

Role of Awake Flexible Endoscopic Assessment of Airway for Obstructive Sleep Apnea (OSA)

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Obstructive sleep apnea (OSA)—also referred to as obstructive sleep apnea-hypopnea—is a sleep disorder that involves cessation or significant decrease in airflow in the presence of breathing effort. It is the most common type of sleep-disordered breathing and is characterized by recurrent episodes of upper airway collapse during sleep. These episodes are associated with recurrent oxyhemoglobin desaturations and arousals from sleep [1].

It is a growing health concern and can affect population of any age group and sex, with higher incidence in middle aged males. OSA is a serious health hazard that is now recognised as an independent risk factor for hypertension, arrhythmias, stroke and coronary heart disease. Apart from the cardiovascular risks, it can also be a causative/aggravating factor for neuro-cognitive disorders. Lethargy, day time somnolence and marital disharmony are other concerns [1].

Identifying the anatomical locations of obstruction and the pattern of obstruction and airway changes are essential for improving effectiveness of treatment methods and minimizing morbidity. The ideal measurement characteristics of evaluation methods are accuracy, repeatability and low inter-rater variability. Moreover, the method should be simple, practical, less expensive and noninvasive without radiation exposure [2].

The standard for the diagnosis of OSA is usually considered polysomnography (PSG). Although PSG helps to identify individuals who have OSA and assess the severity, it does not identify the site(s) of obstruction or predict treatment outcomes [2].

Drug induced sleep endoscopy (DISE) is probably one of the best methods for evaluation of the anatomical and dynamic state

of airway during induced sleep but has its limitations. Need for Anesthesia and hence indoor admissions in a tertiary care centre with good intensive facilities, is the main limiting factor since majority of these patients are high anesthesia risk patients, with increased costs and resources adding to the concern [3].

We propose a simple, bedside/outpatient awake flexible endoscopy for preliminary evaluation of all patients with OSA. It can give a fair idea about the anatomical as well as dynamic assessment of the airway.

We prefer supine/semi-recumbent position for assessment. After appropriate topical anesthesia, we start with endoscopic anatomical assessment of the anterior nasal pathway prior to decongestion for assessment of the nasal valve, turbinates and the nasal septum along the path of inspiratory airway. This is followed by topical decongestion for complete assessment of the upper airway tract. Detailed anatomical assessment of the nasal cavity, nasopharynx (including adenoids), soft palate, retropalatal region, oropharynx (base tongue, palatine tonsil), supraglottis, glottis and hypopharynx is done. This is followed by a dynamic assessment of the above areas using various maneuvers as follows.

1. Muller maneuver – Maximal inspiration with nose and mouth closed to see the collapsibility of airway at each level (retropalatal, oropharynx and larynx/hypopharynx)
2. Jaw protrusion
3. Mouth opening and closing.
4. Tongue protrusion.

At the end, the same flexible scope is used through the oral cavity for assessment of the mallampati grading, hard palate, tongue, soft palate, tonsils and uvula.

Salient points

1. Easy, inexpensive, out-patient procedure with minimal discomfort.
2. Planning for management using oral appliances like tongue retaining devices, mandibular advancement devices, chin straps depending on assessment with various maneuvers.
3. Testing effectiveness of oral appliances by performing the scopy with the appliance in situ.
4. Pre-operative and Post-operative comparison after various corrective surgeries.
5. Bio-feedback to the patients.
6. May avoid the need for DISE in some cases.

Limitations

1. Not as accurate as DISE.
2. May not be possible in children, non co-operative subjects.
3. Inter observer variations.

In conclusion, we recommend a preliminary complete assessment of each patient of OSA using an awake flexible endoscopy as described. It does not replace other diagnostic modalities, but is complementary to them. It may also be used as a reliable screening tool and in many cases may single handedly help in planning appropriate management strategies and assess outcomes.

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