Comparing Ways of Assessing Tongue Base Obstruction In OSA

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INTRODUCTION
OSA surgery is targeted towards the sites of obstruction. Surgical failures often occur because of the failure to address tongue base obstruction. We have noted that awake clinical evaluation methods (MM, FTP, EERTP) for identifying tongue base obstruction are not always concordant, making the decision for tongue-based surgery difficult. In Fig 1 (our surgical outcomes were poor when the decision to treat the tongue base was based on the Mok’s maneuver. We feel that the FTP and EERTP are more sensitive in identifying tongue base obstruction and sought to compare it with DISE. Although drug-induced deep sleep endoscopy (DISE) does not replicate physiological sleep, we believe it more closely resembles the physiological state before the awake examination. The objective of this study is to benchmark these three awake clinical evaluation methods against DISE to see how well they correlate.

METHODS AND MATERIALS
Sixteen consecutive patients with moderate to severe OSA were recruited into the study using the following inclusion and exclusion criteria:

- Patients aged 21-60
- Patients with moderate to severe OSA
- Continuous positive airway pressure (CPAP) is the gold standard treatment for OSA. Surgery is reserved for CPAP failures or those who reject CPAP outright. Surgery is site-directed and is associated with success rates of 75-95%. Failure to recognize and address tongue-base obstruction often leads to poor surgical outcomes.

RESULTS
A total of 16 patients were studied. Majority of the patients were male (15/16). The average age of the patients was 37 years and the mean BMI was 33. The mean AHI of the patients was 65 (18.8-129). During sleep nasendoscopy, a sleep-like state was achieved in all subjects. 15 out of 16 (93.7%) of patients had intrapharyngeal collapse and 10 had sustained multi-segmental collapse. The patients were divided into two groups: patients with or without obstruction at the tongue base. The following findings were considered to be associated with tongue base obstruction:

1. Patients with OSA sleep apnea severity index (SAHI) grades 3 and 4
2. Friedman tongue position grades 3 and 4
3. ERT and FTP had a sensitivity of 80% and 93% respectively for detecting tongue base obstruction. MM was found to have a sensitivity of 53%.

DISCUSSION
Various studies have shown DISE to be a valid test with moderate to substantial test-retest reliability as well as moderate to substantial construct validity. Our surgical outcomes were however poor when the decision to treat the tongue base was based on the Mok’s maneuver. We feel that the FTP and EERTP are more sensitive in identifying tongue base obstruction and sought to compare it with DISE. Although drug-induced deep sleep endoscopy (DISE) does not replicate physiological sleep, we believe it more closely resembles the physiological state before the awake examination. The objective of this study is to benchmark these three awake clinical evaluation methods against DISE to see how well they correlate.

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This is a pilot prospective study. The study protocol was approved by our institution’s Domain Specific Review Board (DSRB) and informed consent was obtained from all patients.

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REFERENCES
2. Cher AY, Ng SK, Low JJJ, Au FC. Reliability of Muller’s maneuver in evaluating tongue base obstruction. Laryngoscope 2001;111:17

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