

# Outcome of an outpatient specialty clinic for chronic epipharyngitis

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## ABSTRACT

**Objective:** In Japan, chronic epipharyngitis became a subject of interest in the 1960s and is currently garnering renewed attention. Previous studies have focused only on the similarities between the immunological characteristics of the tonsil and epipharynx and reported the efficacy of epipharyngeal abrasive therapy (EAT) in patients with IgA nephropathy. However, endoscopic findings of chronic epipharyngitis have not yet been fully evaluated, and, this study aimed to elucidate those findings.

**Methods:** The study period was from November 2016 to October 2017. Two hundred and twelve new patients visited the specialty outpatient clinic for EAT. Age distribution and mean age of patients, sex, chief complaint, diagnosis at other departments and outcomes were retrospectively reviewed based on medical records. Band-limited light endoscopy was performed, and the findings were videotaped in 102 of the 212 new patients, who underwent endoscopic EAT for the first time.

**Results:** The study included 32 men and 70 women with a mean age of 46.0 years (range, 22–83 years). The most common complaint was postnasal drip (42 patients), followed by pharyngeal pain (12 patients), and throat discomfort (11 patients). The outcomes of 74 patients who continued treatment until the last session were; complete cure in 48.6% of cases, marked improvement in 21.6%, improvement in 16.2%, and no change in 13.5%. Band-limited light endoscopic findings included black spots (73%), granular changes (76%), vessel truncations (92%), crust/mucus adhesion (54%), adenoidal hypertrophy (31%) and tonsil cysts (7%). With regard to the appearance of the mucous membranes, 48% patients had an ivory-like-colored mucous membrane, 72% had a green vascular network, and 89% had a dark red to reddish-brown appearance. Six to nine months' EAT remarkably improved their symptoms with resolution of the endoscopic findings in 86% of the patients.

**Conclusion:** Nasal endoscopy using band-limited light is useful for diagnosis and management of chronic epipharyngitis. We believe that this study not only provides information to help the diagnosis of chronic epipharyngitis but also contributes to treat sick patients suffering from chronic epipharyngitis.

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## 1. Introduction

In the 1960s, the association between chronic epipharyngitis (described as “biinkuen”) and systemic diseases was proposed and studied by early researchers, such as Yamazaki

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[1] and Horiguchi [2]. Recently, this concept has garnered renewed interest among otolaryngologists. Hotta focused on the immunological similarity between tonsillar cells and epipharyngeal cells and reported the effectiveness of epipharyngeal abrasive therapy (EAT) in patients with IgA nephropathy [3]. Subsequent studies have improved the understanding of the mechanism underlying EAT for a variety of systemic diseases [4,5].

The concept of chronic epipharyngitis has faded away without being known abroad and this can be attributed to lack of standardization of its diagnosis and treatment modalities. In the early years, Horiguchi used specimens obtained by brushing cytology for the diagnosis of chronic epipharyngitis. It was believed that endoscopic diagnosis of epipharyngeal diseases was difficult despite the advancement in endoscopic technology. Recently, Tanaka reported that chronic epipharyngitis could be diagnosed endoscopically using a band-limited light endoscope [6]. Thanks to the progress of this modern diagnostic technology, it became possible to assess the pathological condition of chronic epipharyngitis by video-images, sharing the pictures with other otolaryngologists.

In November 2016, we opened an appointment-only specialty outpatient clinic, operative every Friday, with the aim to diagnose and treat chronic epipharyngitis and contribute to the understanding of its pathology. In this study, we reviewed the medical records of new patients who visited the clinic during 1 year after its opening and investigated the band-limited light endoscopic findings in patients with untreated epipharyngitis.

## 2. Materials and methods

The study period was from November 2016 to October 2017. Two hundred and twelve new patients suspected of having chronic epipharyngitis visited the specialty outpatient clinic for EAT. The study was conducted in accordance with the Code of Ethics of the world Medical Association (Helsinki Declaration), and the study protocol was approved by the Institutional Review Board. All the patients provided written informed consent.

