Modified transoral endoscopic thyroid surgery for treatment of thyroid cancer: operative steps and video

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Abstract: In this video we describe a kind of modified transoral endoscopic thyroid surgery involving meticulous dissection of mental nerve. Inclusion criteria are: the diameter of benign tumors such as thyroid cyst, nodular goiter were limited less than 50 mm; the malignant thyroid tumors including follicular and papillary microcarcinoma were defined as a papillary carcinoma <2 cm in diameter and endoscopic surgery required for the patient. A 6 cm arc-shaped incision was designed at oral vestibule. The branches of mental nerves at both sides were identified and exposed carefully. A 10 mm trocar was placed at the midpoint of the vestibule. Two 5 mm trocars were separately inserted into the vestibule at lateral or medial of the medial branches of the mental nerve. Thyroidectomy and central lymph node dissection was done fully endoscopically using conventional endoscopic instruments.

Keywords: Oral vestibule; mental nerve; endoscopic; thyroidectomy; thyroid cancer

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Description of the surgical technique

Transoral endoscopic thyroidectomy is developing very rapidly, which allows operations without skin incisions. However, it still face the problem of space limitation and limited angle while deal with the upper pole of thyroid and the possibility of mental nerve injury. We present a case report video of a modified transoral endoscopic thyroidectomy involving dissection of mental nerve (Figure 1).

Patient selection

We followed precise inclusion criteria, i.e., the diameter of benign tumors such as thyroid cyst, nodular goiter were limited less than 50 mm; the malignant thyroid tumors including follicular and papillary microcarcinoma were defined as a papillary carcinoma <2 cm in diameter; endoscopic surgery required for the patient.

Exclusion criteria included, i.e., previous radiation in the area of the head, neck and/or upper mediastinum; had previous neck surgery; recurrent goiter; evidence of the cervical neck lymph node metastasis; Hashimoto’s thyroiditis; malignant tumors were close to trachea or tracheoesophageal groove (2-7).

Operative technique

The anesthesia of patients underwent the general endotracheal anesthesia through nasal intubation.

The patients were in a supine position with neck extension created by a pillow placed under the shoulders to make the angle about 140 between hyoid-chin line and hyoid-suprasternal fossa line.

An L-shaped pole to lift up the retracting wires was fixed above the patient’s neck. After conventional disinfection, the primary surgeon sat down at a position near the patient’s head and the assistants sat on the left and right side of the patient separately. In addition, a nurse sat down near the primary surgeon.

Oral disinfection was performed three times with
chlorhexidine. The lower lip was then retracted, exposing the oral vestibule.

A 6 cm arc-shaped incision beginning at the midpoint of the vestibule 1 cm inferior to the gingival edge and ended at the mucosa opposite to the bilateral second premolar was made with electrotome. The branches of mental nerves at both sides were identified and exposed.

About 10 mL expansion solution (1 mg adrenaline in 500 mL saline) was injected down the middle of the incision towards the submental triangle. From the chin to the suprasternal fossa, a subcutaneous tunnel was created by a blunt rod. A 10 mm trocar was placed into the previously created subcutaneous tunnel through the midpoint of the vestibule, and a 1.0 cm endoscope was inserted into the trocar for observation. CO₂ was injected and a constant pressure of 6 mmHg was maintained. Then, two 5 mm trocars were separately inserted into the vestibule at lateral or medial of the medial branches of the mental nerve. Thyroidectomy and central lymph node dissection were done fully endoscopically using conventional endoscopic instruments (1).

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Figure 1 Video case illustrating in detail a modified transoral endoscopic thyroidectomy involving dissection of mental nerve. A 10 mm trocar was placed into the previously created subcutaneous tunnel through the midpoint of the vestibule. Two 5 mm trocars were separately inserted into the vestibule at lateral or medial of the medial branches of the mental nerve. Thyroidectomy and central lymph node dissection were done fully endoscopically using conventional endoscopic instruments (1).
against the skin over the chin, and ice compression was also applied on the skin over the neck and chin to relieve swelling and bleeding. The patient began oral intake of liquid diet 6 hours after surgery, and the drainage tube was removed 2 or 3 days after operation. Perioperative use of antibiotics including cefathiamidine and ornidazole lasted for 3 days generally to avoid infection. Vocal cord function was checked by laryngoscopy the day after surgery. Discharges from hospital are dictated by the common rules of the thyroid surgery.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Informed Consent: Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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