tonsils and Tonsillitis reviewed. The classical description of Tonsils and its treatment modalities with recent advancement reviewed. *Settings and Designs:* Illustrated scientific analysis of benefits and loses between conventional practice of tonsillectomy and recent advancement in Ayurveda with conservative treatment. *Results:* Appropriate decision of tonsillectomy should be taken after complete evaluation / Ayurveda conservative treatment in order to preserve tonsils in situ.

Keywords: Tonsillectomy; Complications; Treatment; Pediatric; Recurrent.

Introduction

Ayurveda, an Indian holistic healing system of medicine is a gift from Indian cultural heritage to the mankind with double folded approach. The preventive and curative approach [1] through entities like *Dinacharya* (Daily regimen), *Ritucharya* (Seasonal regimen), *Sadaachara* (Behavioral regimen) are summed up in 8 branches of Ayurveda. It always directs us towards the positive health.

Shalakyatantra [2], one of those 8 specialties of Ayurveda, deals with the diseases occurring above the *Jatru* (i.e. clavicle). The derivation of the term *Shalakya* indicates the utility of the instrumental intervention for diagnostic as well as therapeutic purposes. It is specialized surgical division among 8 specialties of the *Ayurveda*. The explanation about miraculous surgical, parasurgical and medicinal wizards are found since the *Vedic* era.

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All the classical surgical procedures are enfolded in 8 techniques [3]. The surgical procedures dealt in classics are time-tested and are in practice till today. Advancement in modern surgery has modified the techniques of surgical procedures and made them safer and sophisticated. Invention of new drugs for anesthesia and analgesia made the surgical procedure comfortable to surgeon and acceptance to the society.

Today the man is climbing the steps of sophistication, simultaneously moving away from nature with irregular, unaccustomed food and behavioral habits, modified life style, hurry, worry, greed, anger, pollution etc & it has become the part of his life. These factors disturb the core control of health i.e., *Tridoshas* and make the individuals viable for many more immune complex and other disorders. Health is the supreme foundation of virtue, wealth, enjoyment and finally for salvation, which the man is losing.

Anatomical Consideration of Tonsils

The first line of defense offered by our body is at the level of entry gate i.e., oro-pharynx called as Waldayer's ring [4]. It is a group of lymphoid tissues in pharynx, distributed in the form of ring pronounced as collection of lymphoepithelial tissue at the opening of the upper aero-digestive tracts. Ayurveda has imparted a significance contribution in Indian holistic healing system of medicine.

It a gift of Indian cultural heritage to the mankind with double folded approach.

There are 2 forms of Waldayer's rings [5] viz., internal and external Waldayer's ring. Outer ring protects the organs and structures above the neck. It is constituted by the lymphatics system that drains into pre & post auricular lymph nodes, Jugulo-diagastric & submandibular lymph nodes and the lymph nodes in triangles of the neck. Internal ring protects the interior of the aero-digestive tract. It is constituted by the Faucial Tonsils, Adenoids, Lymph nodes around the vocal cord, parapharyngeal wall, etc. Among these, faucial tonsils contribute a major role in defense mechanism offered by this internal Waldayer's ring.

Tonsils [6], Faucial tonsils are bilateral ovoid, almond shaped masses of lymphoid tissue with irregular surface. It is a mucus membrane associated lymphoid mass. Actual size of the tonsils is bigger than they appears during inspection. They are embedded in soft palate, base of tongue, palatoglossal arch. Tonsils tend to reach their largest size near puberty then gradually reduce and become average sized thereafter.

Physiological Consideration of Tonsils [7]

Tonsils are supposed to manufacture leucocytes and helps in the defense mechanism of the body. It contains 10% of the lymphatic cells and constitutes 0.2% of lymphocytes in adults. Cytologically, these are subdivided into small lymphocytes (45%), centrolytes (35%), centroblasts (15%), Plasma cells (2.5%). Centrocytes and centroblasts are germinal cells. Plasma cells develop from lymphocytes and produce immunoglobulins. Proliferation of lymphocytes is induced by contact with the antigen and polyclonal activators.

Tonsillar B cells can mature to produce all five major immunological (Ig) classes when these B cells are incubated in vitro with either mitogens or specific antigens like diphtheria toxoid, poliovirus, streptococcus pneumoniae and haemophilus influenzae.

Immunological A (IgA) produced by tonsillar B cells in vitro appears to be 7S monomers, although a significant proportion may be IOS dimeric IgA, which mainly involves the immune mechanism needed for mucosal membrane.

In addition to humoral immunity elicited by tonsillar B cells following antigenic stimulations, there is considerable T cell response in palatine tonsils, thus natural intranasal immunization occurs. Natural infection with varicella zoster virus has been found to stimulate tonsilar lymphocytes better than lymphocytes from peripheral blood.

