

Evaluation of Per operative Causes of Taste Distortion after Tonsillectomy

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Abstract

Background: Tonsillectomy is a relatively safe procedure in expert hand, but it is associated with certain complications. Taste distortion (dysgeusia) is a rare complication of Tonsillectomy that was complained by some patients after operation.

Methods: This retrospective study was done searching the medical records of Department of ENT, Bangladesh Medical College, Dhaka. Total 607 patient was studied, from the year 2012 to 2022. All methods of Tonsillectomy were considered for study.

Result: Taste distortion was found in 1.15% cases of cold steel tonsillectomy, 0.5% in diathermy coagulation tonsillectomy but no case was found in cases of LASER or coblation method.

Conclusion: No dissection of tissues beyond lower pole of tonsil is recommended.

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Introduction

Taste disturbance is an unusual complication of tonsillectomy of which there are very few reports in the literature. The possible causes of this rare complication are: (1) direct or indirect damage to the glossopharyngeal nerve or its lingual branch (LBGN), (2) microcirculatory jeopardy to tongue due to prolong compression time.¹ We report taste disturbance following tonsillectomy that was performed for chronic tonsillar hypertrophy. During surgery, hypertrophic tonsils were found to be sited deeply into the tonsillar bed, especially at the lower pole of the tonsil. Pathologic examination following tonsillectomy revealed chronic infection at the tonsil, and lymphoid hyperplasia at the lower pole.

Qualitative examination of taste function revealed bilateral impairment of the sense of sweet taste on the base of the tongue two months after the surgery, and a taste disturbance of sweet taste persisted 6th month after the surgery. Depending on the literature data and long surgical experience of authors, possible indirect damage to the LBGN was suspected as the cause of the taste disturbance. This symptom may be reversible within two years after tonsillectomy, but it can also be irreversible². Therefore, tonsillectomy should be performed with minimal trauma to the tonsillar bed, especially when there is pathology extends beyond the lower pole. such a patient should be informed about the risk of post-operative taste disturbance after tonsillectomy as being one of the rare & unusual complication of tonsillectomy^{3,4}.

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Tonsillectomy is one of the most commonly performed procedures in ENT. Like any other operations, head and neck surgeons must be aware of possible complications and their potential effects even it is rare. As many of the surgeons are unaware about such type of complication, long clinical and surgical experience of authors evaluate the exact cause of taste disturbance at per-operative period are the 1. Direct injury to lingual branch of the glossopharyngeal nerve due to over enthusiastic dissection beyond the lower pole of tonsils and 2. microcirculatory compromise to taste receptors as cyanosis occurs due to prolong compression of tongue tissue.

Thus epithelial, neural, and central dysgeusia can be distinguished. Impaired perception of all tastes is called total dysgeusia and of some selected tastes – partial dysgeusia. According to Janczewski, the most common cause of reduced sense of taste is rhinitis and other diseases with nasal blockage or coexisting smell disorders.^{5,6}

Before tonsillectomy each patient must be informed about the risk of taste impairment. Transient post-tonsillectomy dysgeusia (PTD) is a common complaint. Long-lasting PTD is less frequent but has significant consequences on patients' quality of life. Transient taste perception changes seem to be relatively frequent after tonsillectomy.^{7,8,9} They are mostly manifested by a metallic or bitter taste and generally maintained from 4 days to 2 weeks after the procedure. Persistent dysgeusia may last for 2 years or longer and retreat spontaneously.^{10,11,12} The cause of this complication remains unknown, although there are several theories, which try to explain its occurrence.

We describe the per operative surgical technique to avoid such a unusual complication that seriously hamper the quality of life of the patients. Our center is a tertiary level hospital in Bangladesh. A study of last 10 years since 2012 to 2022, 600 adult patients underwent tonsillectomy, among them 9 patient complaints for taste disturbance after 30 days of operation. These patients were under surveillance and monitoring for a period of 6 months. Taste

distortion after tonsillectomy documented by clinical and subjective evaluation.¹³

Methods

The clinical course of a patient with taste distortion after tonsillectomy, the gustatory function was investigated by spatial taste testing. Threshold measurements were determined at three left- and three right-side tongue regions: 1) the tongue tip region (innervated by the chorda tympani branch of the facial nerve), 2) the lateral margin of the tongue (anterior to the foliate papillae), and 3) the posterior tongue region (innervated by the lingual branch of the glossopharyngeal nerve).

This prospective study carried out in Bangladesh Medical College hospital over a period of 10 years since 2012 to 2022. Operation, follow up and assessment of patient done in dept. of ENT Bangladesh Medical College hospital. Total 607 operated patients were assessed under this study. Study population was young adults. Follow up period was 1 month to 6 months after operation. Sampling type: Randomized sampling technique applied for patient selection. Patient who were complaining for taste disturbance after tonsillectomy were evaluated in following manner:

Taste distortion persisted upto 1 month post operatively- Transient taste distortion

Taste sensation regained within 6 month - Temporary taste distortion.

Taste distortion persisted after 6 month – Permanent taste distortion.

Inclusion criteria:

1) Patient complaining of post-operative taste distortion after 1 month of operation.

Exclusion criteria:

1. Pediatric age group (below 16 years).
2. Patient having history of chronic rhinitis.
3. Patient history of habitual drug intake.
4. Patient having history of diabetes mellitus.

