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THE COMBINED USE OF VHI30+TLUS+PRAAT IMPROVES THE DIAGNOSTIC EFFICIENCY AND CLINICAL CHARACTERIZATION OF POSTOPERATIVE VOCAL CORD PARALYSIS IN THYROIDECTOMIZED PATIENTS

Bozada-Gutierrez, Katya Estefanía MD, Anaya-Sánchez Sofia MD, Sierra-Salazar Mauricio MD, Pérez-Soto Rafael Humberto MD MSc, ***Velázquez-Fernández David MD MSc PhD***

National Institute for Medical Sciences and Nutrition Salvador Zubirán, México City, Mexico.

Conclusion: The combination of TLUS+VHI-30+PRAAT is a reliable strategy to select patients for early VCP identification who will require further DVL. This combination has an additive value increasing the diagnostic specificity and accuracy among thyroidectomized patients.

Introduction: Vocal cord paralysis (VCP) after thyroidectomy has a negative impact on patients' QoL. Several instruments such as the 30-item Voice Handicap Index questionnaire (VHI-30) and trans-laryngeal US (TLUS) have been implemented to identify this complication. Our aim was to investigate the individual and combined diagnostic efficiency of these instruments for VCP diagnosis, including an objective voice assessment software (PRAAT©).

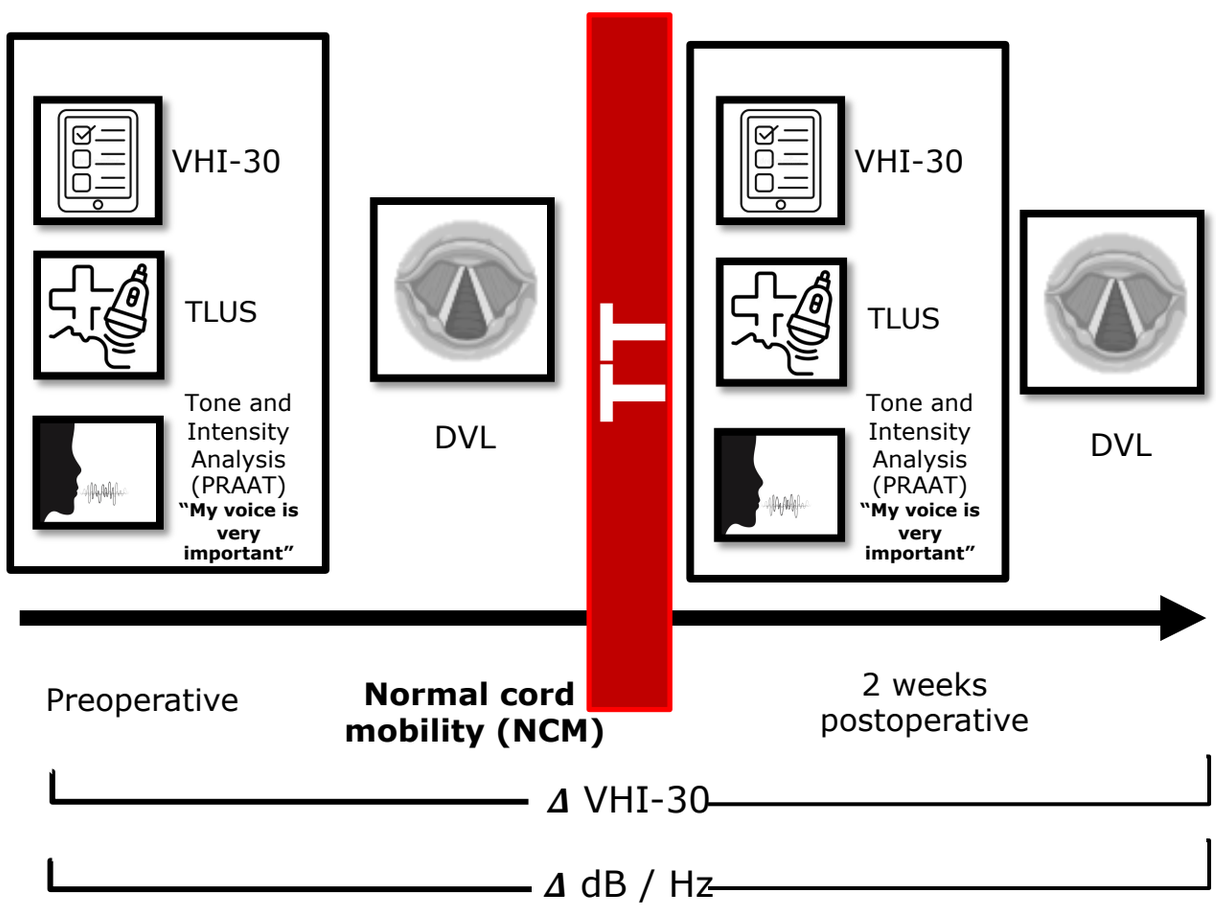

Figure 1: Methodology of the study.

