Factor	B	SE	ρ	exp(B)	95%CI
Age(by year)	-0.017	0.009	0.056	0.984	0.97-1.0
T1(reference)	-	-	0.088	-	-
T2-3	0.014	0.407	0.973	1.014	0.46-2.25
T4	0.552	0.413	0.181	1.737	0.77-3.9
Male gender	0.973	0.313	0.002	2.645	1.43-4.89
DWBS performed	1.882	0.373	<0.0001	6.568	3.16-13.63

Methods. Patients with intermediate and high risk non-metastatic differentiated thyroid carcinoma, who had bilateral thyroidectomy and ablation with ^{131}I, with consequent normal serum Tg levels (<1.0 ng/ml) for at least one year, and who afterwards had increase of suppressed serum Tg (>2 ng/ml). Cohort A underwent RAI treatment after a positive DWBS, but if negative they were observed, till persistent elevation of Tg levels prompted a new DWBS with positive results; cohort B had RAI treatment without DWBS. Main outcomes were frequency of second recurrences(RR) and Disease-free survival (DFS), which were analyzed using the logistic regression and Cox models. Diagnostic accuracy of DWBS in biochemical recurrences was determined.
RESULTS. 115 patients were included; 74 and 41 patients were included in cohort A and B,respectively.There were 85 women (73.91%) and 30 men (26.08%);mean age was 60 years(Standard deviation [SD] 15.7, range from 19 to 93).Surgical complications after total thyroidectomy were: hypoparathyroidism and recurrent laryngeal nerve lesion in 34 (29.6%) and 16 (13.9%) cases respectively. Average postoperative ablation dose was 137 mci (5069 MBq) and153mci(5661MBq), in groups A and B, respectively. Non-diagnostic direct administration of 131I resulted in positive uptake in 40 (97.5%) patients. DWBS sensitivity, specificity, negative and positive predictive values (PV) were: 31%, 100%, 9.6% and 100% respectively. Diagnostic accuracy was 36.4%.Recurrence and DFS factors significant in bivariate analyses were age, gender, T and N classification, differentiation grade, RAI ablation dose, and DWBS.Logistic regression analyses for RR showed age, T, N classification, DWBS and differentiation grade as independent factors p<0.05.Final DFS Cox model is shown in Table (p<0.001)
Conclusion.Sensitivity and negative PV of DWBS are low. Therapeutic dosage of ^{131}I in presence of biochemical recurrence of differentiated thyroid carcinoma has very high uptake rate. This therapeutic modality is associated to lower frequency of recurrence and better DFS.
Conflict of interest: No conflict of interest.

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COMPARISON OF TRANSORAL ENDOSCOPIC AND OPEN SURGERY IN THYROID CANCER BY SINGLE SURGEON

