

The Predictive Value of Head Rotation in Supine Position with Oral Appliance in Sleep Endoscopy: Persistent circumferential velopharyngeal collapse was associated with more severe OSA

Tzu-I Wu, MD , Ying-Shuo Hsu, MD*

Department of Otolaryngology-Head and Neck Surgery, Shin Kong Wu Ho- Su hospital, Taipei, Taiwan

Abstract

Study Objectives:

The aim of this study was to identify the predictive value of head rotation in supine position with oral appliance in drug induced sleep endoscopy(DISE), in order to find that which upper airway obstruction is more responsible for a higher apnea-hypopnea index(AHI).

Methods:

A total of 35 patients with obstructive sleep apnea(OSA) underwent polysomnography(PSG) and DISE. The sleep endoscopy was done using target controlled infusion(TCI) with propofol in an out-patient setting. During DISE, 4 positions were utilized: supine position (Position 1), supine position with head rotation (Position 2), supine position with oral appliance (Position 3), supine position with head rotation and oral appliance (Position 4). DISE findings were recorded using VOTE classification system. PSG data, anthropometric variables and patterns of airway collapse during DISE were analyzed.

Results:

Patients with circumferential collapse of velum in supine position with head rotation and oral appliance (Position 4) were associated with a significantly higher AHI($P=0.01$). A significant association was found between position 4 and Thirty-five patients (30 men and 5 women; mean[SD], 45.3[12.1] years) who completed PSG and DISE were included in the analysis. The mean(SD) AHI was 31.9(23.2), and mean(SD) LaO₂ was 78.8(9.9) %. There were no significant AHI differences between patients with or without anterior-posterior or lateral-lateral velopharyngeal collapse, oropharyngeal collapse, tongue base collapse or epiglottic collapse, regardless of head rotation or not, wearing oral appliance or not. When 9 patients still presented circumferential velopharyngeal collapse in supine position with head rotation AND wearing oral appliance at the same time (Position 4), their mean(SD) AHI was

48.3(32.0), significantly higher than those other 26 patients who did not present circumferential velopharyngeal collapse after head rotation and wearing oral appliance. The other 26 patients' mean(SD) AHI was 26.3(16.6). The AHI differences cannot be found in other 3 conditions between patients with or without circumferential collapse.

Conclusions:

When complete circumferential velopharyngeal collapse is observed when head rotation in supine position with oral appliance in DISE, significant higher AHI scores from PSG are noted. Oral appliance can be used in sleep endoscopy to provide more objective observation of upper airway, better than jaw thrust. Head rotation in supine position with oral appliance are useful maneuvers in DISE and can be helpful for decision making to surgeons. Moreover, in our study, we found circumferential velopharyngeal collapse contribute more to OSA severity, especially when it was still noted when head rotation with oral appliance. More effective surgical procedure may be needed to treat this subgroup of patients.