**Appendix 1**

*The Receiver Operating Characteristic (ROC) Curve-based MCID Analysis*

The receiver operating characteristic (ROC) curve method uses the threshold values of the patient-reported outcome measures (PROMs) that are defined as the maximum sum of sensitivity and specificity in the ROC curve analysis. We also calculated values with this method and anchor scores were categorized as either unchanged (0 or -1 in the nine-grade score or no change [0] in the five-grade scores) or improved (> 0 in all scores). We adopted the higher values of these minimum mean change based or ROC based values as the MCIDs. The receiver operating characteristics (ROC) curve-based values for the HSS-DDI total, HSS-DDI dysphagia/dysphonia subdomain, SWAL-QOL, and MDADI scores.

**Legends**

**Supplemental Fig. 1A-C** The results of the ROC curve analysis showed threshold values: (A) 5 for the HSS-DDI total score, 8 for the dysphagia domain, (B) 4 for the SWAL-QOL, and (C) 4 for the MDADI.

**Supplemental Fig. 2** The graphical summary of all possible MDC and MCID values including ROC based values isshown.