Materials & Methods: 48 patients with total thyroidectomy in a training cohort and 25 patients in a validation cohort were assessed preop- and 2 weeks postoperatively.
Subjective VHI-30, objective pitch/intensity analysis (by PRAAT) and TLUS evaluation were performed in these patients. Direct video-laryngoscopy (DVL) was employed as the gold standard. Pre- and postop deltas in VHI-30 and PRAAT parameters were contrasted between cases and controls (**figure 1**). ROC analysis was performed for these parameters in the training cohort. Diagnostic efficiency for VCP was estimated in the validation cohort.

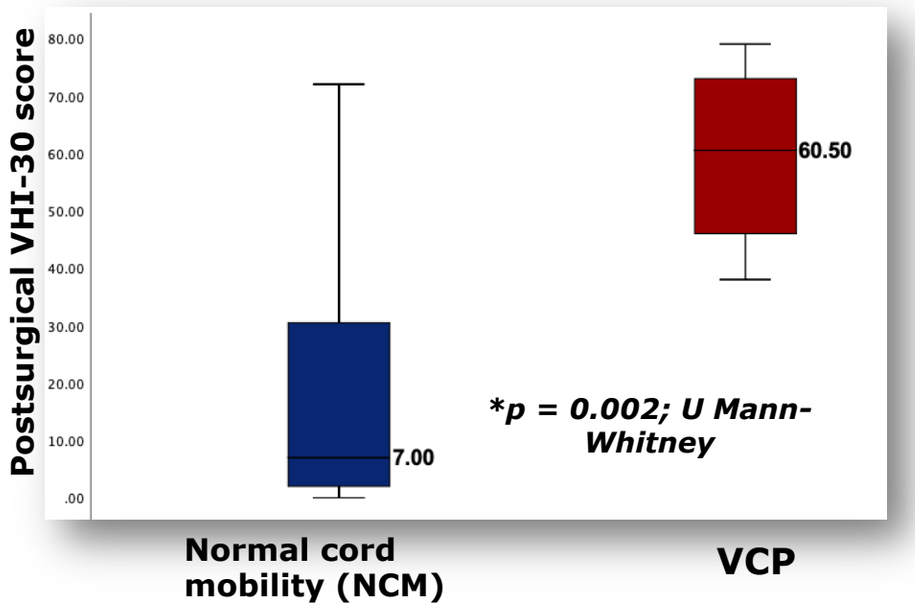

Figure 2: Comparison of the VHI-30 score (pts) in patients with NCM and VCP.

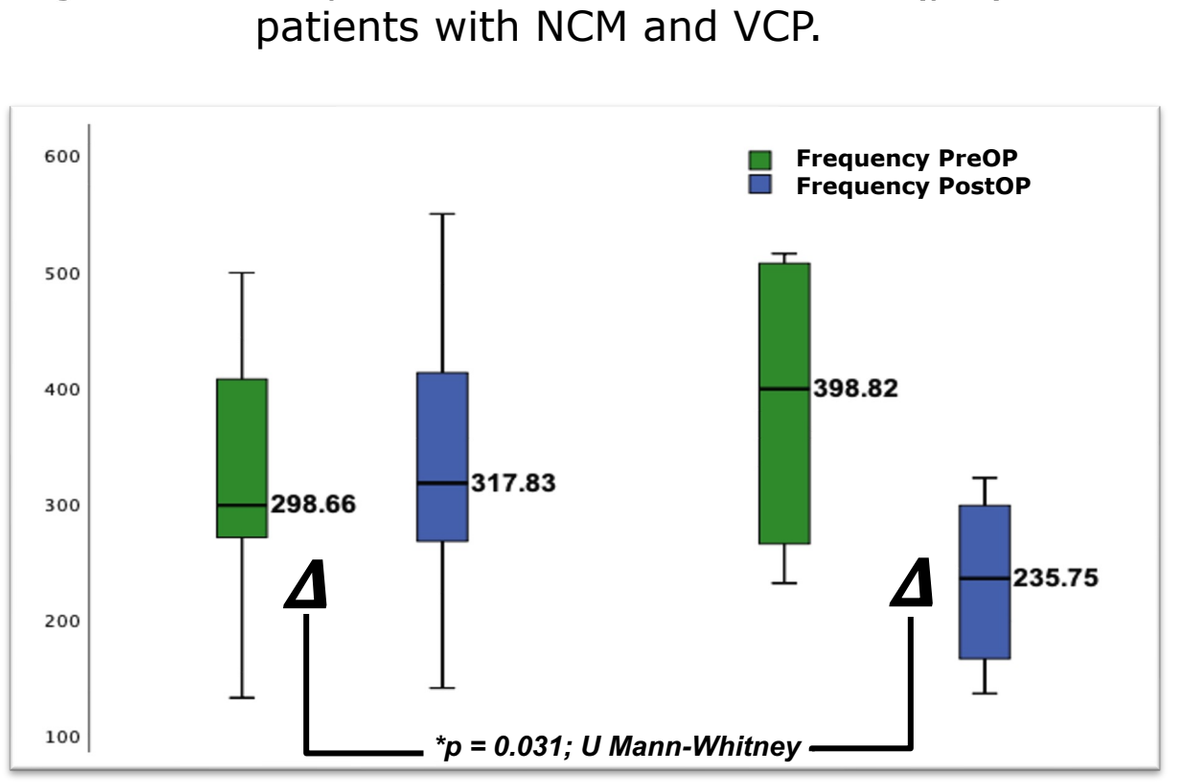

Figure 3: Frequency deltas (Hz) of NCM and VCP groups.

