

Transoral endoscopic thyroidectomy vestibular approach, adaptation of modern surgical technique in a developing country

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Abstract

Conventional thyroidectomy has been the standard technique for over 100 years but has the drawback of leaving a scar on the neck. As such, the demand for minimally invasive endoscopic thyroid surgery is rapidly growing as patients are becoming more and more worried about scars; it is more appropriate in patients who want to get surgery done because of odd looking swelling over the neck. TOETVA is safe, feasible, effective, and scar-free alternative to conventional thyroid surgery. We are sharing our first clinical experience in TOETVA in Pakistan with effective outcome in terms of surgical complication and patient satisfaction.

Keywords: TOETVA, minimally thyroid surgery, Pakistan.

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Introduction

For the past many decades, the conventional thyroid surgery has remained the gold standard surgical technique,¹ but scar on the neck is one of the reasons to avoid surgery. This postsurgical scar sometimes leads to psychological distress. With the use of endoscopes/laparoscopes in different fields of surgery, surgeons developed different approaches to address the cosmetic issue of thyroid surgery. The first endoscopic thyroid surgery was done in 1997 by Huscher et al who operated a 4mm thyroid nodule through trans cervical approach.² Anuwong did transoral endoscopic thyroidectomy by using the vestibular area to access the neck and published his first case series of transoral endoscopic thyroidectomy vestibular approach (TOETVA) comprising 60 cases in 2015.³ Transoral endoscopic thyroidectomy via vestibular approach (TOETVA) is the newest techniques, with the advantage of using a natural orifice of the body. It gives marvellous cosmetic results by

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not leaving a visible scar, and provides accessible approach to the thyroid gland with minimal dissection resulting in decreased surgical trauma. In this case series we present the experience of adopting TOETVA as a new technique in Pakistan.

Case Series

TOETVA was performed in four patients presenting with thyroid nodules between October 2020 and December 2020 at the Liaquat National Postgraduate Medical Centre, Karachi. The demographic data of the patients and surgical outcomes were retrospectively reviewed after taking approval from our ENT (Head and neck) department. Four patients—2 males and 2 females—were included in the study. Consent was taken from all patients for publishing their cases. The age range was from 21 to 30 years with no known comorbidities. All the patients were euthyroid. All the patients had a solitary nodule on clinical examination and ultrasonography. The right lobe was involved in three cases and the left lobe was involved in one case. The nodule diameter ranged from 2-4cm. Among the four cases, 1 (one) was cystic nodule and 3 were solid nodules. Pre-operative diagnosis on FNAC showed 1 (one) case of Bethesda III (follicular lesion of unknown significance) and 3 cases of Bethesda II (benign thyroid nodule). No compressive symptoms were present in any of the patients. In the three patients with benign thyroid nodule, indication for surgery was cosmetic reason, while in one case, it was a suspicious lesion. All cases fulfilled the indication of endoscopic thyroid surgery. All surgeries went uneventful. Recurrent laryngeal nerve was identified in all the surgeries. Post-operative pain was controlled with NSAIDS analgesics. There was no transient or permanent recurrent laryngeal nerve palsy, and no complaint of postoperative change in voice. None of the patients developed haematoma. One patient had seroma which was aspirated three times and then resolved. None of our patients has external scar or burn over the cervical skin. All the patients had intact submental nerve examined on the first clinic visit on the seventh postoperative day. Patients were kept for observation for 24 hours in the hospital and oral diet was started on the day of surgery. All patients were satisfied with the results of their scar-free surgery. Figure 1 shows



Figure-1: A. preoperative picture of patient showing neck swelling.
B. postoperative picture of patient showing scar-less neck.

preoperative swelling and post-operative results in one of the patients. No complications were noted on six-month follow-up.

