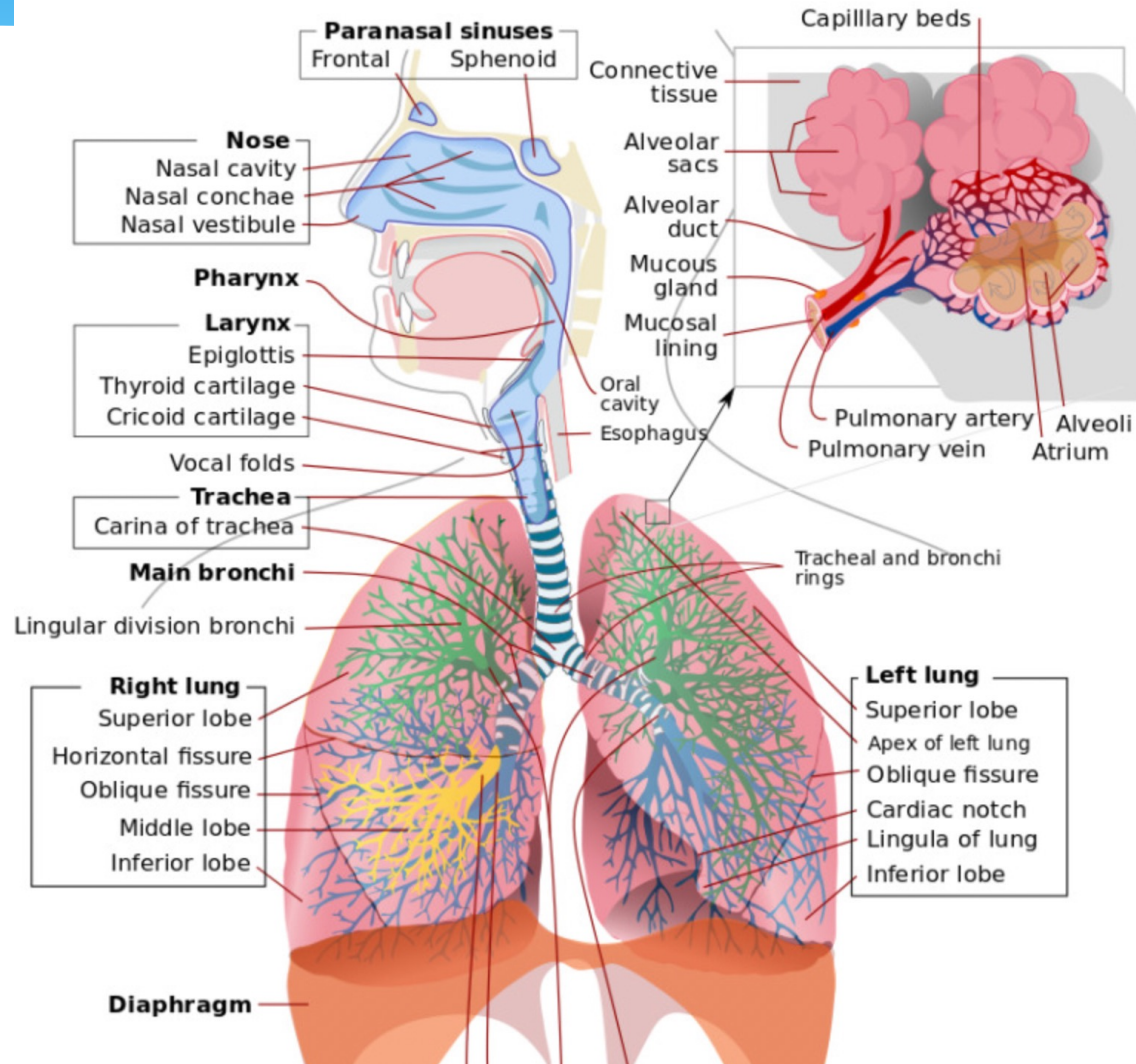


Obstruksi Saluran Nafas

