Physical Examination and Endoscopy for OSA

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Overview

Goals of evaluation
[Nasal anatomy and evaluation]

Pharyngeal anatomy and evaluation

Goal of Evaluation

Characterize disorder to guide effective treatment

Major sites of potential airway obstruction
– Nose
– Palate
– Hypopharynx
Oral Cavity, Oropharynx, and Hypopharynx Anatomy

- Palate (hard and soft)
- Uvula
- Tonsils
- Lateral pharynx
- Tongue
- Mandible/dentition
- Hyoid bone
- Epiglottis
- Larynx
- Neck

Oral Cavity and Oropharynx—Physical Exam

- Height, weight, neck circumference
- Palate and uvula thickness and length
  --webbing
- Tonsil size
- Surgical changes?

Lateral pharyngeal tissue character, redundancy

Tongue size

Modified Mallampati Position (tongue size relative to palate and “space”)

Friedman Stage

<table>
<thead>
<tr>
<th>FS</th>
<th>Modified Mallampati</th>
<th>Tonsils</th>
</tr>
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<tbody>
<tr>
<td>I</td>
<td>1, 2</td>
<td>3+, 4+</td>
</tr>
<tr>
<td>II</td>
<td>1, 2</td>
<td>0, 1+, 2+</td>
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<tr>
<td></td>
<td>3, 4</td>
<td>3+, 4+</td>
</tr>
<tr>
<td>III</td>
<td>3, 4</td>
<td>0, 1+, 2+</td>
</tr>
<tr>
<td>IV</td>
<td>BMI ≥ 40</td>
<td></td>
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Oral Cavity and Oropharynx—Physical Exam

Mandible position

Gross assessment

Dentition

X-ray (lateral cephalogram)

Oral Cavity and Oropharynx—Physical Exam

Mandible position

--may be reflected by dentition

Angle Classification

Mesiobuccal cusp of maxillary first molar to buccal groove of mandibular first molar

Lateral Cephalogram

Standardized lateral X-ray of head and neck

Multiple bony and soft tissue measurements

– Posterior airway space, soft palate length, SNA and SNB angles, mandibular plane to hyoid

Lateral Cephalogram

Patients with normal BMI and OSA typically have abnormal lateral cephalogram

--decreased SNB

--narrow PAS

--high MP-H
Fiberoptic Examination

Nose
Pharynx
Adenoid size
Gross assessment of airway narrowing at palate/HP
--? grade view of laryngeal visualization (Cormack and Lehane Anesthesia 1984)
  I = full view of VC; II = partial view (post comm)
  III = epiglottis only; IV = no epiglottis view
Epiglottis position and character
Müller/Muller/Mueller maneuver?
Larynx

Müller Maneuver

Prepare patient with gentle deep inspiration and expiration
Forced inspiratory effort against closed mouth and nose at end-expiration
Endoscopic evaluation of airway at the levels of the palate and the hypopharynx
Ritter et al. 1999: No difference between upright and supine in awake patient

Fiberoptic Examination

Drug-Induced Sleep Endoscopy (DISE)
Developed in UK by Croft and Pringle (1991)
Fiberoptic endoscopy of sedated, sleeping patient
  – Titration of sedation (propofol) to achieve drug-induced sleep
  – Goal: reproduce SDB demonstrated on sleep study
  – DISE may visualize regions and structures that produce upper airway obstruction
Ongoing research: DISE and eval techniques
Conclusions

Physical examination of the (nose and) pharynx characterizes patient anatomy in order to guide effective treatment

Conclusions

Tools of physical examination are:

Low tech: tongue depressor and light
[Medium tech: lateral cephalogram]
High tech: flexible fiberoptic endoscope