

Post-Tonsillectomy Taste Disturbance; An Unusual Complication of Tonsillectomy

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Abstract:- Tonsillectomy is a very common operation to the otolaryngologist and relatively safe in expert hand. Sometimes it bothers the surgeon for its acute and chronic post-operative complications like reactionary hemorrhage, throat pain, referred otalgia, dehydration, velopharyngeal incompetence, burns of uvula, soft-tissue injury, dento-mandibular trauma, and respiratory compromise. Although rare, it is often associated with altered taste and temporary or long continued loss of taste sensation. In this article, the authors reported 39 (3.9%) cases of disturbance of taste sensation among 1000 post-tonsillectomy patients during the period 2015 to 2018 in the Bangladesh medical College Hospital. Age of the patients was ranged in between 20 to 30 year. The study was aimed to find out the possible cause of taste disturbance in the post-tonsillectomy patients and obtain informed written consent prior to tonsillectomy.

Keywords:- Post-Tonsillectomy, Taste Disturbance, Complication.

I. INTRODUCTION

Tonsillectomy is the most commonly performed operation in otolaryngological practice. The surgery is relatively safe but occasionally it gives horrifying troubles to the surgeon for its acute and chronic complications. The complications are mostly hemorrhage, painful throat, difficulty in swallowing, referred otalgia, burns of uvula, soft-tissue injury, dento-mandibular trauma, velopharyngeal incompetence and respiratory compromise. Although rare, it is often associated with altered taste and temporary or long continued loss of taste sensation that is an unusual complication of tonsillectomy. Taste gives pleasure in eating and drinking. It satisfies hunger and carries important physiologic functions which helps to distinguish nutrients from toxins, facilitates digestion; and regulates salt and energy intake¹. Malnourishment, weight gain or loss happen mostly due to taste disorders. The study was aimed to find out the possible cause of taste disturbance in the post-tonsillectomy patients and obtain informed written consent prior to tonsillectomy.

II. ANATOMY AND PHYSIOLOGY OF TASTE

Taste is a special sensation associated with the primary organ tongue that contains taste reception. There are other taste receptors on the tonsillar pillars, palate, epiglottis and upper esophagus⁵. Three types of papillae namely circumvallate, fungiform and foliate present on different sites of the tongue. Developmentally anterior 2/3rd of the tongue originates from the 1st and 2nd pharyngeal arches. This part gets its somatosensation from the mandibular division of the trigeminal nerve and taste sensation from the chorda tympani branch of the facial nerve. The greater superficial petrosal branch of this nerve innervates taste buds on the soft palate. The posterior 1/3rd of the tongue develops from the third pharyngeal arch; and derives both taste and somatosensation from the Glossopharyngeal nerve. It also innervates the upper part of epiglottis. Rest of epiglottis, esophageal area, tonsillar pillars and root of the tongue derive from the branches of vagus nerve^{6,7}.

These three cranial nerves carry taste sensation to the medulla then to the thalamus and finally to the primary gustatory cortex which is responsible for taste sensation. It is mentioned here that there is a close relation between taste and smell sensation; and as such when this area receives signals from taste buds, it also receives information about the smell as well⁸. However, ultimately they can recognize the different forms of tastes include salty, acidic, sweet, bitter, and umami (protein).

III. TASTE DISTURBANCE

Taste may be disturbed in various conditions namely common cold, allergic rhinitis, injury to the chorda tympani nerve, Bell palsy, radiation therapy and many more. It causes a refractory to decrease in appetite leading to less food intake causing weight loss. Adenoid hypertrophy disturbs taste in relation with smell⁸. Zinc deficiency and many drugs like metronidazole, antibiotics and antifungal may affect taste^{9,10}. Many surgeries such as tonsillectomy^{11,12}, middle ear surgery¹³⁻¹⁵, direct laryngoscopy¹⁶,

uvulopalatopharyngoplasty¹⁷ may lead to taste disturbance. Appropriate history and physical examination are more than ever essential to diagnose the post-tonsillectomy taste disturbance.

This study was conducted in the Bangladesh Medical College Hospital from 20015 to 2018. 1000 adult patient underwent tonsillectomy, age ranged in between 20-40 years. Among them 39 patients developed taste disturbance after 1 month of operation. These patient kept under regular surveillance and monitoring for a period of 6 months.

➤ *Effects of tonsillectomy on taste*

Tonsillectomy is one of the most common surgeries in otolaryngological practice all over the world. Although rare, taste dysfunction occurs in some patients. The possibilities are described differently in different literatures and documented²⁻⁴:

- Injury to nerve: direct or indirect damage to the glossopharyngeal nerve (GN) or its lingual branch (LBGN). The course of the LBGN to the muscle layer of the palatine tonsillar bed is variable. They usually travel between the superior and middle pharyngeal constrictor muscles, but at times may remain partially exposed or adherent to the tonsillar capsule. During dissection, this can lead to the injury of the lingual branch of the glossopharyngeal nerve^{11,12}
- Operation duration: it is observed that jeopardy of the microcirculation to the tongue by tongue blade of mouth gag due to prolong compression can lead damage to the taste buds
- Injury to tonsillar bed: injury or damage to the muscle layer of the tonsillar bed or capsule lead to fibrosis of the muscles during healing process that in turn results disorder of the LBGN.