Surgical procedure: After inducing general anaesthesia, the patient was placed in supine position. A prophylactic antibiotic was administered 30 minutes before the surgery. Endotracheal intubation was done through the nasal route. The oral cavity was disinfected with 0.05% chlorhexidine solution. Three incisions were made in the vestibule on the lower lip: one 10mm incision in the midline above the frenulum and two lateral vertical 5mm incisions against the mandibular canines' teeth. Thirty (30) ml of 1:1,000,000 adrenaline: normal saline solution was infiltrated in the subplatysmal plane in the neck. Three tunnels were made through the central incision with vascular tunneler. 10mm ports were inserted through the central incision and 10mm 30-degree scope was inserted through it. Then two 5mm ports were inserted through the lateral incisions under vision. Carbon dioxide gas was insufflated at 6mm Hg of pressure with high flow. All the three subplatysmal tunnels made by the vascular tunneler were joined by raising the flap with cautery hook. The strap muscles were split in the midline and retracted with external hanging silk sutures to improve exposure. Subsequently, the isthmus of the gland was identified and divided with harmonic Ace. Dissection started from superior pole of the gland and upper pedicle sealed with harmonic Ace. Branches of the inferior thyroid artery were identified and sealed with harmonic Ace over the gland. The recurrent laryngeal nerve was identified in the tracheoesophageal groove. Parathyroid glands were identified and preserved. Haemostasis was secured completely. A 5mm thirty-

degree scope was inserted through the lateral port and endobag was inserted through the central 10mm port. The entire lobe was brought out through the oral cavity using endobag via a 10mm incision. The strep muscles were approximated using vicryl sutures. The oral vestibular port sites were closed using vicryl sutures in two layers.

Discussion

The evolutionary development of endoscopic technologies has resulted in delivery of better cosmetic results and less trauma. To improve cosmetic outcomes, various approaches have been discovered, such as trans axillary approach, trans areolar approach, retro auricular approach, and trans anterior chest wall approach, and they all have been quite successful in providing minimal scars but involvement of extensive dissections make these surgeries more invasive than traditional thyroidectomy.^{4,5} In 2010, Wilhelm performed the first transoral thyroid surgery with the aim to develop a completely scar-less surgery. In his technique, Wilhelm reduced the extensive tissue dissection seen in the previous extra cervical approaches for endoscopic thyroidectomy.⁶ In 2015, Anuwong used the oral cavity vestibule to access the neck—the Trans Oral Endoscopic Thyroidectomy Vestibular Approach (TOETVA).³ TOETVA has gained considerable attention in recent years, as it preserves anatomic integrity, involves minimal surgical trauma and tissue damage, minimises morbidity, promotes quicker recovery, shortens hospital stay, and is truly a scar-free surgery.

Hence, the endoscopic thyroidectomy started by just using endoscope to reduce the size of the incision revolutionised to completely scar-free surgery through natural orifice, i.e. the mouth. Complications associated with TOETVA include haematoma, seroma, recurrent laryngeal nerve injury, hyperparathyroidism, surgical site infection, thermal injury of the skin, and mental nerve paresthesia.⁷ There is also negligible risk of carbon dioxide embolism during surgery.⁸ No transient or permanent recurrent laryngeal nerve palsy, submental nerve injury, and haematoma was observed in our patients. One patient had seroma which was aspirated three times after which it was resolved. None of our patients has external scar or burn over the neck skin. Postoperatively, three of our patients had bruises over cervical skin which completely disappeared in two weeks' time. According to Anuwong et al, TOETVA is safe and

postoperative complication rate is similar to the conventional thyroidectomy but this technique has additional advantage of easy accessibility to both sides of the neck, less tissue dissection due to short surgical pathway, and good view of the anatomical structures and is the only approach that avoids cutaneous scar.⁹

TOETVA is a feasible and safe new approach having superb cosmetic results. Our patients developed no postoperative complications and were very satisfied with the results of the surgery. This approach was noted to be very effective and it is believed that this will be the best option in future for thyroidectomies. Surgeon's skills and experience will be a learning curve and this will improve with time.

Conclusion

TOETVA is safe and feasible, with several advantages and is becoming popular among many patients all over the world due to its incredible cosmetic results. This technique could be the first step towards development of endoscopic surgeries of the neck in future. Our experience with TOETVA was very good and all surgeries went uneventful. Patients were satisfied with the cosmetic results of surgery. No major complications were noted postoperatively. Patients had short hospital stay and recovered early.

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