Endoscopic EAT was performed in 209 of the 212 patients and the endoscopic findings were videotaped in all patients. Of the 212 patients, 90 had previously been treated at another clinic, and 122 had never been treated. Of the 122 patients who received EAT for the first time, 102, whose endoscopic findings could be evaluated on videotapes, were examined for the study variables. The study variables were as follows: 1) age distribution and mean age of the patients, 2) sex, 3) chief complaint, 4) diagnosis by other departments, 5) outcomes and 6) endoscopic findings. The first five items were retrospectively reviewed from patients' medical records. In principle, EAT was performed once a week (one session) through a transnasal and transoral approach in a blind fashion. Endoscopic EAT was performed at the initial session and then approximately once every 3 months (that is, once every

12 sessions). Assessment of the therapeutic effect was performed during the endoscopic EAT and the observed images were videotaped. When endoscopic EAT was performed, the patients also evaluated their subjective symptoms on a visual analog scale (VAS) and rated the severity of their chief complaints on a scale of 0 (absence of symptoms) to 10 (highest severity of symptoms). The VAS scores were used to analyze outcomes. With reference to the report by Tanaka [4], mucosal findings were described in terms of percentage of black spots, granular changes, vessel truncations, crust/mucus attachments, tonsil cysts, adenoid hypertrophy, and degree of mucosal swelling. Based on the categories of endoscopic mucosal findings reported by Tanaka, "mucosal edema and swelling," "green network of blood vessels," and "dark red to reddish-brown mucosa" were jointly described as "degree of mucosal swelling."

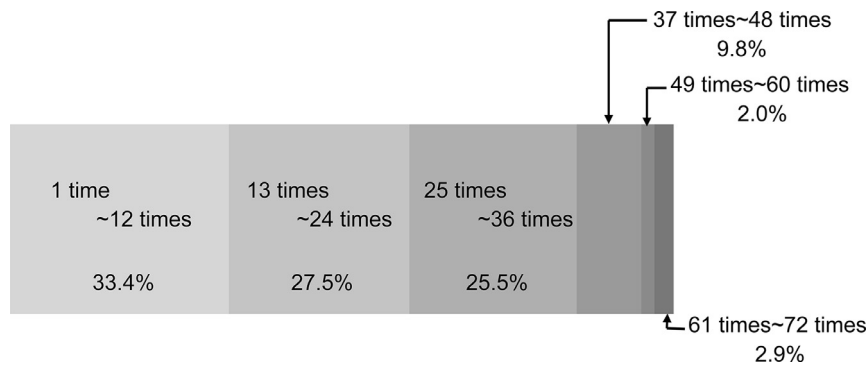
## 3. Results

The age distribution of the subjects ranged from 22 to 83 years with a mean age of 46.0 years. Thirty-two of them were men, and seventy were women. Major chief complaint was postnasal drip in 42 patients (41.2%), pharyngeal pain in 12 patients (11.8%), and throat discomfort in 11 patients (10.8%) (Table 1). IgA nephropathy was diagnosed at other departments in 10 patients, chronic fatigue syndrome in 10 patients, chronic rheumatoid arthritis in 3 patients, and fibromyalgia in 3 patients (Table 2). Fig. 1 shows the proportions of patients according to the number of therapy sessions. Fifteen patients received only the initial therapy session, whereas seventy-four patients continued treatment until the last session were com-

**Table 1.** Chief complaint.

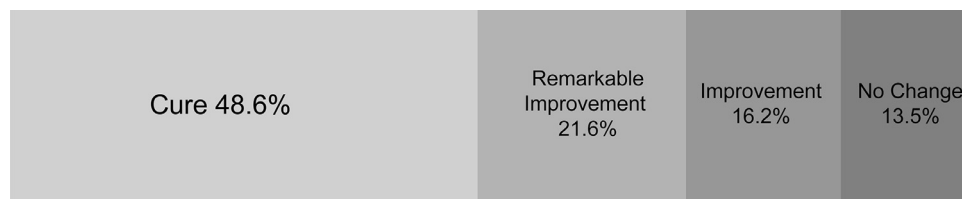
Chief complaint	Number (%)
Postnasal drip	42 (41.2)
Throat pain	12 (11.8)
Throat discomfort	11 (10.8)
IgA nephropathy	8 (7.8)
Sputum	5 (4.9)
Nasal Obstruction	4 (3.9)
Headache	3 (2.9)
Cough	2 (2.0)
Systemic pain	2 (2.0)
Nasal discharge	2 (2.0)
Earfullness	2 (2.0)
Hyposmia	1 (1.0)
Fatigue	1 (1.0)
Recurrent cold	1 (1.0)
Hair loss	1 (1.0)
Bad breath	1 (1.0)
None	4 (3.9)

There were 42 patients with postnasal drip, accounting for 41.2% of the cases. The next most common chief complaint was Throat pain in 12 patients, followed by throat discomfort in 11 patients (10.8%). The chief complaints of patients visiting our clinic were vary. Postnasal drip may classify as a common complaint in patients with chronic epipharyngitis.