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Background. Transoral endoscopic thyroid surgery vestibular approach (TOETVA) is a promising thyroid surgery technique that does not leave any scar. However, there is little report on TOETVA in thyroid cancer surgery. In this study, the surgical outcome of thyroid cancer patients who underwent open thyroidectomy and TOETVA were compared, and the oncologic safety of TOETVA in cancer patients was assessed.
Materials and methods. This study consisted of thyroid cancer patients who underwent TOETVA or open thyroid surgery in a single institution between January and December 2017. A total of 178 thyroid surgeries (110 open, 60 TOETVA and 8 Robot BABA) were performed by a single endocrine surgeon. After excluding benign, Graves' disease, recurrence operation, completion, MRND and preoperative vocal cord palsy patients, 64 open surgery group and 54 TOETVA group were included in the analysis. Baseline clinicopathologic characteristics and parameters of surgical outcome were compared for all patients, lobectomy patients and total thyroidectomy patients between the open surgery and TOETVA groups.
Results. Age, gender, tumor location and main tumor size were not different between open and TOETVA group. Total thyroidectomy was preferred in open surgery (19 versus 45) than TOETVA (37 versus 17). In lobectomy comparison, TOETVA showed longer operation time (84.47±22.62 versus 111.08±34.13 min, p<0.001), more blood loss (22.37±34.66 versus 57.57± 65.92 ml, p=0.036) and higher postoperative 1-day VAS (visual analog scale) pain score (2.63±0.76 versus 3.14 ± 0.77, p=0.016). Retrieved central lymph nodes (3.89±3.30 versus 3.03 ±3.30, p=0.313) and postoperative 2-day VAS score (2.53±0.62 versus 2.81±0.88, p=0.233), transient and permanent vocal cord palsy were not different. In total thyroidectomy, TOETVA represented longer operation time (95.44±23.69 versus 141.47±36.35 min, p<0.001) but Estimated blood loss (13.56±21.65 versus 48.24±74.43 ml, p=0.076), retrieved central nodes (6.18±4.74 versus 5.35±3.35, p=0.448), VAS score in postoperative 1 (2.78±0.77 versus 2.94 ± 0.75, p=0.1) and 2-days (2.42±0.50 versus 2.53±1.01, p=0.424) were not different. Transient hypoparathyroidism was low in TOETVA (28 versus 16, p=0.014). Permanent hypoparathyroidism and vocal cord palsy were not different. Postoperative 3 months Tg level (0.31±0.94 versus 0.24±0.34 ng/ml, p=0.701) and stimulated Tg level before first RAI (4.96±15.83 versus 0.76±1.16 ng/ml, p=0.241) was not different. Percentage of stimulated Tg level below the 1.0 was 66.7% (7/14) in open and 62.5% (5/3) in TOETVA.
Conclusions. This is the first study to demonstrate the oncologic feasibility of TOETVA on the thyroid cancer patients by comparing outcome, including in particular similar post-operative mean stimulated Tg levels, and surgical completeness to open thyroidectomy.
Conflict of interest: No conflict of interest.

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TOWARDS INTRA-OPERATIVE RESECTION MARGIN ASSESSMENT USING NEAR INFRARED HYPERSPECTRAL IMAGING IN SQUAMOUS CELL CARCINOMA OF THE TONGUE

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Background. Patients with early stage squamous cell carcinoma of the tongue are generally treated with surgery. Surgeons aim to remove the tumor with a margin of healthy tissue, to ensure optimal local control and prognosis. However, in up to 85% of the patients, the margins are considered inadequate and a successive surgery is required to remove residual disease. Especially the deep resection margin challenges complete tumor removal.
In this study, we are evaluating whether hyper spectral imaging (HSI) is feasible for intra-operative assessment of the deep resection margin. In HSI, the tissue is illuminated with light, which is partially absorbed and reflected by different components in the tissue. Our hypothesis is that components in tumor tissue reflect light differently compared to healthy tissue making HSI a promising technology for the detection of tumor tissue at the deep resection margin.
Materials and methods. Since our focus is on the detection of tongue cancer at the deep resection margin, we compared tongue tumor tissue with healthy tongue muscle tissue, rather than healthy tongue mucosal tissue. To obtain a surface with both tumor and healthy muscle tissue, the pathologist cleaved the freshly resected specimen through the middle of the tumor. This surface was scanned by the HSI camera. For each pixel of the hyperspectral image, a measure of the diffuse light reflectance was acquired (wavelength range of 900-1700). After precise registration of the HSI image with the corresponding histopathology slide, the data could be used in a machine learning analysis to develop a model that can predict the measured tissue type.
Results. Fourteen fresh surgical specimens of squamous cell carcinoma of the tongue were included in this study. A total of 820 pixels containing light reflectance spectra obtained from tongue tumor and 679 pixels from healthy tongue muscle tissue were selected from the HSI images. A simple linear classifier as a model to predict the measured tissue type. Prior to testing the performance of the model on the data obtained from one patient, the model was trained on data obtained from all other patients. Training and testing of the model was repeated in such a way that every patient was used to test the model once. Mean sensitivity and specificity of the light reflectance spectra in detecting tongue tumor tissue were 86% ±6