Objectives

Airway endoscopy is one of the methods used to better understand and evaluate the upper airway for obstructive sleep apnea (OSA). Different methods focus on identifying levels of snoring or obstruction, but provide little or no structural or anatomical data.

We describe a modified method that accounts for the mechanics of airway closure during sleep and describes important structural features of the pharyngeal airway. This method allows describing the upper airway structure itself using structural landmarks, not location. The objectives of this study are to assess the reproducibility of diagrams using structural landmarks and to compare sleep and wake examination.

Methods

Airway Diagrams: Complex upper airway anatomy is described using a model of structural buttresses. In this model muscle buttresses help define the shape and structure of the upper airway. (Fig. 1)

Retropalatopharyngeal area
1. Salpingo-pharyngeus muscle
2. Levator muscle
3. Uvular muscle
4. Lateral hypopharynx
5. Epiglottis
6. Valvulotrace tongue base

A retrospective review of 21 procedures evaluated waking and sedated clinical endoscopies. Clinical examinations were performed supine at end expiration.

a. Sedated endoscopy is performed using a standardized algorithm
b. Propofol infusion to steady state snoring/apnea

c. Minimal midazolam and narcotics which suppress ventilatory reflexes.

Structures were scored on 3 or 4 point scales with agreement indicating exact matching. (Fig. 2) We defined the structural disagreement as the difference which is greater than 2 or more between the score of the sedated exam and the clinical exam.

All data and files for endoscopy and their assessment was entered into our database system for endoscopy and compared. (Fig. 3)

Fig. 1: Retropalatopharyngeal airway includes 1. Salpingo-pharyngeus, 2. Levator and 3. Uvular muscle groups. Solid line measuring the effect of soft palate collapse on structures is described below (Fig. 4). Dotted line means the simple soft collapse without effect of bone or tissue compliance.

Salpingopharyngeus m. Not visualised* Normal Hyperplastic* Obstructive* 2 3 4

Epiglottis

1. The pattern of collapse is completely anterior posterior and side to side collapse.

2. They are between Normal and obstructive.

3. Lateral wall appose midline and muscles markedly enlarged.

Leveror Palatine m. Normal* Narrow* Obstructive* 2 2 2

*Superior border of levator muscle is closer to hard palate than posterior wall.

*Superior border of levator muscle is intermediate hard palate and posterior wall.

* Levator muscle virtually touch posterior wall.

Auditory tube

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