**Fig. 1.** The number of treatments.

We carried out epipharyngeal abrasive therapy (EAT) once a week (one session). The treatment number varies from 1 to 72 times (sessions). In 86% of the patients, treatment completed within 9 months with 36 times' EAT.

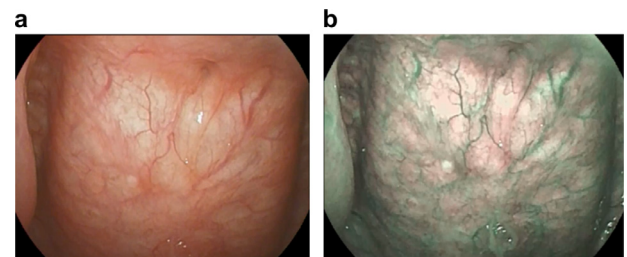


**Fig. 2.** Outcome of EAT in the outpatient clinic for chronic epipharyngitis. We analyzed 74 patients who continued treatment until therapeutic effects could be evaluated. The effect was assessed subjectively by visual analog scale (VAS). When their subjective symptoms disappeared and VAS scale reached 0, we judged they reached "cure".

**Table 2.** Underlying disease.

IgA nephropathy	10
Chronic fatigue syndrome	10
Rheumatoid arthritis	3
Fibromyalgia	3
Sterility	3
Allergy rhinitis	2
Cough variant asthma	1
Irritable bowel syndrome	1
Palmoplantar pustulosis	1
Depression	1

Total 17 patients are considered to be functional somatic syndrome, including chronic fatigue syndrome, fibromyalgia, sterility, and irritable bowel syndrome.

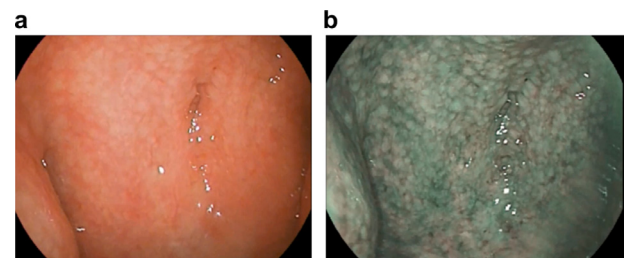


**Fig. 3.** Transnasal endoscopic photographs of epipharyngeal lesion without inflammation.

a: Image obtained under ordinary light endoscopy.

b: Image obtained by OE Mode 1.

Branching green vessels are observed. When inflammation is absent, new blood vessels (brownish area) and dark red blood vessels in the surface layer of the mucosa are less obvious, thus the vessels in the deeper layer become visible.



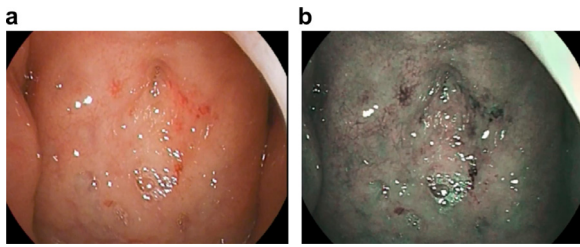
**Fig. 4.** Transnasal endoscopic photographs of chronic epipharyngeal lesion.

a: Image obtained under ordinary light endoscopy.

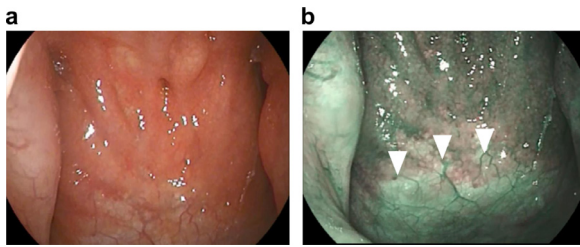
b: Image obtained by OE Mode 1.

