

## Brief communication (Original)

# Unsedated transnasal esophagoscopy: a sensitive and safe outpatient screening tool

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**Background:** Unsedated transnasal esophagoscopy is an emerging screening tool for head and neck cancer evaluation. It has been popular because of its acceptance and cost-effectiveness in an office setting.

**Objectives:** To evaluate indications, outcomes, and complications of unsedated transnasal esophagoscopy among patients at our hospital.

**Methods:** A retrospective, descriptive review of data recorded from patients who underwent transnasal esophagoscopy (TNE) without sedation at ENT department. Demographic data, indication, and clinical record were collected.

**Results:** We retrospectively reviewed the records of 58 patients. Their mean age was 57.4 years (range 18–84 years), and the cohort comprised 43 men and 15 women. Indications for TNE (total 72) were second primary cancer surveillance 34/72 (47%), swallowing problem 27/72 (38%), head and neck clinical staging 8/72 (11%), and voice problem 3/72 (4%). Tissue biopsy positive for esophageal cancer was found in 5/58 patients (9%). Two patients (3%) had major complications.

**Conclusions:** Transnasal esophagoscopy is a safe and practical screening tool for detecting esophageal cancer. This procedure allows otolaryngologists early detection of cancer in an office setting.

**Keywords:** Dysphagia, esophageal cancer, head and neck cancer, second primary cancer, swallowing, transnasal esophagoscopy

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Transnasal esophagoscopy (TNE) is a tool for otolaryngologists that is emerging for examination of the upper aerodigestive tract [1]. The feasibility and practicality of TNE for screening of head and neck cancer is useful for in-office examination without sedation [2-4]. Compared with conventional techniques, TNE has comparable diagnostic accuracy and patient tolerance [5, 6]. A small caliber flexible endoscope with distal-chip technology allows more complete evaluations of patients with dysphagia, second primary cancers or laryngopharyngeal reflux by otolaryngologists. Here we describe our experience with unsedated transnasal esophagoscopy in an office setting at a single institution.

## Materials and methods

This study and the retrospective review of patient records was approved by the King Chulalongkorn Memorial Hospital (651/58) and the Institutional Review Board of the Faculty of Medicine, Chulalongkorn University (approval No. 182/2015/023/58). In this descriptive study we retrospectively reviewed the records of patients who underwent transnasal esophagoscopy at King Chulalongkorn Memorial Hospital without sedation from September 2011 to March 2014. The same endoscopic technique was used by the 2 examining otolaryngologists (P. Sombuntham and W. Rawangban). Primary Indication was recorded according to the patients' chief complaint. Clinical findings and complications were retrieved from patient medical records. All patients had signed a standard preoperative informed consent form and had been provided an overview of the reasons and likely benefits from undergoing this procedure.

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**Transnasal esophagoscopy**

All patients received 10 mL viscous 2% lidocaine orally at least 15 minutes before the procedure. Bilateral nasal packing was performed with cotton-pledgets soaked in 0.05% oxymetazoline hydrochloride and 2% lidocaine solution for 5–10 minutes. Patients underwent TNE in a sitting position without sedation. A flexible 4.9 mm scope (Pentax EE1580K, Pentax Corp, Tokyo, Japan) was inserted into a nostril and further down through nasopharynx, oropharynx, and hypopharynx. Patients were asked to swallow simultaneously when the flexible scope entered into the esophagus. Evaluation of the esophageal lumen was then conducted in a retrograde fashion from lower esophageal sphincter to the postcricoid area. Suspected lesions were obtained using biopsy forceps through a 2 mm working channel.

**Results**

We retrospectively reviewed the cases of 58 patients with complete clinical records. The mean age of these patients was 57.4 years (range 18–84 years)

and the cohort comprised 43 (74%) men and 15 (26%) women. Before the procedure 35 patients (60%) had a diagnosis of head or neck cancer (**Table 1**). As shown in **Table 2**, indications for TNE included second primary tumor surveillance, dysphagia, clinical staging of head and neck cancer, and change in voice problems.

Esophageal lesions were detected in 5 patients. **Figure 1** shows abnormal findings in the esophagus. Tissue biopsy was obtained in all patients with biopsy forceps through a utility channel. Only 1 patient had a positive result for squamous cell carcinoma. Four patients had to undergo rigid esophagoscopy under general anesthesia for additional tissue biopsy. Overall esophageal cancer was found in 5/58 patients (9%). Three of 34 patients (9%) had second primary cancers.

All of the patients were able to complete the exam. Complications were reported in 2 patients (3%), one with hypotension following viscous 2% lidocaine ingestion, but required no treatment, and the other had major bleeding from esophageal cancer that required blood transfusion.