Results

Table-I. Methods of operations (n=607)

Methods	No. of patient operated	No. of patient with temporary taste distortion	Percentage
Cold steel dissection	345	4	1.15%
Coagulation Diathermy	196	2	0.51%
Coblation	60	0	0
LASER surgery	6	0	0

Rate of neural injury to lingual br. higher in dissection method.

Table-II. *Duration of operation*

Operating time	No. of patient with taste distortion	Bilateral loss	Unilateral loss
20 - 30 minutes	0	0	0
30- 45 minutes	1	1	0
45 -60 minutes	3	3	0

Incidence is higher if Operating time takes more than 30 minutes.

Table III. *Method of hemostasis applied*

Hemostatic method	No. of patient with taste distortion	Bilateral loss	Unilateral loss
Coblator	0	0	0
Uni-polar diathermy	2	0	2
Bipolar diathermy	0	0	0

Use of unipolar diathermy at lower pole for hemostasis may cause neural injury.

Table- IV. *Evaluated causes of taste distortion*

Method	Bilateral loss	Unilateral loss
Cold dissection method	1	3
Uni-polar diathermy	1	1
Operating time >30 minutes	3	0

Among 9 patients 4 developed taste distortion due to surgical injury by serrated tonsillar dissector, 2 patient due to heat eviction neural injury by unipolar diathermy and 3 patient due to massive cyanosis by tongue compression > 30 minutes.

Discussion

Gustatory dysfunction is an uncommon complication following tonsillectomy with a potential impact on the quality of life. This prospective study was undertaken to evaluate the incidence of posttonsillectomy dysgeusia and its relationship to extension of surgical wound, surgical technique and operating time. A prospective chart review of 600 patients who had undergone tonsillectomy between 2012 to 2022 at a single tertiary care research based institute was. Among them 371 patient reported in OPD with the complaints of post operative loss of taste perception. Clinical examination include - evaluation of the patient's history and psychophysical testing with cottons soaked in chinin sulfate (bitter), glucose (sweet), citric acid (sour) and sodium chloride

(salt) after 30 days of operation to 6 months following tonsillectomy at a tertiary care research based hospital. Operation time, methods to achieve hemostasis and period of wound healing were also included. Subjective taste dysfunction was registered in 9 patients after 30 days of surgery. In all patients this dysgeusia regressed within 6 months. Routine postoperative follow up at 7th and 14th POD revealed transient taste changes in more than 50% of patient but > 95% recovered within 30th POD probably due to complete wound healing and resolution of surgical edema. Investigated factor such as operating time, or hemostatic technique with unipolar diathermy, time for wound healing were also associated with the occurrence of transient taste disturbance. Transient taste perception changes seem to be relatively frequent after tonsillectomy. Gustatory symptoms can occur even after uneventful tonsillectomy. Informed consent should include post-tonsillectomy gustatory dysfunction.⁴

Depending on what study you look at, this complaint occurs anywhere from 0.3% to as high as 9% of tonsillectomy cases according to world literatures. Dysgeusia after tonsillectomy is felt to be due to a number of different causes including.⁵

- 1) Massive tongue compression > 30 minutes
- 2) Injury to lingual branch of glossopharyngeal nerve.

Regardless of the etiology, most cases of post-tonsillectomy taste distortion spontaneously resolves

within a few months without any specific intervention⁶.

post-tonsillectomy taste dysgeusia may result from surgical injury, tongue compression, inflammatory processes or side effects of local anesthetics⁷.

Some Researchers like Leong SC et al and Hanna Temporale et al suggested that meticulous cold steel dissection of tonsils and limited use of electrocautery to the lower pole of tonsils limit damage to the throat muscles and consequently reduce the risk of destruction to branches of the nerves responsible for the reception of taste sensations^{14,15} These two researcher also recommend careful fixation and release of tongue retractor intermittently that reduce circulatory jeopardy to sensory nerve ending of taste buds.¹⁰

Regardless of the etiology, most cases of post-tonsillectomy dysgeusia spontaneously resolves within a few months without any specific intervention^{15,16} post-tonsillectomy taste dysgeusia may result from surgical injury, tongue compression, inflammatory processes⁷ prolonged tongue depression from a mouth gag that's inserted during a tonsillectomy could bring greater potential for a taste disturbance complication post-surgery, especially in adults. Tonsillectomies in adults often take longer duration, because the tonsil tissue tends to be more scarred down, and the operation tends to be bloodier. We tried not to press the tongue for too long period, If the procedure was of longer duration, we took the patient out of the mouth gag and let their tongue rest a little bit, get the blood flow going and then re-suspend them.⁷ While many tonsillectomies are still performed by the traditional scalpel method, It's theorized that the residual cuff of tonsil tissue acts like a biological Band-Aid during the healing process, so that smaller caliber vessels affected, and the healing process can occur at a more superficial level to potentially decrease complications of post-operative pain and bleeding. That have the potential to decrease the risk of direct injury to the lingual branch of the glossopharyngeal nerve.⁹

Conclusion

Authors specially recommends not to dissect hypertrophied tissues beyond the lower pole of tonsils to avoid injury of lingual branch of glossopharyngeal nerve as it lies within very close to lower pole tissue (2-3mm). Tonsillar tissue remain in lower pole after

cold steel dissection of tonsils should be cauterized superficially with bipolar diathermy. This procedure reduces the incidence of post tonsillectomy taste distortion. Our long surgical experience and observation also recommend to reduce operation time less than 30 minutes or release the pressure of mouth gag over tongue intermittently to prevent circulatory disturbance to sensory nerve ending of taste buds.

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