➤ *Objective:*

The study was aimed to find out the possible cause of taste disturbance in the post-tonsillectomy patients and obtain informed written consent prior to tonsillectomy.

IV. PATIENTS AND METHODS

➤ *Study design:*

- Study type: Retrospective study
- Study period: From 2015 to 2018.
- Study place: Bangladesh Medical College Hospital
- Study Sample number: 1000 patients
- Study population: Age ranged 20-40 year
- Evaluation period: 1 month to 6 months after operation.
- Sampling type: Random sampling
- Diagnosis and questionnaires' : Appropriate history and physical examination

➤ *Inclusion criteria:*

- Patient complaining of post-operative taste disturbance.
- Patient not regaining taste sensation after 1 month of operation.

➤ *Evaluation method:*

- Taste disturbance persisted up to 1 month post operatively- Transient taste disturbance
- Taste sensation regained within 6 month - Temporary taste disturbance
- Taste disturbance persisted after 6 month – permanent taste disturbance.

➤ *Exclusion criteria:*

- Age below 20 years
- Patient having history of rhinitis.
- Patient history of drug intake.
- Patient having history of diabetes mellitus.

➤ *Operation:*

- Methods
- ✓ Bipolar diathermy
- ✓ Dissection method
- Operation time: 30 minutes average

V. RESULTS

Age in years	Male (%)	Female (%)
20-30	345 (35%)	230 (23%)
31-40	265 (27%)	170 (17%)

Table 1:- age and sex distribution (n 1000)

Temporary taste disturbance (%)	Number of patents	%
Male	17	1.7
Female	22	2.2

Table 2:- Taste disturbance post-tonsillectomy patients after 1 month (n 1000)

Taste regained	No of patients	%
Male	05	13
Female	04	10

Table 3:- Follow up after 3 month of operation (n 39)

Taste regained	No of patients	%
Male	12	40
Female	18	60

Table 4:- Follow up after 6 month of operation (n 30)

VI. DISCUSSION

Taste disturbance is an uncommon complication following tonsillectomy. There are a few studies have been found regarding post-tonsillectomy taste disturbances till to date. This condition is so horrifying that may produce a long-term nutritional deficiency resulting weight loss and decrease quality of life^{10,18}.

In our study we found complaints of taste disturbance more common in 20-40 years of age and is slightly higher in female which corresponds to other study¹⁹.

In this study it was relevant to the fact that following tonsillectomy most of the patients develop taste disturbance but all patients except 3.9 % regained their taste after 7 to 30 days. In most of the published literature and the systematic review, the finding is variable¹. A few studies about taste disorder following tonsillectomy can be found in the literature...but most of the clinical trials report that taste disorders are a very rare complication or something that disappears quickly. If it is permanent, "That is something that can really lower one's quality of life." Indeed, most research describes post-tonsillectomy transient taste dysfunction persist for a few weeks and regained taste spontaneously after completion of healing¹⁹.

Post-tonsillectomy taste disturbance may result from surgical injury, tongue compression, inflammatory processes or side effects of local anesthetics, prolonged tongue depression from a mouth gag that's inserted during a tonsillectomy could bring greater potential for a taste disturbance complication especially in adults²⁰. Adult tonsillectomy is a rather traumatic experience for some patients, and can produce considerable post-operative swelling as well as pain during swallowing and mastication¹⁸.

The close anatomic relationship between the palatine tonsil and the lingual branch of the glossopharyngeal nerve makes the nerve vulnerable during tonsillectomy. Clamping, knotting or use of electrocautery at the lower pole of the tonsil to control hemorrhage can injure the nerve²¹ that can easily be avoided by meticulous dissection and judicious use of cautery. Tonsillectomies in adults often take longer duration, because the tonsil tissue tends to be more fibrosed and the operation becomes messier and bloody which lead to more fibrosis in the healing process. The procedure can injure LBGN that become unable to carry the taste to the higher centers leading taste disturbance. It is also observed that surgery takes a little longer duration where pressure of the mouth gag can lead to compromise the circulation to the taste buds of the tongue. This condition can easily be prevented by intermittent relaxation of the tongue blade aiming to the restoration of the circulation in the tongue

tissue for the normal functioning of the taste buds²¹. In our study, operation time taken by all surgeons rating from trainee to an experienced surgeons was on average 30 minutes. Experienced surgeon took only 10 to 15 minutes in our hospital setting.

VII. CONCLUSION

Taste disturbance after tonsillectomy is a rare complication but has a significant impact on quality of life of patients. Meticulous dissection, avoidance of injuring the lower pole of the tonsil and judicious use of electrocautery/bipolar diathermy can save the LBGN. It also reduce the time of operation for all-out safety of the patients.

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