

Transoral endoscopic thyroidectomy via a vestibular approach: why and how?

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Abstract The transoral endoscopic thyroidectomy vestibular approach (TOETVA) is a novel, scar-free surgical procedure that does not require visible incisions. Indications for TOETVA are as follows: predicted gland width on diagnostic imaging ≤ 10 cm; a thyroid volume outline of < 45 mL or dominant nodule dimension of ≤ 50 mm; three or four Bethesda lesions; a primary papillary microcarcinoma without local or distant metastasis; and patient request for optimal esthetic results. Contraindications are as follows: patients unfit for general anesthesia; precedent radiation in the head, neck, upper mediastinum; antecedent neck surgery; recurrent goiter; a gland volume of > 45 mL or main nodule diameter of > 50 mm; and documentation of lymph node or distant metastases, tracheal/esophageal infiltration, preoperative laryngeal nerve palsy, hyperthyroidism, mediastinal goiter, or an oral abscess. Patients with poorly

differentiated or un-differentiated cancer, dorsal extrathyroidal radius, and/or lateral neck metastasis are not suitable for TOETVA. Following the introduction of a robotic surgical system, enabling a three-dimensional surgical view and the use of articulating instruments, TOETVA became suitable for most differentiated thyroid cancers without evidence of extensive extrathyroidal invasion or lateral neck metastasis. The procedure is performed using a vestibular approach and three-port technique; a 10-mm port is used for the 30° endoscope, two 5-mm ports are used for the dissecting and coagulating instruments, and an 8-mm port is placed in the axillary fold during the robotic procedure to enhance fine countertraction of tissue for radical oncological dissection. TOETVA follows surgical planes and is probably the best scar-free approach to the thyroid, given the short distance between the gland and intraoral incisions.

Keywords Transoral thyroidectomy · Endoscopic thyroidectomy · Robotic thyroidectomy · Natural orifice transluminal endoscopic surgery

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Nearly 20 distinct endoscopic thyroidectomies, along with refinements and adaptations, have been reported [1–4]. None of these endoscopic techniques appears advantageous compared to the others (Fig. 1).

Natural orifice transluminal endoscopic surgery (NOTES) is an innovative approach that involves insertion of an optical instrument through a native orifice, such as the mouth. NOTES was conceived in 2008, via sublingual and transtracheal *modus operandi* [5]; however, this approach is associated with unnecessary tissue grievance, increased morbidity due to laryngeal nerve injury, greater anesthesia time, high rates of conversion, and unwieldy instrument maneuverability [5–11]. Thus, between 2013 and 2016,