



Transoral endoscopic thyroidectomy—essentiality of classification

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Karakas E. The vestibular approach in transoral thyroid surgery: proceedings within the clinical setting. *Transl Cancer Res* 2017;6:S26-S28.

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Since the adoption of natural orifice transluminal endoscopic surgery (NOTES) for thyroid surgery via transoral access, its popularity has increased worldwide, especially in Asian countries. The advantage of this innovative surgery is its scar-free result, which is ideal for all kinds of operations. However, care must be taken to classify the transoral endoscopic thyroidectomy approach appropriately because they are completely different in technique and outcome.

The first technique is a purely sublingual approach, which was introduced by Witzel *et al.* and performed only on cadavers and animals (1). Transoral endoscopic partial parathyroidectomy (TOPP) uses a 20 mm incision at the lateral floor of the mouth, performed by Karakas *et al.* (2,3). However, TOPP was poorly accepted by the patients, potentially caused by fear of the words “transoral access”, especially in the sublingual area. Another reason for lack of acceptance was culture. In western culture, a scar is not a big deal and may decrease in visibility over time. It is the opposite in Asian cultures, where a scar is viewed as undesirable and ugly, regardless of its location. Therefore, endoscopic thyroidectomy as well as transoral access is more widely accepted and developed in Asia.

The second technique is a combined sublingual and oral vestibular approach. This technique was first experimented with in cadavers, called “transoral video-assisted thyroidectomy” (TOVAT) by Benhidjeb *et al.* in 2009 (4), using a 10 mm port at the sublingual area combined with two 5 mm ports at the lateral oral vestibule. However, there were some political issues between those authors because one member

who was an ENT consultant left the group and decided not to collaborate. That consultant then applied this premature technique on human beings and changed the name to endoscopic minimally-invasive thyroidectomy: eMIT (5). As expected, there were difficulties and complications in the first 8 cases of the human series, including mental nerve injury in 8 cases, conversion to open surgery in 3 cases, recurrent laryngeal nerve in 2 cases and infection in 1 case. Due to overt complications, those authors ended their study and stopped doing the operation in their country. However, they went on to teach the technique to Chinese surgeons (6). For this reason, the operation remains to be used only in one institute in mainland China.

The third technique is a purely oral vestibular approach. It has gained increasing popularity because of the benefits of its top-down view and easier mobilization of the thyroid gland as well as having fewer complications. We developed and reported on the first 60 human cases of transoral endoscopic thyroidectomy vestibular approach (TOETVA) in 2015 with few complications (7). A 10–15 mm port was inserted in the center of oral vestibule, while two 5 mm ports were inserted underneath the lower lip in the area of the canine teeth. With the benefit of top-down visualization, it is possible to see the cricoid cartilage, thyroid glands, and sternocleidomastoid as well as the sternal notch in a single view. Moreover, instrumental movement is feasible with less collision. We have already completed more than 550 cases with no infection. As a result, this procedure is considered one of the standards for thyroid surgery in our institute. Moreover, TOETVA is currently performed at 39 centers

in 14 different countries (personal communication). Reports regarding TOETVA continue to be published from various institute (8-10).

Regarding the antibiotic protocol for TOETVA, we have followed the clean-contaminated wound surgery protocol since our first case. Intravenous amoxicillin-clavulanic acid is given 30 minutes prior to incisions and then continued in intravenous form for 2 days, followed by oral tablets for 7 days. Up to now, there has been zero rate of infection. Thus, a prospective randomized study is scheduled to be performed in our hospital to reduce the period for antibiotics to just one preoperative dose. We will report the results of that study soon.

A drawback is considered to be the size and specimen of extraction. For TOETVA, we recommend the indication of a benign tumor size less than 7–8 or 1–2 cm malignant nodule. Extraction of the specimen while keeping the nodule intact is essential in thyroid cancer. An additional benefit of TOETVA is central neck lymph node dissection, which is very easy because of direct visualization above the sternal notch. For a benign nodule, the specimen can be extracted from the center incision with good shape and oncological outcome if it is less than 4–5 cm. Otherwise, the gland must be cut into 2–3 pieces before removal of the specimen.

In 2017, Wilhelm *et al.* reported their analysis of all transoral endoscopic thyroidectomy (TOET) literature (6). They included 25 eligible studies in all 3 transoral thyroidectomy approaches mentioned earlier, as well as reported the combined German-Chinese eMIT's outcomes in 96 patients. Permanent RLN palsy was found in 1 (1.1%) case, while transient mental nerve injury was found in 15 (16.1%) cases. Infection was found in 1 (1.1%) case at the intraoral site, while there were 5 (5.4%) cases of neck site infection. The authors did not provide more details concerning neck site infection. Because this procedure may be considered to involve a clean-contaminated wound and bacteria from the oral cavity may go down into the thyroid bed, serious complications could result such as abscess formation in the working space or deep neck infection, which may cause airway obstruction. Moreover, the authors tried to conclude that TOET, inclusive of all 3 techniques, is safe, has been left in a state of infancy and is considered to be alternative approach for thyroidectomy. This may not be true because TOETVA is the only transoral thyroidectomy approach that been proven to be safe, feasible and reproducible with minimal complications (7-10). The sublingual approach

requires additional proof of its safety and more publications, especially concerning the infections mentioned previously.

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