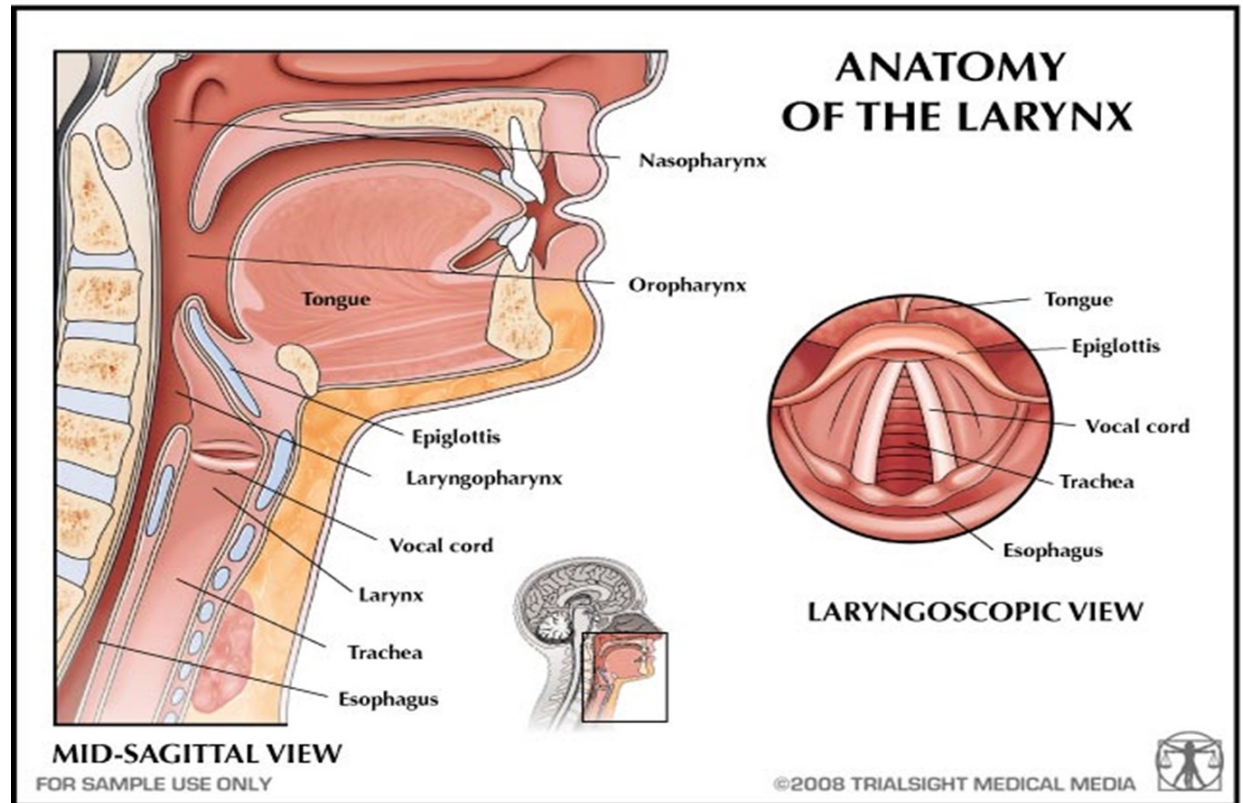
dr. Asti Widuri Sp.THT-KL. M.Kes

Airway anatomy