Immunological Consideration of Tonsils

A study done on combined tonsillectomy and adenoidectomy has a profound detrimental effect on the local IgA response in the nasopharyngeal fluid against polio viruses. These immunological observations showed that there is increased incidence of paralytic poliomyelitis after operation. Thus, it is obvious that the tonsil have an important role in the defense of the host against bacterial and viral infections and the success of regional mucosal immunity induced by intranasal vaccines most likely depends on these immnuno-competent tissues in the oropharynx and nasopharynx [8].

Tonsils are covered by non-keratinising stratified squamous epithelium surrounded by lymphoid tissues. It is traversed by the crypts which extend through the full thickness of the tonsil reaching almost to its hemisphere.

Crypts are group of invaginations of the tonsillar epithelium but a highly complicated network of capillaries and germinal centers. These increase the surface area for the contact with foreign substances. The various crypts of tonsils harbor bacteria and serve as culture media producing vaccines. These are carried out by lymphatics to various fixed cells of the body and stimulate to produce antibodies [9]. It is also supposed that the tonsils produce internal secretions concerned with growth factor.

Tonsils become inflamed (i.e. tonsillitis) during a bad cold, but they prevent penetration of pathogens further down. When there is much foreign invagination tonsils undergo hypertrophy associated with signs and symptoms like sore throat, etc and should revert to normal size when symptoms subsides. During such physiological hypertrophy induces B lymphocytes proliferation. The prevalence of the disease is more in the children and becoming less frequent in the aged [10].

Classical Approach towards Tonsils

The signs and symptoms of Tonsillitis are very much resembling with the explanation of *Tundikeri*. The disease is characterized by the cystic swelling at the conjoining part of *Hanu* (conjoining part of Tempero-mandibular joint) resembling the fruit of *Karpasa* (fruit of cotton) associated with *Shopha* (swelling), *Manda Ruk* (mild dull aching pain) [11]. *Chhedanakarma* (excision) is indicated when conservative line of management fails to treat the condition. In classics the surgical extraction of tonsils is explained [12]. In chronic tonsillitis, the anterior surface of tonsil is filled with pustules. (follicles filled with pus) In classics, they have

given simily with *Vanakarpasa* (the fruit of cotton with open crypts). Hence, classical explanation directs towards the follicular variety of tonsillitis.

In classics the nature and consistency of *Tundikeri* is explained as *Kathina Shotha* (Hard swelling) which directs the attention towards the paranchyamatous tonsillitis characterized with gross oedematous hypertrophied tonsillar enlargement / kissing tonsils.

Manda ruk (Mild dull aching pain) is found in throat and it may refer to ear and triangles of the neck. In Madhavakara, 02 types of *Tundikeri* are explained. This classification is based on characteristic pain in throat [13]. The patient with *Vata-Pittaja Tundikeri* will be having severe pain indicates pharyngo-tonsillitis, whereas *Kapha-Raktaja* type of *Tundikeri* will be having mild to moderate type of pain indicative of Chronic tonsillitis. *Yogaratnakara* [14] explains *Shoola* (mild dull aching pain) and *Toda* (pricking type of pain) type of pain observed in *Tundikeri* indicates towards chronic follicular tonsillitis.

The *Nidana* (aetiological factors) of *Tundikeri* (tonsillitis) mentioned in classics is intake of *Abhishyandi,* (slimy, cold) *Sheeta, Kapha-Rakta Utkleshaka Dravyas*. Similarly in predisposing factors of Tonsillitis it is mentioned as excess exposure to cold, dust and mist.

The treatment principle explained for *Tundikeri* is *Cchedana* (excision). Similarly tonsillectomy is advised in tonsillitis.

The explanation of the clinical features of *Tundikeri* given in classics emphasis 2 types of conditions. Viz. Tonsillitis and Peritonsillar abscess. Because, the *Paka / Prapaka* (suppuration) word shows the tendency to undergo paka. In Tonsillitis only small pustules are formed where as in peritonsillar abscess a big cystic swelling with suppuration is found which undergo *Paka* (suppuration) in further consequences of the diseases.

In classics, *Chhedana* (excision) is advised for *Tundikeri*, whereas *Dalhana* (A commentator) has advised *Bhedana* (incision and drainage) while commenting on the same context. The probable reason can be taken that, according to *Dalhana*, *Tundikeri* may resembles with Peritonsillar abscess, whereas others explanation resembles with tonsillitis where *Bhedana* cannot be done where as *Chhedana* and *Pratisarana* (A type of application) are beneficial.

Tonsillitis – Diseases & Treatment Review

Many theories have been put forth to describe the pathogenesis of tonsillitis. But, no single theory of pathogenesis has yet been accepted. However, viral infection with secondary bacterial invasion may be one of the acceptable forms of pathogenesis [15].

Use of Antibiotics and pain relieving medicines during the course of the treatment stands an ideal treatment. But, recurrent attack and incomplete treatment makes the disease chronic & it has complications. Though surgery has highest success rate it does not suit for all.

Tonsillectomy stands as the second most common childhood surgery accounts for 25% of all operations of Otorhinolaryngologists. In India, approximately 2 lakhs children [16] undergo tonsillectomy. But, many of them have no real benefit from the operation for managing recurrent throat pain. In spite of no clear objective sign to judge the patient for tonsillectomy it has been in practice since many years.

