Snoring & Obstructive Sleep Apnea

- The basic information
- Diagnostic Techniques
- Treatment modalities

What is Snoring??

Snoring

Music to Whose Ears?

Snoring represents obstructed breathing and can be a manifestation of or can lead to more serious health problems.
What is Obstructive Sleep Apnea??

Repeated collapse of the upper airway during sleep

Cessation of respiration

OSA

Habitual snoring & OSA

Incidence:

Snoring:

- 20-25% of adults.
- Increase prevalence with age
- More among males
- More among obese

OSA:

- 4% of adults
Loud Snoring is disruptive to family life

Some snorers make frightening sounds suggesting that each breath may be the last

Bedpartners become consumed with plotting strategies to get to sleep:
- sleeping pills, ear plugs, ear muffs
- pushing the snorer out of bed

Recently legal courts consider snoring as grounds for divorce

Noises of Snoring

Difficult to ignore because of their inherent irregularity
Pathophysiology of Snoring

- Incompetent tone of palatal, pharyngeal, & glossal muscles
  - fail to maintain airway patency during inspiration
- Space occupying masses i.e., tonsils, adenoids, cysts, tumors, tongue
  - compromise the pharyngeal airway.
- Excessive length of the soft palate & uvula
  - narrows the nasopharyngeal aperture.
- Nasal obstruction
  - creates excessive -ve pressure in the collapsible pharyngeal airway during inspiration.
Collapsible Airway
(No rigid support)

Pathophysiology of OSA

Diagram showing the pathophysiology of OSA with underlying mechanisms and primary events.
Obstructive Sleep Apnea

**Anatomical abnormalities:**
- Redundant oropharyngeal tissue
  - Large edematous uvula
  - Wide posterior pillar mucosa (web formation)
  - Redundant pharyngeal mucosal folds
- A low palatal arch with a long soft palate
- Large tongue, mandibular retro or microglossia
- Floppy epiglottis & redundant aryepiglottic folds
- Hypertrophied lingual or palatine tonsils
- Redundant lateral pharyngeal walls
Common anatomical features of snorers

Upper Airway Anatomy in OSA

Classification:

- **3 Types:**
  - I, II & III

- **Add N:**
  - N(+) : nasal obst
  - N(-) : no nasal obst
Obstructive Sleep Apnea

**Symptoms:**
- Loud snoring
- Restless sleep with excessive motor activity
- Hypersomnolence
- Personality changes, poor mentation
- Hyperactivity & antisocial behavior
- Nocturnal enuresis & sweating
- Morning headaches & exhaustion
- Sexual impotence

**Snoring Or OSA**

**IF YES**

OSA

**WHAT’S YOUR SNORE SCORE?**

Your answers to this sleep quiz will help you decide whether you may suffer from sleep apnea:

1. Are you a loud, habitual snorer?  
   - Yes  
   - No

2. Do you feel tired and groggy on awakening?  
   - Yes  
   - No

3. Are you often sleepy during waking hours and/or can you fall asleep quickly?  
   - Yes  
   - No

4. Are you overweight and/or do you have a large neck?  
   - Yes  
   - No

5. Have you been observed to choke, gasp, or hold your breath during sleep?  
   - Yes  
   - No
Obstructive Sleep Apnea

Special studies:
- Fiberoptic Endoscopy
- Cephalometric analysis
- CT scan & MRI
- Polysomnography

Fiberoptic Endoscopy

*The fiberoptic endoscope is passed transnasally to observe the upper airway patency at two different levels:*
- Oropharyngeal level (soft palate & junction of the nasopharynx)
- Hypopharyngeal level (just above the epiglottis)
Fiberoptic Endoscopy

- **Mueller's maneuver:**
  Forced inspiratory effort with the mouth and nose closed & note the site and degree of airway collapse

- **Sleep endoscopy:**
  - Induction of sleep (IV Propofol)
  - Introduce endoscope slowly
  - Video recording during introduction & withdrawal of the endoscope

Cephalometrics
Polysomnography

- Diagnosis of sleep apnea
- Differential diagnosis of apnea:
  - Obstructive
  - Central
  - Mixed
- Determine severity of apnea:
  - Mild
  - Moderate
  - Severe

Polysomnography

- EEG
- Chin muscle activity
- Eye movements (sleep stage)
- Air movement at nose & mouth
- Thoracic & abdominal movements
- Oximetry (O2 saturation)
- ECG (cardiac rhythm)
- Leg movement
Management Team

- Sleep specialist
- Pulmonary physician
- Otolaryngologist
- Oral surgeon
- Cardiologist
- Neurologist
- Psychiatrist
Management

Management Plan

Non-surgical Treatment

Surgical Treatment

Nonsurgical measures:
- Weight loss, Sleep positioning, Avoidance of alcohol, tobacco, and certain drugs.
- Mechanical ventilation (CPAP or BiPAP).
- Dental prostheses (mandible advancement prostheses & tongue restraining devices).
Indications for surgical treatment

3 basic factors

- Severity of medical complications
- Socioeconomic compromise
  (disabling daytime sleepiness)
- Socially disturbing loud snoring
Criteria for surgical treatment

- Low surgical risk (safety)
- Low incidence of complications
- Minimal morbidity or functional impairment
- Reasonable success rate

Surgical Plan

- The level of obstruction responsible for snoring or apnea should be determined by careful upper airway anatomical assessment
- Often, more than one site of anatomical narrowing is involved
Management

&Surgical measures:

I. Enlarging & stabilizing the airway:
   - Nasal airway procedures.
   - Partial palatal resection.
   - Tongue base resection.
   - Orthognathic procedures.

II. Bypass the upper airway:
   - Tracheostomy.

Thank You For Your Attention