Cobblestone-like granular changes are prominent. It was often observed that swelling of the epipharyngeal mucosa resolved with continuation of EAT, and the granular changes disappeared.

pleted. Outcome was cure in 48.6% of the patients, remarkable improvement in 21.6%, improvement in 16.2%, and no change in 13.5% (Fig. 2). Mucosal findings were as follows: Fig. 3a and b shows the epipharyngeal mucosa without inflammation. In untreated patients, granular changes were observed in 76% of cases (Fig. 4b), black spots in 73% (Fig. 5b), and vessel truncations in 92% (Fig. 6b arrows). In addition, crust/mucus attachments were observed in 54% of cases, adenoid hypertrophy in 31%, tonsil cysts in 7%, and ivory colored mucosal swelling in 48% (Fig. 7a). Other frequently observed findings were: green network of blood vessels in 72% (Fig. 7b) and dark red to reddish-brown mucosa in 89% of the patients (Fig. 7c).



**Fig. 5.** Transnasal endoscopic photographs of chronic epipharyngeal lesion. a: Image obtained under ordinary light endoscopy. b: Image obtained by OE Mode 1. There are many black spots, indicating submucosal bleeding or severe submucosal congestion.



**Fig. 6.** Transnasal endoscopic photographs of chronic epipharyngeal lesion. a: Image obtained under ordinary light endoscopy. b: Image obtained by OE Mode 1. The green-colored vessels running upward from the oropharynx appear to be truncated due to swelling of the epipharyngeal mucosa. They are indicated by  $\Delta$ .

#### 4. Discussion

In this study, we investigated the medical backgrounds of patients with chronic epipharyngitis who visited our specialty outpatient clinic. We also investigated the band-limited light endoscopic findings of patients with untreated chronic epipharyngitis, with reference to the report by Tanaka [4].

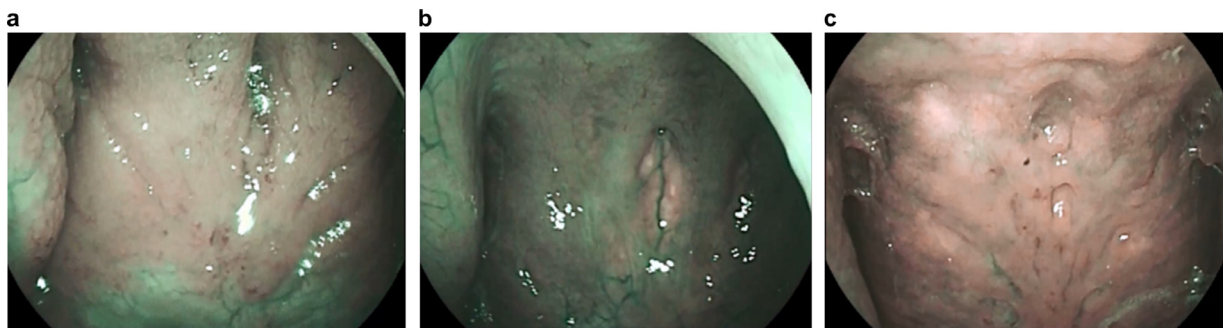
Most patients in this study were adults, and the major symptoms were postnasal drip, pharyngeal pain, and throat discomfort (Table 1). As we assumed that postnasal drip was the common chief complaint with chronic epipharyngitis, approximately 40% of the patients had postnasal drip. In these patients, postnasal drip was persistently annoying symptom irrespective to various medical treatment. Throat pain

and throat discomfort were also frequently observed in the condition of chronic epipharyngitis. We suggest it would be important that otolaryngologists do not under-estimate these complaints even though ordinary examination such as endoscopic examination and X-ray does not show significant findings.

The most frequent underlying diseases observed in patients who visited our clinic for EAT were IgA nephropathy and chronic fatigue syndrome (Table 2). The association between IgA nephropathy and chronic epipharyngitis was studied by Hotta. He reported that in some patients with IgA nephropathy, they occasionally exert recurrent hematuria triggered by upper respiratory infections even after they received curative therapy, including tonsillectomy plus steroid pulse therapy. He also mentioned that the additional EAT is extremely effective in such patients in order to induce them into clinical remission (disappearance of both proteinuria and hematuria) [3]. We hope that EAT will be recognized as a standard treatment approach not only for IgA nephropathy but also for other immunologically disturbed health conditions such as rheumatoid arthritis and palmoplantar pustulosis.

