

Opinion

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Assisted-Endoscopic Submandibular Gland Resection Using Lateral Oral Vestibule Approach

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Transoral approach using the floor of the mouth to resect submandibular gland has been in practice since a long time; however, the clinical application of the vestibular approach is a relatively novel approach. As per my knowledge, the vestibular approach has only been implemented to resect the thyroid gland, with the clinical application of transoral transvestibular endoscopic approach in the surgical removal of the thyroid gland being reported for the first time by Wilhelm et al.¹ Transoral endoscopic thyroidectomy vestibular approach (TOETVA) is currently in use in various institutions. TOETVA has been proposed, introduced and clinically performed in various countries including South Korea, Thailand, India, China, Taiwan, Singapore, USA, Mexico, Japan, Ecuador and Italy.¹⁻⁴ We present our opinion on the clinical procedure of TOETVA. The surgical procedure is carried out using a three-port technique at the oral vestibule, by placing one 10-mm port for a 30° endoscope and two additional 5-mm ports for the dissecting and coagulating instruments. CO₂ insufflations pressure is maintained at 6 mmHg. An anterior cervical sub-platisma space is created from the oral vestibule down to the sternal notch, lateral to the sternocleidomastoid muscles. Thyroidectomy is performed endoscopically using conventional endoscopic instruments and intraoperative neuromonitoring (IONM).²

Submandibular gland resection has been advocated for the treatment of recurrent or persistent inflammatory conditions, (recurrent sialadenitis, chronic sialadenitis), mucocele, obstruction of the submandibular duct (traumatic or calculus) and neoplasia (benign and malignant).³

Surgery of the submandibular gland using TOETVA places the marginal mandibular nerve, the hypoglossal nerve, the mental nerve and the lingual nerve at risk. The constant anatomical connection of the marginal nerve is with the mandibular notch. The nerve crosses over on to the mandible at this point and runs forward. It positions the parotid gland below the angle of the mandible, usually at a proximity of 1-2 cm, and takes an anterior course below the border of the mandible up to the area of the mandibular notch and the facial vessels. The hypoglossal and lingual nerves run along the floor of the gland. The hypoglossal nerve runs inferior to the lingual nerve, from a posteroinferior position to the anterosuperior end, while the lingual nerve is wider and loops down from a posterosuperior position. The mental nerve (MN) exits the mandible through the mental foramen, and divides into 3 branches deep into the depressor angulioris muscle (Figure 1).

Care should be taken during the anterior extension of the incision and during the retraction to preserve the nerve. The submandibular gland surrounds the posterior border of the mylohyoid muscle, which is easily identified by the direction of its fibers. These fibers run obliquely and anteroinferiorly from the hyoid to the mandible posterosuperiorly. The relationship between the submandibular duct and the lingual nerve is such that, the duct is 'double-crossed' by the nerve. The nerve loops down posteriorly, crossing the duct superficially/laterally; it takes a course anteriorly below and medially deep into the duct.³

Before the surgery is performed, the concerned patient is requested to rinse his oral cavity with chlorhexidine gluconate, following which he is made to lie down in a supine posi-

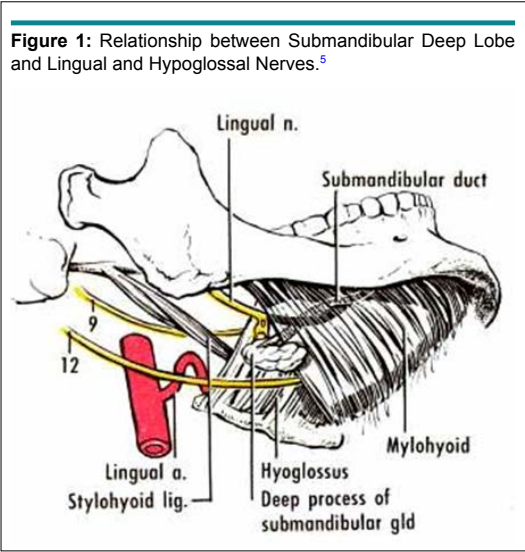


Figure 1: Relationship between Submandibular Deep Lobe and Lingual and Hypoglossal Nerves.⁵

tion thereby facilitating the hyperextension of the neck. Nasal intubation is performed using the contralateral nasal opening, after the administration of appropriate prophylactic antibiotics. Local injections of lidocaine (0.005 mg/ml) and adrenaline (0.005 mg/ml) are given at the oral vestibule. Intraoral incision is performed in the gingivobuccal sulcus of the oral vestibule using a two angled retractor. The incision is run down from the level of the canine tooth extending posteriorly to the angle of the mandibular (Figure 2).

