

**Monoblock Mandibular Advancement Device Without Breathing Hole May Induce Oral Breathing by Increasing Expiratory Velopharyngeal Obstruction? Modified Drug-Induced Sleep Endoscopy for Obstructive Sleep Apnea**

**Objective:** Obstructive sleep apnea (OSA) is primarily caused by airway collapse during sleep, leading to partial obstruction. Modified Drug-Induced Sleep Endoscopy (DISE) is a reliable method for identifying the site of obstruction and assessing the effectiveness of mandibular advancement devices (MAD). Although the monoblock MAD without a breathing hole is commonly used to treat mild to moderate OSA, its effectiveness is inconsistent in some patients. This study aims to compare the effectiveness of the monoblock MAD without breathing hole in improving airway patency as observed during DISE.

**Methods:** We included 75 adult OSA patients who underwent DISE between August 2022 and June 2024 at the Division of Otolaryngology, Shin Kong Wu Ho-Su Memorial Hospital. Participants underwent clinical evaluations along with standard polysomnography (PSG) or home sleep tests (HST). The TCI-DISE system was used to monitor upper airway obstruction, classified using the VOTE system, and to detect the presence of expiratory velopharyngeal obstruction (EVO).

**Results:** In this study, 75 OSA patients were assessed. The monoblock MAD without breathing hole significantly reduced airway obstruction in 34.8% of patients ( $P = 0.015$ ) compared to conventional OA, particularly at the velum (soft palate). However, EVO was more prevalent with the monoblock MAD without breathing hole, increasing from 41.3% with oral appliance (OA) to 64.0% in the supine position ( $P = 0.011$ ). In head rotation to left position, EVO incidence decreased but remained higher for the monoblock MAD without breathing hole (45.3%) compared to OA (16.0%). Statistical analysis indicated that while the monoblock MAD without breathing hole improved inspiratory airway obstruction, it did not significantly reduce EVO, with more than 40% of patients developing new EVO symptoms.

**Conclusion:** Our study indicates that while MAD is effective in treating OSA, the monoblock MAD without a breathing hole may have an adverse effect in patients with EVO under certain conditions. Therefore, careful selection of different types of MAD based on individual patient characteristics is crucial.

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