



The vestibular approach in transoral thyroid surgery: proceedings within the clinical setting

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Comment on: Anuwong A. Transoral endoscopic thyroidectomy vestibular approach: a series of the first 60 human cases. *World J Surg* 2016;40:491-7.

Submitted Dec 12, 2016. Accepted for publication Jan 11, 2017.

doi: 10.21037/tcr.2017.02.40

View this article at: <http://dx.doi.org/10.21037/tcr.2017.02.40>

Introduction

Since the first reports regarding natural orifice transluminal endoscopic surgery (NOTES) via so-called natural orifices more than 10 years ago, several techniques have more or less successfully been implemented in different surgical fields. Aim of the NOTES procedures is to minimize operative trauma and optimize cosmetic results. Different study groups attempted to find a transoral access to the thyroid region, considering the embryologic origin of the thyroid and parathyroid glands.

In this context it is of note, that Anuwong reported on the first series of transoral endoscopic thyroid surgery in patients and that his promising results were recently verified within notable international project cooperation by Udelsman *et al.*

Summary

A. Anuwong reports on the first series of 60 patients who underwent transoral endoscopic thyroidectomy via the vestibular approach (TOETVA), using conventional laparoscopic instruments inserted through the premandibular space. All operations were performed by one experienced laparoscopic surgeon. Patients with thyroid glands not larger than 10 cm in diameter were included, while patients with previous neck surgery, radiation, poor general health status or dental braces were excluded.

The study was approved by the Ethical Committee of the Police General Hospital Bangkok. All operations, 34 hemithyroidectomies and 26 (subtotal) thyroidectomies were performed under general anesthesia with nasotracheal intubation in a supine position and neck extension under antibiotic prophylaxis and local disinfection of the oral cavity.

After application of 30 mL of an adrenaline containing saline solution three trocars—the first 10 mm in the center of the oral vestibule and two 5 mm trocars at the junction between the incisor and canine on both sides—were placed in a space in the anterior neck created with an electrical scalpel. The working space was created in a subplatysmal layer using CO₂ gas insufflation with a maximum pressure of 6 mmHg.

Division of the strap muscles in the median raphe and all further surgical steps were performed under direct vision using a 30° 10 mm camera placed in the central trocar. An additional suture through the skin was used to distract the strap muscles. After exposure of the thyroid the isthmus was transected to increase mobility of the thyroid lobes. Thyroid vessels were transected using an ultrasonic device. The recurrent laryngeal nerve was visualized until its access into the larynx as well as all parathyroid glands by lifting the upper thyroid pole. The thyroid specimen was removed using an endobag via the 10-mm incision.

A surgical drain was placed in bilateral thyroid

surgery and the drain was diverted in the lateral neck using an additional 5 mm trocar. Strap muscles were re-approximated and the oral wound was closed using absorbable sutures. Oral diet was started on postoperative day one and oral antibiotics were applied for 7 days (1).

Commentary

All results reported impressively underline that transluminal endoscopic surgery, as a refinement of minimally invasive operations, allows surgical treatment without visual scars also in thyroid surgery as a routine procedure.

While several other techniques in thyroid surgery that are currently implemented in the clinical setting are called “minimally invasive” by mistake, especially the transaxillary or trans-areolar breast approach (2-4), the TOETVA procedure seems to meet almost all criteria of minimal invasive surgery—maximum proximity to the operative field, optimal surgical, histopathologic and cosmetic results.

Merely the extent of the access trauma might not fulfill the criteria of minimally invasive surgery. The subplatysmal working space has to be created artificially and does not exactly correlate with the embryologic presetting in the neck. However, short and long term results reported in this series clearly show that the TOETVA procedure is not associated with increased morbidity due to wound healing problems, hematoma or functional impairment as described in other so called minimally invasive approaches (2-4). In addition, very low-pressure CO₂ gas insufflation was uneventful, which is in line with own preliminary experiences.

With regard to the obviously good visualization of all relevant anatomic structures in combination with an acceptable tissue trauma and the reported median operative time, blood loss as well as the low complication rate—3% transient but no permanent recurrent laryngeal nerve palsy, and 5% transient hypoparathyroidism and one mentionable hematoma—the technique seems to be comparable with the gold standard conventional open thyroid surgery in small thyroid glands.

As a practical matter, operation time will definitely decrease with an increasing experience and expertise of the surgeon. The risk of mental nerve injury represents a new potential complication in transoral thyroid surgery and the frequency and clinical relevance cannot definitely be estimated by now. On the other hand, problems with keloid or scarring retraction of the skin, which definitely

represent an underestimated inconvenience, will rather not be seen in future.

With regard to and as a result of the more or less promising attempts undertaken by different working groups to reach the thyroid region via a transoral access over the past 10 years (5-11) and the maximum interest especially in Asia to find a way to avoid a cosmetically disfiguring scar in the neck, implementation of this technique is the corollary.

One point that has to be discussed is that in contrast to conventional thyroid surgery a 7-day prescription of oral antibiotics was considered necessary.

The potential risk to turn an aseptic operation into an infectious procedure by spreading the oral flora was already rebutted by our own animal experiments with no clinical signs of wound infections and negative/sterile microbiologic swabs following transoral surgery in pigs including a follow-up of 14 days (6). Therefore, maybe a perioperative single shot intravenous antibiotic application will be sufficient in future.

Since the online publication of the paper in November 2015 the particular value of this study has been increased by Udelsman *et al.* (12) who recently reported on their first experiences with the TOETVA procedure within an exemplary international cooperation with Dr. Anuwong. Their results affirm the feasibility and safety of the procedure and suggest its potential widespread applicability even outside Asia. Like in the USA there is an estimated proportion of 20% thyroid cases in Europe that fulfill the criteria to perform transoral surgery.

However, two aspects have to be highlighted in this context: first, in our own experience the transoral technique was poorly accepted by patients despite optimum scientific and juridical validation, because a transverse cervical skin incision in the neck is not considered as cosmetically disfiguring in the Western world as in Asia; second, all too often thyroid operations are performed, notwithstanding that the clear indication is lacking, leading to a high number of over-diagnosed cases and overtreatment, particularly in small thyroid glands, representing the main objective of the new upcoming transoral techniques—a fact that is worthy of discussion in this context.

However, the author congratulates Dr. Anuwong on his outstanding results. There is no doubt that several other institutions will adopt this approach as a feasible and safe alternative in thyroid surgery, ideally in cooperation with other experienced working groups to avoid unnecessary and potentially harmful complications during the first attempts and individual learning curves.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned and reviewed by the Section Editor Chengzhong Cai (National Center for Toxicological Research, Food and Drug Administration, USA; Shanghai 10th People's Hospital, Tongji University, Shanghai, China).

Conflicts of Interest: The author has completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/tcr.2017.02.40>). The author has no conflicts of interest to declare.

Ethical Statement: The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Cite this article as: Karakas E. The vestibular approach in transoral thyroid surgery: proceedings within the clinical setting. *Transl Cancer Res* 2017;6(Suppl 1):S26-S28. doi: 10.21037/tcr.2017.02.40