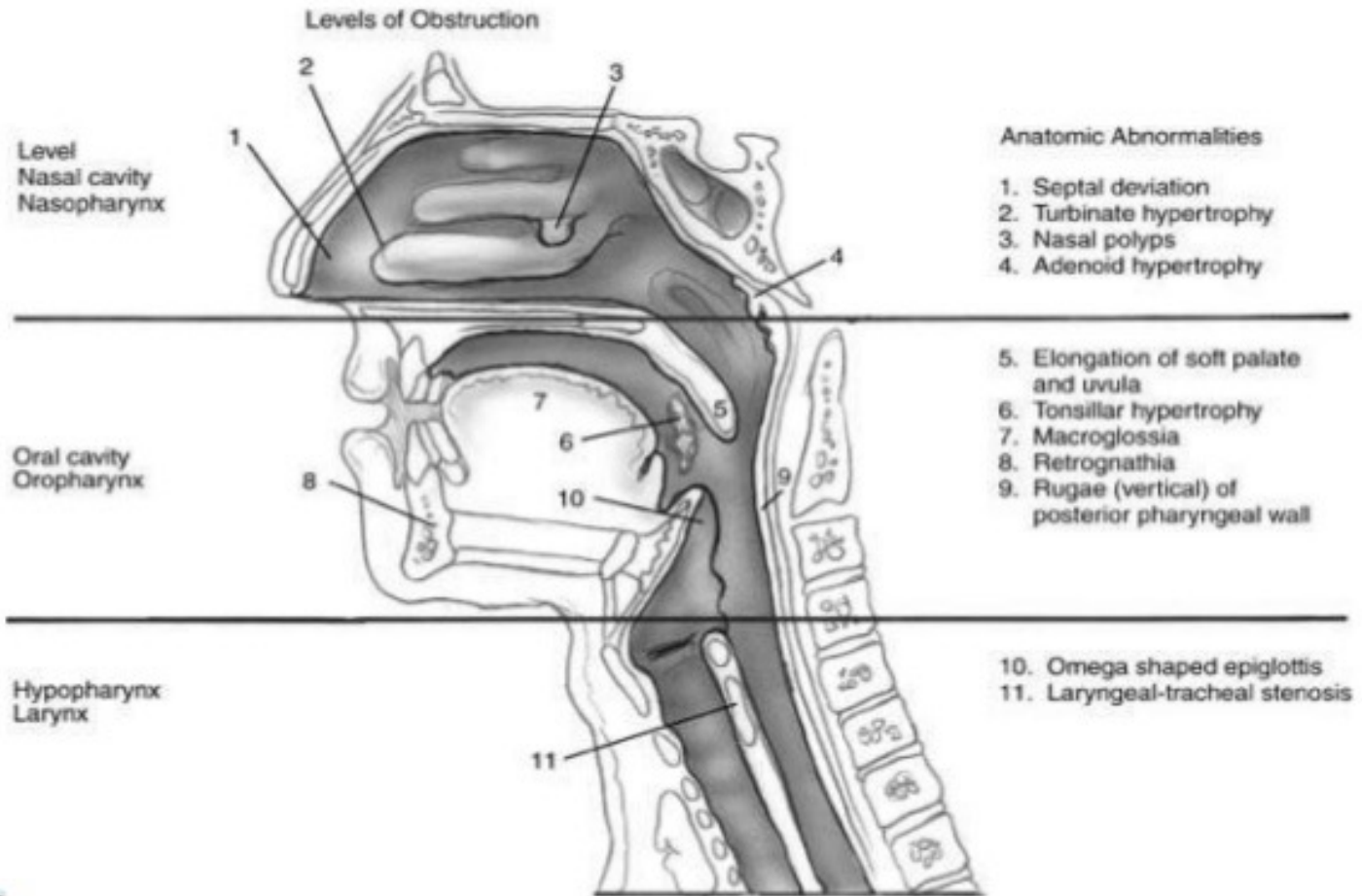


Sumbatan Laring Disebabkan:

1. Radang
2. Kongenital
3. Trauma
4. Benda asing
5. Tumor
6. Kelumpuhan N. Rekuren Bilateral



EXAMINATION



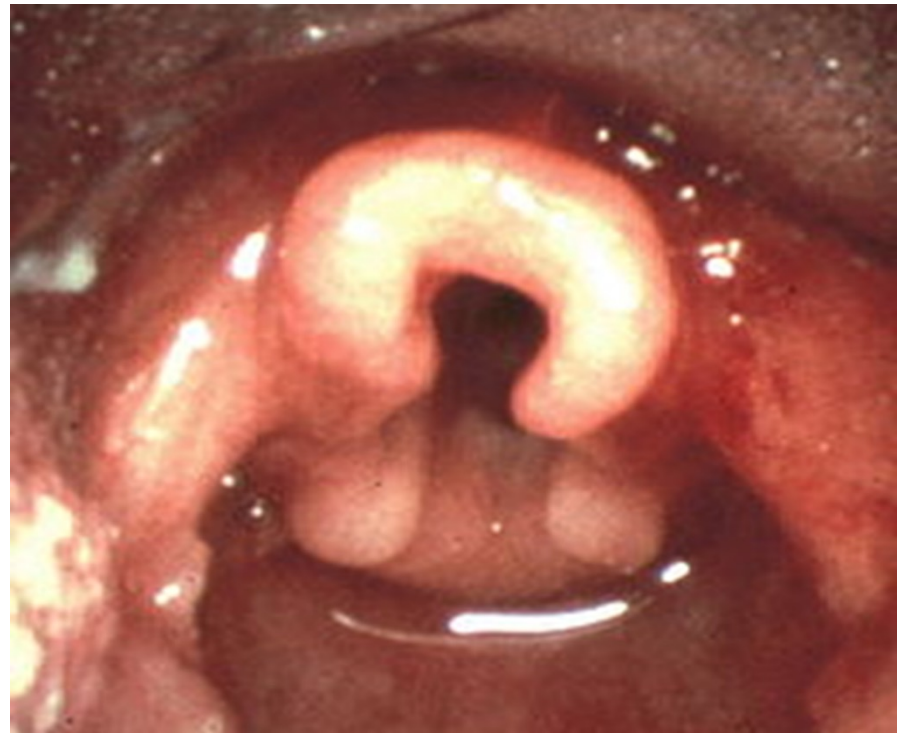
Kasus

- * deviated septum
- * foreign body ingestion
- * Macroglossia
- * tracheal webs
- * tracheal atresia
- * retropharyngeal abscess
- * peritonsillar abscess
- * rhinitis
- * turbinate hypertrophy
- * Polyps
- * enlarged tonsils
- * lipoma of the neck
- * nasopharyngeal/oropharyngeal cancers
- * edema from epiglottitis
- * blunt or penetrating trauma
- * anaphylaxis
- * chemical or thermal burns.
- * Obstructive sleep apnea

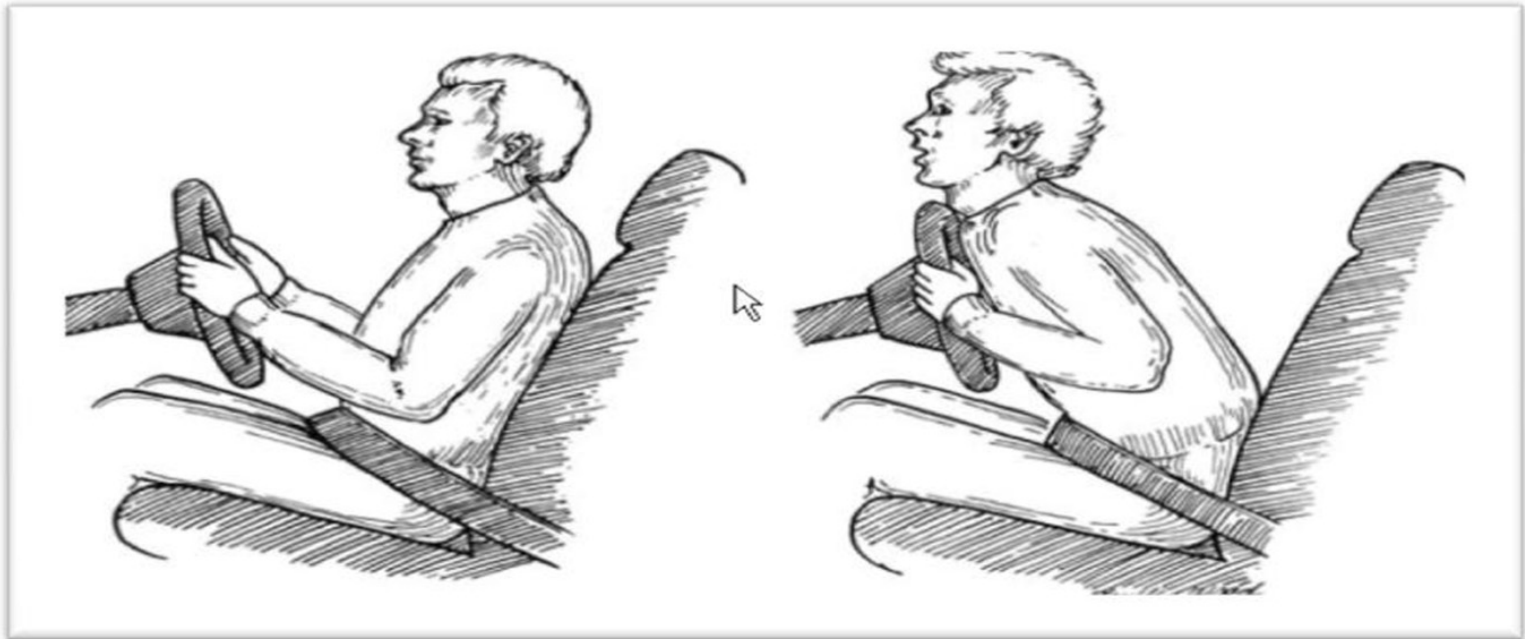
Sumbatan Laring Disebabkan:

1. Radang

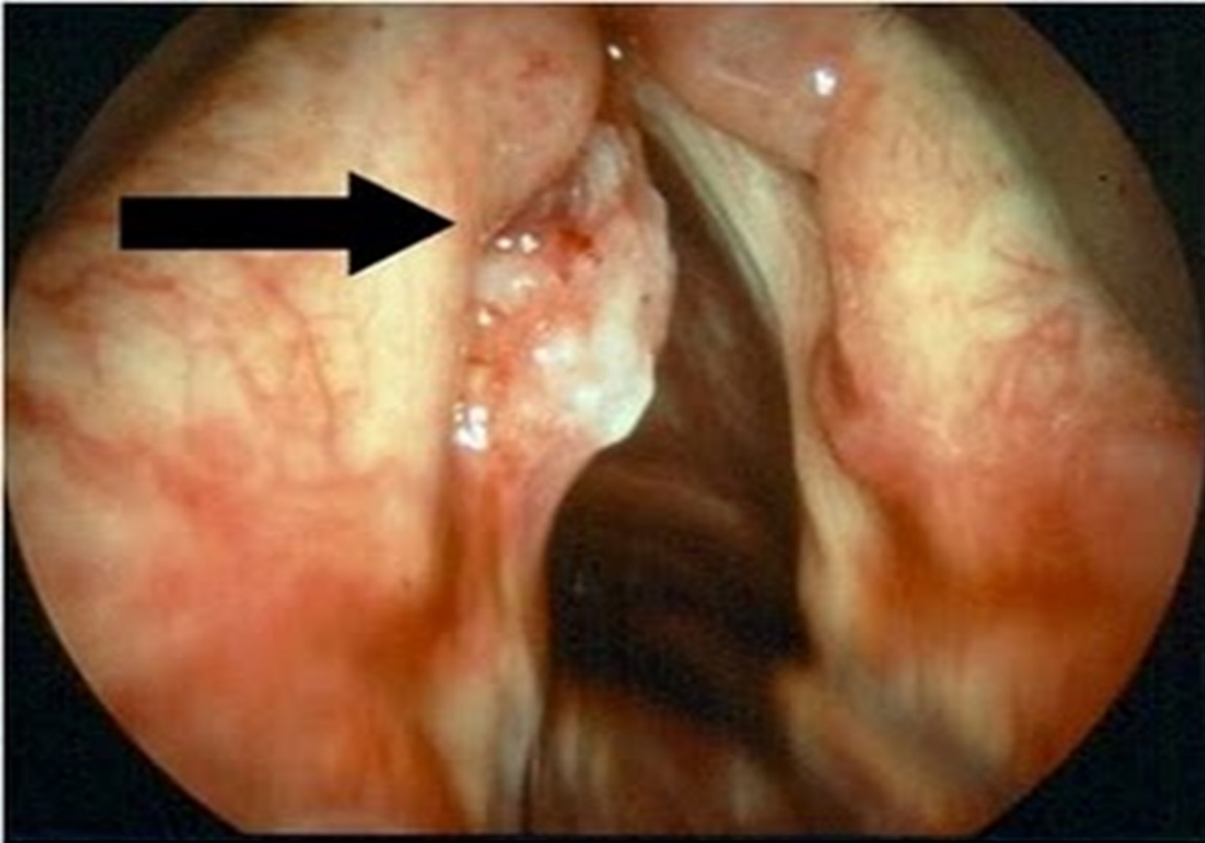
2. Kongenital



Trauma



Tumor/carcinoma



Gejala Sumbatan Jalan Nafas

gejala

- Suara serak (disfoni) samapi afoni
- Sesak napas (dispnea)
- Stridor
- Cekungan yg terdapat pada waktu inspirasi pada suprasternal, epigastrium, supraklavikula, dan interkostal.
- Gelisah
- Warna muka pucat dan bisa menjadi sianosis karena hipoksia

Stadium

Stadium 1 : cekungan tampak pada waktu inspirasi di suprasternal, stridor pada saat inspirasi dan pasien masih tenang

Stadium 2 : Cekungan pada waktu inspirasi di suprasternal makin dalam, di tambah pada daerah epigastrium. Pasien sdh gelisah, stridor terdengar saat inspirasi