The soft tissue is stripped laterally from the bone until the posterior border of the mandible is reached, exposing the mental nerve in the anterior part of the field (Figure 3).

The facial artery and the facial groove is identified and ligated. Then, the incision of the periosteum and the soft tissue along the inferior border of the mandible is performed until the

capsule of the submandibular gland is reached (Figure 4).

The inferior border of the submandibular gland from the overlying soft tissue is dissected in a plane medial to the facial artery. Dissection of the gland from the medial face of the mandible is performed and the mental artery ligated (Figure 5).

The gland is grasped and retracted posteriorly. The anterior margin is dissected free from the mylohyoid muscle. The posterior border of this muscle is identified and retracted anteriorly with a blunt retractor. The deep lobes of the submandibular gland are exposed by this manoeuvre and important structures are identified on the floor (the hypoglossal nerve at an inferior position and lingual nerve with the submandibular ganglion at a superior position). The canal of the submandibular gland is clumped near the floor of the mouth (Figure 6).

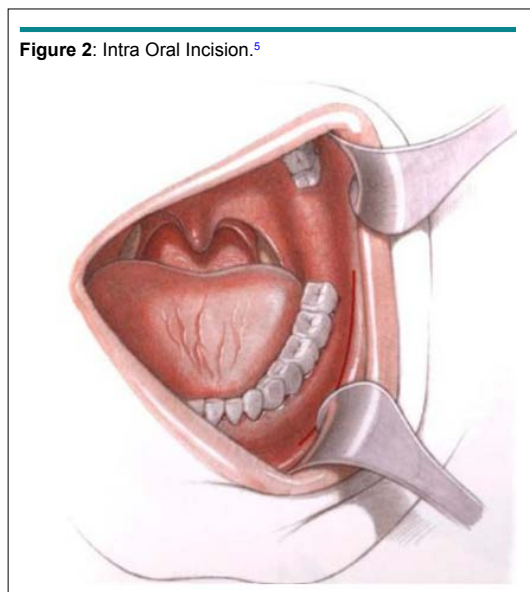


Figure 2: Intra Oral Incision.⁵

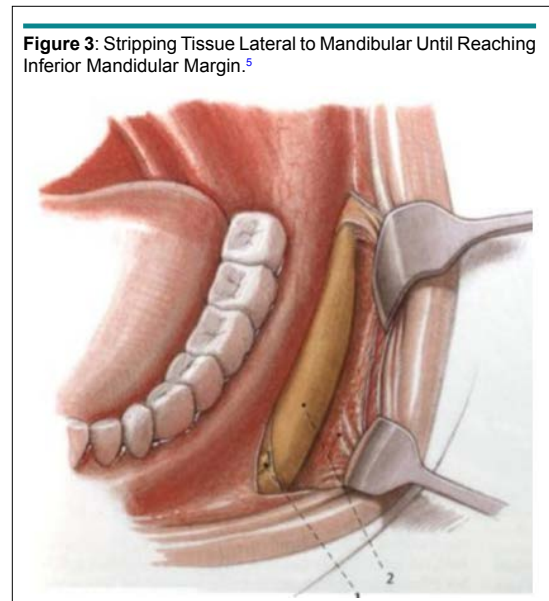


Figure 3: Stripping Tissue Lateral to Mandibular Until Reaching Inferior Mandibular Margin.⁵

Figure 4: Arrow Line is the Incision of the Periosteum and the Soft Tissue Along the Inferior Border.⁵

