CASE SERIES

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, 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. 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. 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 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...
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
then 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, thermic 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.\textsuperscript{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.

\section*{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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None.

\section*{Conflict of Interest}

None.

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\section*{References}