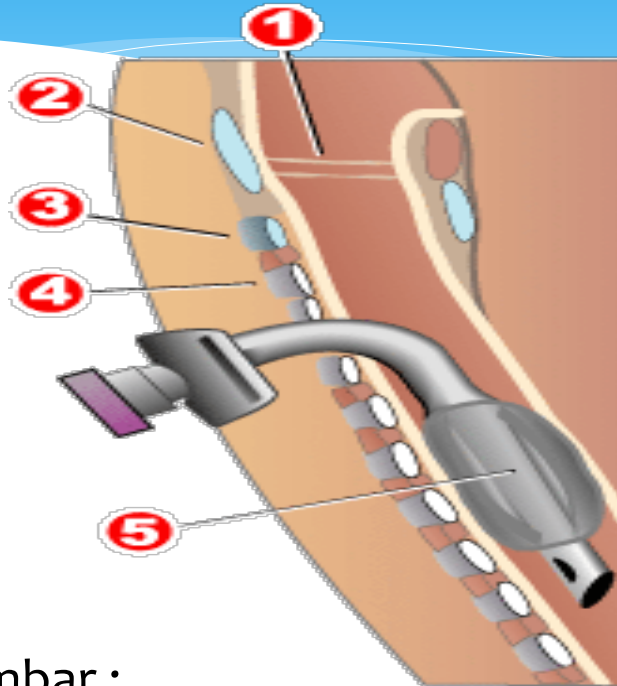
Stadium 3 : cekungan terdapat pada suprasternal, epigastrium, infraklavikula dan sela-sela iga, pasien gelisah, dispnea dan stridor terdengar pada saat inspirasi dan ekspirasi

Stadium 4 : cekungan – cekungan diatas bertambah jelas, pasien sangat gelisah, sangat ketakutan, dan sianosis. Jika terus berlanjut, pasien akan kehabisan tenaga, pusat pernapasan paralitik karena hiperkapnea, pasien lemah dan tertidur, akhirnya meninggal karena asfiksia

Penanggulangan

- Stadium 1. tindakan konservatis : pemberian antiinflamasi, antialergi, antibiotika serta pemberian oksigen intermitten
- Stadium 2 dan 3. tindakan intubasi endotrakea dan trakeostomi
- Stadium 4. krikotirotomi

Tracheostomy



Keterangan Gambar :

- 1 - Vocal cords
- 2 - Thyroid cartilage
- 3 - Cricoid cartilage
- 4 - Tracheal cartilage
- 5 - ballon cuff



Tracheostomy



Differential diagnosis

acute upper airway obstruction:

- * Aspiration
- * Infection
- * Hemorrhage
- * Angioedema
- * Iatrogenic (e.g., post-surgical, instrumental)
- * Blunt trauma
- * Inhalation injury
- * Neuromuscular disease
- * The differential diagnosis of chronic airway obstruction:

chronic airway obstruction:

- * Infection
- * Post-intubation
- * Amyloidosis
- * Sarcoidosis
- * Tumor
- * Collagen vascular disease
- * Mediastinal mass
- * Esophageal tumor
- * Cardiovascular anomaly
- * Neuromuscular disease
- * Idiopathic
- * Tonsillar enlargement in children

Sleeping Breathing Disorder

- * Obstructive sleep apnea
- * Central sleep apnea
- * Mixed
- * Obesity Hypoventilation syndrome

Physiology of sleep

Divided into

REM (Rapid Eye Movement) sleep

NREM (Non-Rapid Eye Movement) based on

- ▶ Environmental Responsiveness
- ▶ General Physiology
- ▶ EEG waveforms (of muscle and eye movement)
- ▶ Muscle tones
- ▶ Mental activity