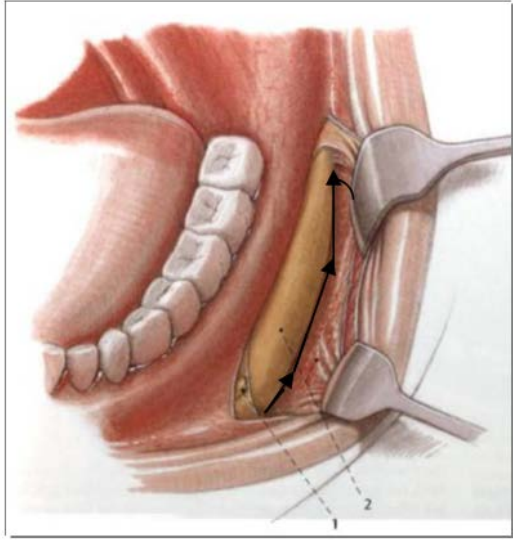


Figure 5: Seeing from above, the Inferior Border of Mandible is down and the Submandibular Gland after Dissection of Overlaying Fascia is up.⁵

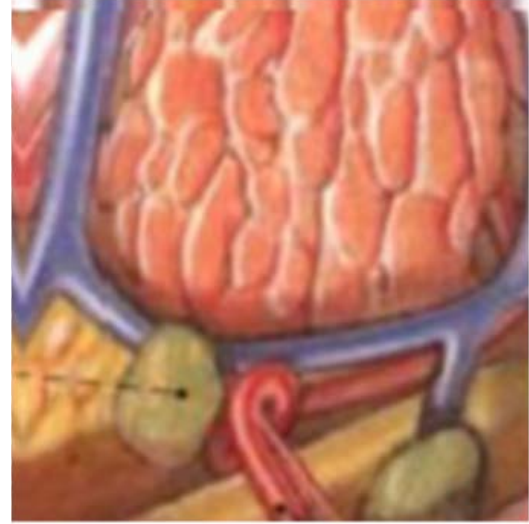
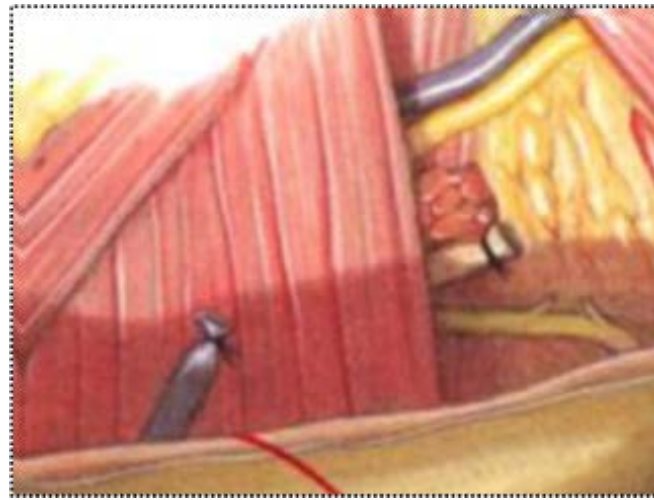


Figure 6: (Post-Resection); Seeing from above, the Inferior Border of Mandible (down), the Posterior Border of Mylohyoid Muscle, Hypoglossal Nerve Inguinal Nerve, and Cutting Submandibular Gland Duct.⁵



A size 8FG vacuum drain is inserted into the cavity and drainage, closure, and dressing are performed.^{2,4}

The benefits of this procedure include no skin scar with a better cosmetic result and no tongue retraction due to scars in the floor of the mouth. While the disadvantages of this procedure include a little risk of damage to the inferior mental nerve and neck infection.⁴

CONCLUSION

In conclusion Submandibular Gland Resection using lateral oral vestibule approach is a novel, safe and effective. The approach combines the advantages of a “scarless”, remote access incision with the goals of minimally invasive surgery. Unfortunately, this

approach technically difficult and place a little risk on the mental nerve. Further comparative studies should be conducted to confirm our conclusions.

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