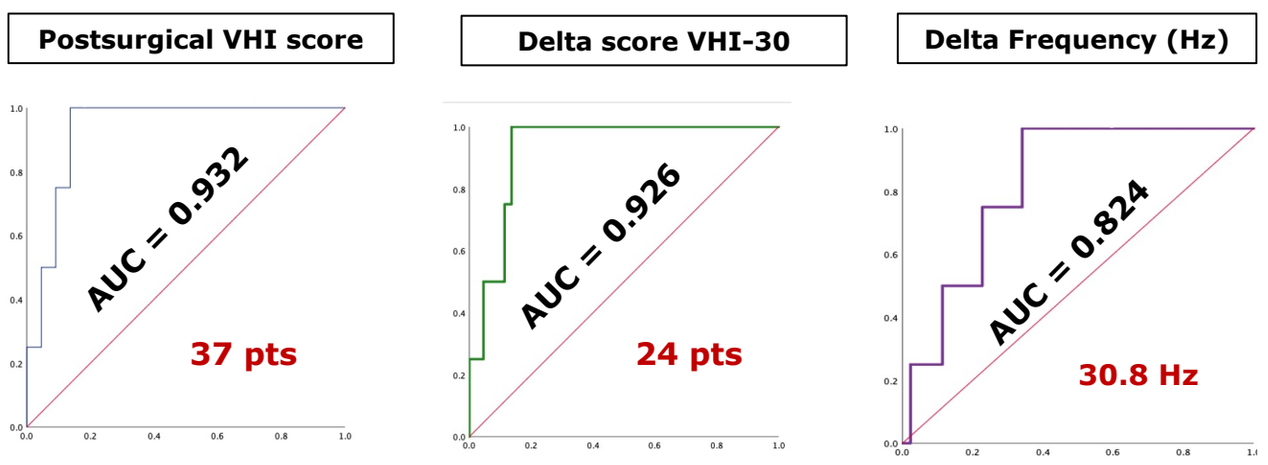

Figure 4: ROC analysis of the postoperative VHI-30 score, VHI-30 score and pitch deltas.

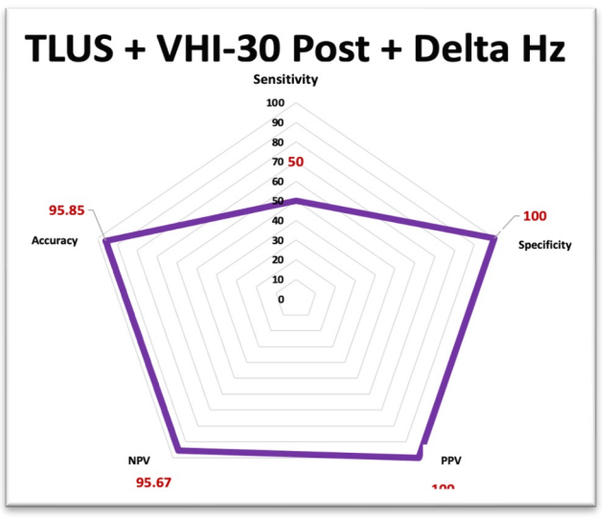

Figure 5: Diagnostic accuracy, sensitivity, specificity, PPV and NPV of the combined instrument.

Results:
Four (8.3%) and 3 (12%) patients with early postoperative VCP were identified in the training and validation cohort, respectively.
Postoperative VHI-30 scores and VHI-30 score delta **(figure 2)** resulted higher in the VCP group than controls (60 vs 7 pts, *p=0.002* and 33 vs 0 pts, *p=0.002;* respectively). A higher pitch decline was observed in VCP cases (135.7 vs 4.3 Hz, *p=0.031*) **(figure 3)**. After ROC analysis, a postoperative VHI-30 score of 37pts, a VHI-30 score delta of 24pts and a pitch delta of 30.8Hz displayed the higher diagnostic accuracy for VCP **(figure 4).** In the validation cohort, the TLUS + VHI-30 delta + pitch delta had the higher diagnostic accuracy (96%), with sensitivity 50%, specificity 100%, PPV 100% and NPV 95.6% for VCP **(figure 5).**

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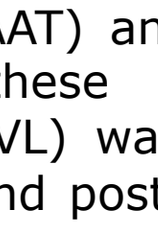

Katya Estefanía Bozada Gutierrez
Fellow Endocrine Surgery
National Institute for Medical Sciences and Nutrition Salvador Zubirán, México City, Mexico.
katyabozada@gmail.com