There is no proof available to show the benefits of tonsillectomy over the conservative therapy. Even today, tonsillectomy is the most obvious example of an operation performed on a large scale for the decades, yet no considered seldom, if ever of value.

Indications of Tonsillectomy [17]

- Patients with 3 or more infections of tonsils per year and 5 to 7 infections in 2 years despite adequate medical therapy.
- Hypertrophy (enlargement) causing dental malocclusion or adversely affecting oral-facial (mouth-face) growth documented by ortho-dontist.
- Hypertrophy causing upper airway obstruction (sleep apnea), severe dysphagia (troublesome swallowing), sleep disorders, or cardio-pulmonary complications.
- Peritonsillar abscess unresponsive to medical management and drainage documented by surgeon, unless surgery performed during acute stage.
- Persistent foul taste or breath due to chronic tonsillitis not responsive to medical therapy.
- Chronic or recurrent tonsillitis associated with the streptococcal carrier state and not responding to beta-lactamase-resistant antibiotics.
- Unilateral tonsil hypertrophy presumed euplastic. Although without other indications (abnormal appearance, physical examination, symptoms or history) most asymmetries can be followed conservatively.
- Recurrent acute otitis media or chronic serous otitis media. Adenoidectomy should not be

performed with the insertion of the first set of myringotomy (ear) tubes unless there is another indication for adenoidectomy besides chronic otitis media. However, repeat surgery for chronic otitis media should consist of adenoidectomy with myringotomy (with or without myringotomy (ear) tube placement.)

- Shrunken and atrophic tonsils indicate a collapse of the B cells activity and collapse of the defense. Therefore, they are more often the seat of infection of a chronic sort and such become redundant and worth removing.
- Tonsillectomy is also indicated in diseases like tubercular tonsillitis, etc.
- Apart from this it is also performed in adults with unilateral tonsillitis in adults with the probability of CA.

Ayurvedic Treatment Modalities

Recent advancement in the field of specialization evolved *Shalakyatantra* as an independent branch of Ayurveda sub-speciality. More than 20 research works being carried out in all over the India. Among these, *Kshara Pratisarana* (application of special alkaline medication) stood the therapy with most promising results currently in practice by *Ayurveda Shalakya* practitioners [18].

Tonsils have definite role in the local as well as systemic immunity concern issues. It is harmless bodily structure, unless being preserved in good condition. The ill managed tonsillitis cases may cause severe complications like bacterial endocarditis, sleep apnea syndrome, etc.

Discussion

Though the tonsil takes part in immunological activities, there are equal chances of getting undue pathological changes in it. Among these the physiological hypertrophy without regressing to the normal size is said to be the pathological one.

The recurrent attack of tonsillitis makes the patient to suffer from the complications related with infection and incomplete treatment of it. The disease related complications are the because of effect of streptococci over heart, kidney, etc. Incomplete treatment makes resistance to treatment along with undue medicine related complications [19].

Tonsillectomy though stands the right choice in absolute indications for the surgical intervention but it is not suitable for all. There are several new techniques practiced for tonsillectomy viz. – cold knife dissection, electrocautery, harmonic scalpel, radiofrequency ablation, carbon-dioxide laser, microdebrider, bipolar radiofrequency ablation, etc. Sophistication in surgical intervention makes the procedure easier and safer rather than making it more beneficial in treating recurrent throat pain.

Ayurveda management of the tonsillitis through *Gandusha-Kavala,* (types of gargle) *Pratisarana*, internal medication, etc. have an extensive role in preventing the undue complications and protecting the tonsils from their removal. Tonsillectomy carries lesser benefits in treating recurrent throat pain than the conservative line of management.

Further research on the efficacy of tonsillectomy to treat recurrent sore throats is still needed. We know of no definitive studies since the original study by Paradise et al, showed that tonsillectomy is beneficial in patients with recurrent sore throats [20].

Conclusion

- The physiological role of tonsils is not much clear, but it has its own importance in immunological and growth factors.
- Conservative treatment without undue complication stands the choice of remedy rather than the surgical intervention to prevent recurrent throat pain.
- Saving the tonsils certainly helps in avoiding the exposure to the surgical procedures in childhood as well as benefits of physiological functioning of Tonsil through Waldayer's ring and others.
- The Ayurveda therapeutic procedures like, *Gandoosha, Kavala, Nasya*, etc and internal medications found beneficial in treatment for Tonsillitis [21].
- *Kshara Pratisarana* (application of special alkaline medication) evolved as an excellent Para-surgical procedure in the management of Tonsillitis, prevents undue complications and saves tonsils in-situ. It has got additive benefits even in surgical intervention.
- Ayurveda is not against tonsillectomy, but tonsillectomy performed for recurrent throat pain or for relative indications can be prevented to restore the natural functioning of tonsils.

- Appropriate decision of tonsillectomy should be taken after complete evaluation in order to preserve tonsils in situ.

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