**Table 1.** Patient characteristics

	n	%
Sex		
Male	43	74%
Female	15	26%
Age, median (range) years		
Total	57.4 (18–84)	
Head and neck cancer	35	60%

**Table 2.** Indication for transnasal esophagoscopy

	n (%)
Surveillance for second primary tumor	34 (47)
Dysphagia	27 (38)
Clinical staging for head and neck SCCA	8 (11)
Voice problem	3 (4)
Total	72



**Figure 1.** Abnormal findings in the esophagus during transnasal esophagoscopy. (A) Early mucosal cancer in the midesophagus, (B) tumor at the esophagogastric junction, (C) tissue biopsy performed during transnasal esophagoscopy.

### Discussion

Advances in flexible endoscope technology has led to the development of a distal-chip, small caliber flexible esophagoscope, which has been a useful tool for evaluation of head and neck cancer and other indications. Transnasal esophagoscopy became more popular among otolaryngologists in an office setting. Giving its feasibility, low cost, and safety without sedation, it is similar to an examination using a flexible nasolaryngopharyngoscope in an otolaryngology or ear, nose, and throat (ENT) outpatient clinic.

To our knowledge our study is the first of TNE without sedation in Thailand. In our institution, most patients who underwent TNE had head and neck cancer, and indications for or second primary surveillance. As a tertiary care hospital, the majority of head and neck patients were referred from secondary care hospitals for treatments after initial diagnosis by tissue biopsy under sedation was done elsewhere. TNE reduces the risk from repeated sedation and gave direct visualization of second or recurrent primary esophageal cancer, which can occur in 1.3% to 18% of cases [7-11]. Our study found a similar rate (9%) with complication rate (3%) that was comparable to that reported by other authors. Our preliminary study found TNE to be a safe and efficient procedure in examination of the upper aerodigestive tract. Although in our experience, tissue biopsies were often nondiagnostic and further rigid esophagoscopy was required. This procedure offers more convenience than conventional procedures, is hospitalization-free for most patients, and reduces health care costs.

Other indications for transnasal esophagoscopy include dysphagia, second primary cancer surveillance, globus pharyngeus, or head and neck cancer staging [4, 7, 12-19]. Belafsky et al. described unsedated-

TNE experience in 100 patients in a study that showed patient acceptance under topical anesthesia [1]. Their study was one of the early studies reporting this procedure performed by otolaryngologists. Postma et al. [3] initially reviewed the utility of TNE in head and neck patients when compared with standard panendoscopy followed by a larger study (of 611 patients) in 2005 [20]. Therapeutic use of TNE in tracheoesophageal injury and dilation of esophageal stricture was also reported. This revealed the efficacy and expanded practical use of TNE in clinical settings. Safety is a major concern in unsedated TNE.

Hypotension as a side effect of lidocaine and major bleeding from the site of biopsy were found in our experience in selected patients. However, only minor complications were reported in previous studies [2, 16, 19-23]. Nose bleeding occurred in less than 2%. Other complications including nausea, lightheadedness, and vasovagal reactions. A tight nasal vault was described in one report [1].

Although TNE has many advantages compared to conventional methods, many otolaryngologists remain unfamiliar with it. TNE required further training and experience.

### Conclusion

TNE without sedation in an office setting is a safe and effective procedure for many indications such as screening for head and neck cancer, swallowing problems, and esophageal cancer. This procedure is comparable to rigid esophagoscopy in selected patients. TNE should be used as a surveillance screening tool for head and neck cancer patients.

### Conflict of interest statement

The authors have no conflicts of interest to declare.