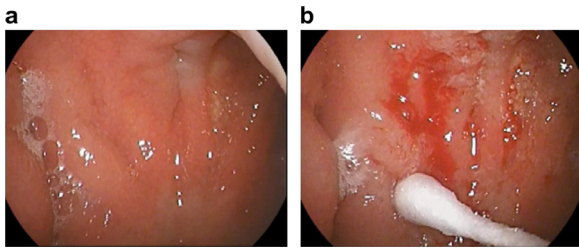
Hotta reported the relationship between chronic fatigue syndrome and chronic epipharyngitis by using an epipharynx-lymbic system interaction hypothesis, and he discussed the therapeutic application of EAT [4]. We also experienced some physicians often referred patients with mycoplasma infection who had extrapulmonary symptoms and patients with fibromyalgia or chronic fatigue syndrome for EAT, assuming the association between epipharyngeal focal infection and these conditions [6]. Indeed, in the present study, total 17 patients were diagnosed as functional somatic syndrome [7], including chronic fatigue syndrome, fibromyalgia, sterility and irritable bowel syndrome [9], and were referred to our clinic for the evaluation of chronic epipharyngitis (Table 2). Extensive EAT was actually very effective in many of these patients. Thus, we would like to suggest that endoscopic observation of epipharynx with EAT may be a potential tool to solve such unexplained medical symptoms, identifying the reason of poor physical condition.

In this study, 74 of 102 patients continued EAT until we could assess the therapeutic effect as disappearance of chief complaints as markers. Treatment was completed within one



**Fig. 7.** Transnasal endoscopic photographs of chronic epipharyngeal lesion obtained by OE Mode 1. The color is more ivory (a) because of mucosal swelling due to possibly lymphatic congestion, excessive intercellular fluid, and venous congestion. The color is greener (b) because of vasodilatation, increased vascular permeability, and submucosal congestion. The color is darker red to reddish-brown (c) when the venous congestion in the deeper layer of the mucosa disappears, and only vessels in the surface layer of the mucosa are observed.





**Fig. 8.** Transnasal endoscopic photographs of chronic epipharyngeal lesion during EAT.

Ordinary light endoscope is inserted from one nasal nostril, whereas cotton applicator immersed with 1% zinc chloride is inserted from the other nostril for EAT. In patients harboring high-grade chronic epipharyngitis, significant impure bleeding with searing pain is observed during scratching.

months in 33% of patients. As the number of therapy sessions increased, the more patients improved their symptoms. Within 9 months (36 sessions), 85% of patients completed their treatment. Because it is necessary to visit our clinic once a week for EAT, some patients could not continue the treatment. Fig. 2 shows the outcome of 72 patients who completed the treatment. The rate of complete resolution of their symptoms was 49%, suggesting continuation of treatment appears to be important. Of 28 patients who prematurely discontinued treatment, 15 received only the initial endoscopic EAT session. They might have discontinued treatment because of intolerable pain during EAT. Finally, the sum of population who reached cure, remarkably improved, plus improved, was 86.4%. The proportion of patients with remission in this study was comparable with the rate of symptomatic improvement reported by Ohno's report [8], where the response rate to EAT was approximately 80%.

One of the reasons could be the lack of definitive diagnostic criteria, because classical studies demonstrated that mere evidence of bleeding during and after scratching was a hallmark of chronic epipharyngitis (Fig. 8). Definitely, development of new medical concept with its management has been awaited. Recently, owing to the widespread use of flexible and rigid endoscopes, visual examination of the epipharynx became possible in routine clinical practice. In this method, the endoscopic images are recorded digitally, and the data are reproducible. Ohno et al. proposed a severity classification of chronic epipharyngitis based on the degree of erythema and swelling of the epipharyngeal mucosa on ordinary endoscopy, and they also reported the effectiveness of EAT [9]. This allowed a comparison of images before and after therapy, although the basis for diagnosis of chronic epipharyngitis before treatment was unclear. The presence/absence of secretions as well as reddening and swelling of the mucosa can be detected by observation under ordinary light; however, if such a finding is absent during ordinary endoscopic examination, the operators may not take the patient's complaints of sputum and postnasal drip seriously. While performing EAT at the site of mucosal swelling under ordinary endoscopy, we occasionally noticed oozing of secretions other than blood from the mucosa. Such secretions could be the source of postnasal drip and sputum that were complained of by the patients.

There have been significant advances in medical optical technology. One such noteworthy development is the band-limited light endoscope. In the field of otolaryngology, this device is used to detect new blood vessels in head and neck cancers, such as cancers of the larynx and hypopharynx. Tanaka suggested that the band-limited light endoscope becomes a tool for the diagnosis of chronic epipharyngitis [6]. The band-limited endoscope Optical Enhancement Mode 1 is a function of the endoscope manufactured by PENTAX Medical. This endoscope was devised to detect neovascularization in head and neck cancers by using band-limited light emission at a wavelength of approximately 415–540 nm, corresponding to the hemoglobin absorption peaks of the blue and green spectrum (of the three primary color spectrums (red, green, blue), wavelengths in the red spectrum were not used). With this optical technology, vessels in the superficial layer are depicted in reddish-brown color and those in the deep layer are depicted in green color (Fig. 3b). Tanaka assumed that pathological mucosa susceptible to bleeding during and after scratching is necessarily accompanied by submucosal congestion, and he argued that the band-limited light endoscope can be used for the diagnosis of chronic epipharyngitis if submucosal congestion is detected.

We analyzed various band-limited light endoscopic findings in our patients with untreated chronic epipharyngitis in accordance with the report by Tanaka. The three most frequently observed mucosal findings were vessel truncation, granular changes and black spots, all of which were demonstrated in Tanaka's report as prominent features of chronic epipharyngitis observed by band-limited light endoscopy [6]. We suggest that these endoscopic findings may become hallmarks of chronic epipharyngitis.

This study provided a comprehensive picture of chronic epipharyngitis in patients who visited our specialty outpatient clinic. Many patients demonstrated symptoms directly associated with chronic epipharyngitis, such as postnasal drip, pharyngeal pain or throat discomfort. On the other hand, some patients did not show such symptoms, whereas they exhibited medically unexplained various symptoms (so called functional somatic syndrome), including chronic fatigue syndrome and fibromyalgia. Given such unexplained symptoms often disappear by EAT, we would like to recommend clinicians to suspect chronic epipharyngitis, decide to perform a thorough band-limited light endoscopic examination of the pharynx for these patients.

It should be noted that the treatment strategy for patients suspected with chronic epipharyngitis based on clinical and band-limited light endoscopic findings, but without any bleeding during and after EAT, is not entirely clear. Conventionally, such patients are not diagnosed with chronic epipharyngitis. Even in our institution, we do not treat patients without evidence of bleeding during and after EAT, and we explain to such patients that they do not have chronic epipharyngitis.

In addition, we sometimes encounter cases of persistent and significant band-limited light endoscopic findings of chronic epipharyngitis without any symptoms, or cases of persistent symptoms without any endoscopic findings. We hope our findings and knowledges will help to understand further

the pathophysiology of chronic epipharyngitis and shed light on modern therapeutic strategy to treat many patients suffering from chronic epipharyngitis as well as relating various diseases.

## 5. Conclusions

1. In this study, we evaluated patients who visited our specialty outpatient clinic for chronic epipharyngitis.
2. Many patients had symptoms directly caused by chronic epipharyngitis, or had functional somatic syndrome, possibly related to epipharyngeal local infection.
3. Analysis of band-limited light endoscopic findings in patients with untreated chronic epipharyngitis, with reference to the report by Tanaka, demonstrated that the most prominent pathological findings were mucosal swelling, vessel truncation, granular changes, and black spots.
4. Six to 9 months' EAT remarkably resolved their symptoms, eventually inducing cure.
5. This study may provide general diagnosis and therapeutic method, capable of giving a diagnostic marker that contributes to the improvement of diagnosis of chronic epipharyngitis as well as its therapeutic effect.

## Funding and Declaration of Competing Interest

None.

## Meeting information

The 31th Annual Meeting of the Japan Society of Stomato-pharyngology, Nagoya City, Japan, September 14th 2017.

## Ethical approval

The study was conducted in accordance with the Code of Ethics of the World Medical Association (Helsinki Declaration), and the protocol was approved by the Institutional Review Board of Ota General Hospital (Approval number No. 18025).

## Acknowledgments

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