## References

1. Belafsky PC, Postma GN, Daniel E, Koufman JA. Transnasal esophagoscopy. *Otolaryngol Head Neck Surg.* 2001; 125:588-9.
2. Peery AF, Hoppe T, Garman KS, Dellon ES, Daugherty N, Bream S, et al. Feasibility, safety, acceptability, and yield of office-based, screening transnasal esophagoscopy (with video). *Gastrointestinal Endoscopy.* 2012; 75:945-53.e2.
3. Postma GN, Bach KK, Belafsky PC, Koufman JA. The role of transnasal esophagoscopy in head and neck oncology. *Laryngoscope.* 2002; 112:2242-3.
4. Andrus JG, Dolan RW, Anderson TD. Transnasal esophagoscopy: a high-yield diagnostic tool. *Laryngoscope.* 2005; 115:993-6.
5. Bacon CK, Hendrix RA. Open tube versus flexible esophagoscopy in adult head and neck endoscopy. *Ann Otol Rhinol Laryngol.* 1992; 101:147-55.
6. Thota PN, Zuccaro G Jr, Vargo JJ 2nd, Conwell DL, Dumot JA, Xu M. A randomized prospective trial comparing unsedated esophagoscopy via transnasal and transoral routes using a 4-mm video endoscope with conventional endoscopy with sedation. *Endoscopy.* 2005; 37:559-65.
7. Su YY, Fang FM, Chuang HC, Luo SD, Chien CY. Detection of metachronous esophageal squamous carcinoma in patients with head and neck cancer with use of transnasal esophagoscopy. *Head Neck.* 2010; 32:780-5.
8. McGuirt WF, Matthews B, Koufman JA. Multiple simultaneous tumors in patients with head and neck cancer: a prospective, sequential panendoscopic study. *Cancer.* 1982; 50:1195-9.
9. Dhooge IJ, De Vos M, Van Cauwenberge PB. Multiple primary malignant tumors in patients with head and neck cancer: results of a prospective study and future perspectives. *Laryngoscope.* 1998; 108: 250-6.
10. Petit T, Georges C, Jung GM, Borel C, Bronner G, Flesch H, et al. [Systematic esophageal endoscopy screening in patients previously treated for head and neck squamous-cell carcinoma.](#) *Ann Oncol.* 2001; 12:643-6.
11. Schwartz LH, Ozsahin M, Zhang GN, Touboul E, Vataire FD, Andolenko P, et al. Synchronous and metachronous head and neck carcinomas. *Cancer.* 1994; 74:1933-8.
12. Gerson LB, Triadafilopoulos G. Screening for esophageal adenocarcinoma: an evidence-based approach. *Am J Med.* 2002; 113:499-505.
13. Meyer V, Burtin P, Bour B, Blanchi A, Cales P, Oberti F, et al. [Endoscopic detection of early esophageal cancer in a high-risk population: does Lugol staining improve videoendoscopy?](#) *Gastrointest Endosc.* 1997; 45:480-4.
14. Murakami S, Hashimoto T, Noguchi T, Hazamada S, Uchida Y, Suzuki M, et al. The utility of endoscopic screening for patients with esophageal or head and neck cancer. *Dis Esophagus.* 1999; 12:186-90.
15. Pattani KM, Goodier M, Lilien D, Kupferman T, Caldito G, Nathan CO. Utility of panendoscopy for the detection of unknown primary head and neck cancer in patients with a negative PET/CT scan. *Ear Nose Throat J.* 2011; 90:E16-20.
16. Peña S, Zuzukin V, Beahm DD, Nuss DW, Walvekar RR. Transnasal esophagoscopy (TNE) in the staging of head and neck cancers: Feasibility and impact in a public hospital setting. *Laryngoscope.* 2010; 120 (Suppl S3): S46.
17. Su YY, Chen WC, Chuang HC, Gou CS, Lin YT, Luo SD, et al. Effect of routine esophageal screening in patients with head and neck cancer. *JAMA Otolaryngol Head Neck Surg.* 2013; 139:350-4.
18. Tsikoudas A, Mochloulis G. Role of transnasal oesophagoscopy in diagnosis of early malignancy in the area of the oesophagus and hypopharynx. A review of the literature. *Eur Arch Otorhinolaryngol.* 2014; 271:203-4.
19. Price T, Sharma A, Snelling J, Bennett AMD, Qayyum A, Bradnam T, et al. How we do it: The role of trans-nasal flexible laryngo-oesophagoscopy (TNFLO) in ENT: one year's experience in a head and neck orientated practice in the UK. *Clin Otolaryngol.* 2005; 30:551-6.
20. Postma GN, Cohen JT, Belafsky PC, Halum SL, Gupta SK, Bach KK, et al. Transnasal esophagoscopy: revisited (over 700 consecutive cases). *Laryngoscope.* 2005; 115:321-3.
21. Dolan RW, Anderson TD. Practical applications of in-office fiberoptic transnasal esophagoscopy in the initial evaluation of patients with squamous cell cancer of the head and neck. *Ear Nose Throat J.* 2013; 92:450-5.
22. Sharma A, Price T, Mierzwa K, Montgomery P, Qayyum A, Bradnam T. Transnasal flexible laryngo-oesophagoscopy: an evaluation of the patient's experience. *J Laryngol Otol.* 2006; 120:24-31.
23. Wang CP, Lee YC, Lou PJ, Yang TL, Chen TC, Huang CC, et al. Unsedated transnasal esophagogastroduodenoscopy for the evaluation of dysphagia following treatment for previous primary head neck cancer. *Oral Oncology.* 2009; 45:615-20.