Physiology of sleep

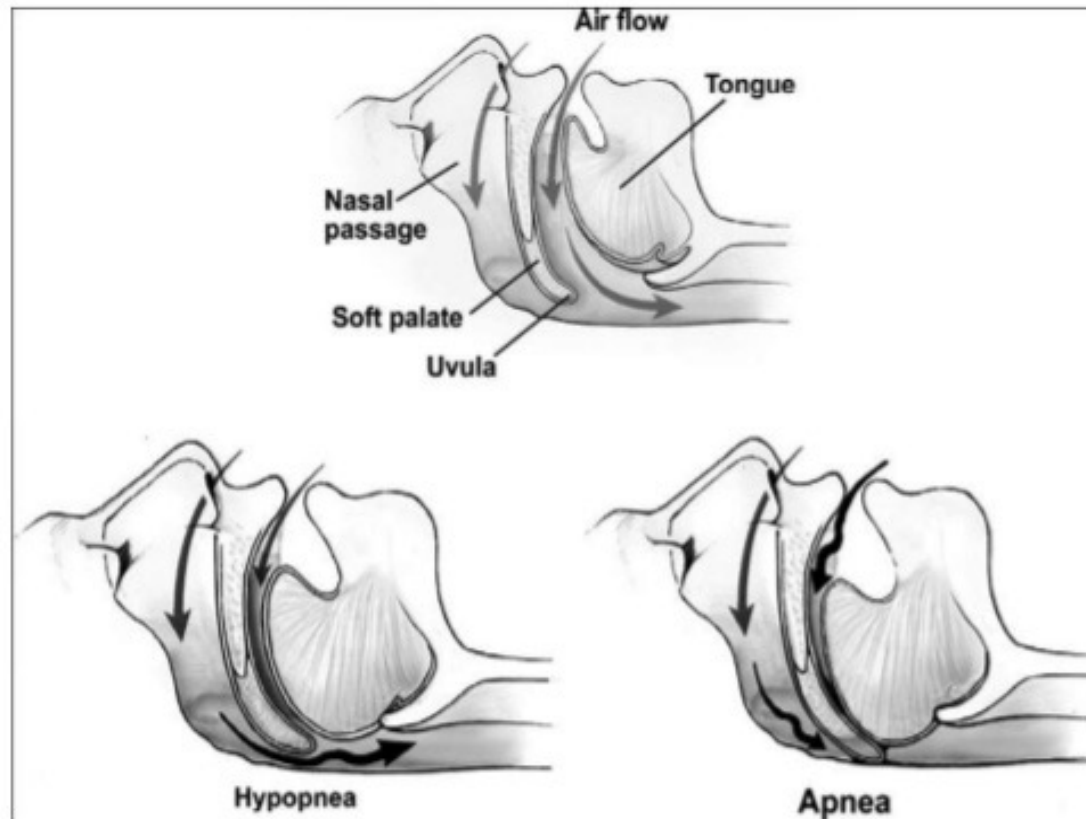
Principal characteristics of REM and NREM sleep

REM SLEEP	SLOW-WAVE/NREM SLEEP
EEG De-synchrony (irregular, low voltage high freq)	EEG Synchrony (slow waves)
Lack of Muscle Tones	Moderate Muscle Tones
Rapid Eye Movement	Slow or Absent Eye Movement
Genital Activity	Lack of Genital Activity Dreams
Dreams	-
Increased autonomic activity	

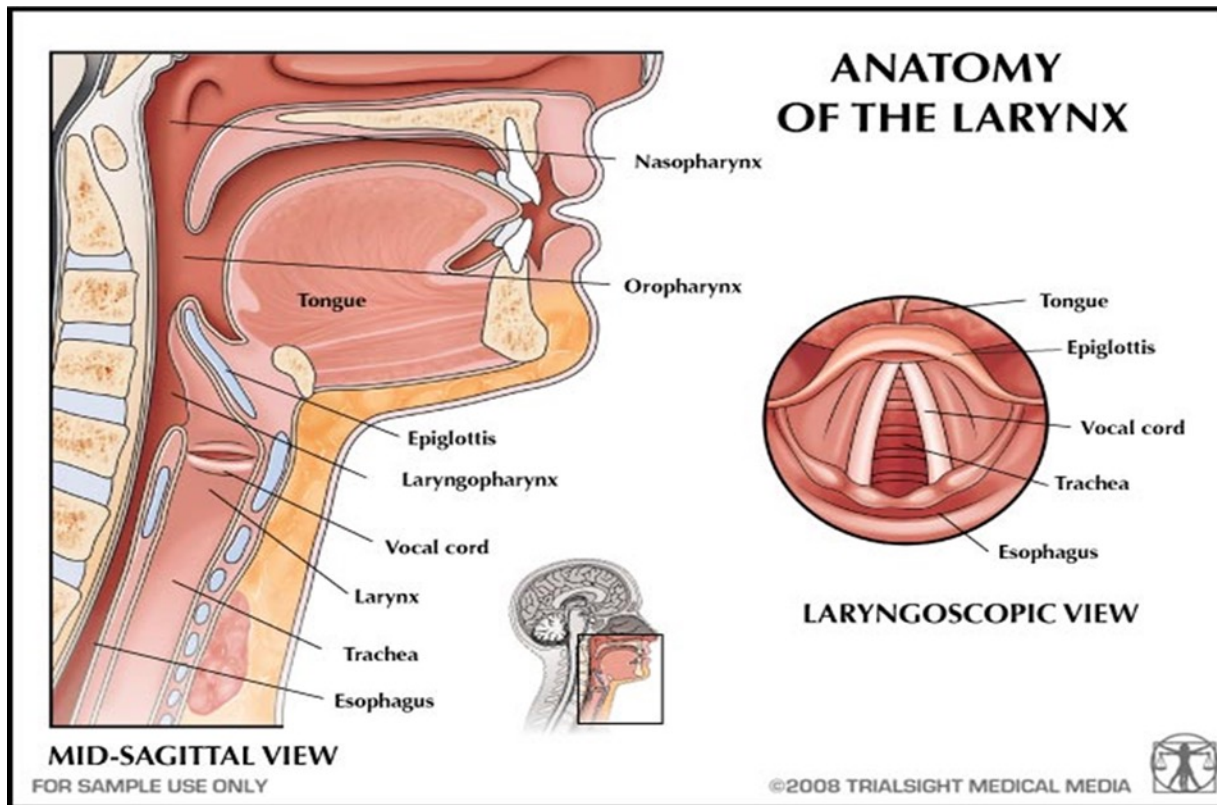
Obstructive Sleep Apnea:

- * Disorder of obstructed breathing occurring during sleep
- * Cessation of air flow for greater than 10 Seconds with continued chest and abdominal effort

PATHOPHYSIOLOGY OF OSA



Structure



- * the nasopharynx (from the nasal turbinates to the hard palate)
- * the oropharynx which is subdivided into the retropalatal or velopharynx (from the hard palate to the caudal margin of the soft palate) and retroglossal (from the caudal margin of the soft palate to the base of the epiglottis) region
- * the hypopharynx (base of the tongue/epiglottis to the larynx).

AHI (Apnea-Hypopnea Index)

- * < 5 Normal, Snoring
- * 5-15 Mild Sleep Apneu
- * 15-30 Moderate Sleep Apneu
- * ≥ 30 Severe Sleep Apneu

AI= apnea/jam

RDI=respiratory distress index

Epidemiology of OSA

- * 85% men
- * Prevalence - 2% in women, 4% in men
- * two thirds are obese

Pathophysiology of OSA

- tissue laxity and redundant mucosa
- anatomic abnormalities
- decreased muscle tone with REM sleep
- airway collapse
- desaturation
- arousal with restoration of airway
- sleep fragmentation leading to hypersomnolence

Clinical features:

- * Heavy snoring – characteristics
- * Witnessed apnea: Stop breathing while sleeping - then .snort.
- * Chocking
- * daytime sleepiness evaluated by Epworth sleepiness score

Risk factors

- * adenotonsillar hypertrophy
- * nasal obstruction
- * hypothyroidism
- * acromegaly
- * Down syndrome
- * sedative use
- * Alcohol
- * Smoking

Risk factors

- * micrognathia
- * retrognathia
- * Obesity
- * Neck circumference
- * vocal cord paralysis
- * H&N masses

Risk Factors and Possible Risk Factors for OSA

Risk factors for OSA	Possible risk factors for OSA	Specific diseases that are risk factors for OSA
Obesity	Age	Conditions causing macroglossia
Fat distribution	Smoking	Polycystic ovarian syndrome
Neck circumference Craniofacial features Nasal resistance Gender Menopause Ethnicity	Alcohol Snoring Body position	Neurological conditions (stroke, neuromuscular diseases, etc.) Congenital abnormalities that cause retrognathia

Physical Examination

- * High blood pressure
- * Nasal obstruction - turbinate hypertrophy, polyposis, septal deviation
- * oral cavity and oropharynx
- * redundant mucosa
- * elongated uvula
- * Macroglossia

Pathophysiology - complications

- * desaturation with compensatory polycythemia
- * hypercapnia with pulmonary hypertension
- * systemic hypertension
- * Respiratory failure
- * Arrhythmias
- * Cardiac arrest
- * Death

Treatment

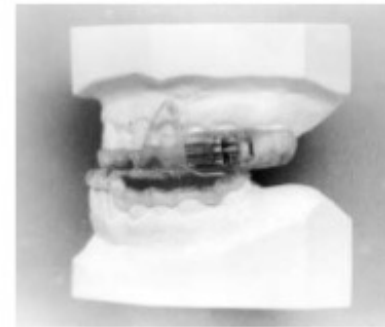
- * Weight loss/ Exercise
- * Nasal obstruction → allergy treatment
- * Smoking cessation
- * Avoid sedatives
- * Sleep hygiene (body Position, avoid alcohol: heavy meal, caffeine, TV, reading)
- * pharmacotherapy
- * orthodontic devices
- * continuous positive airway pressure

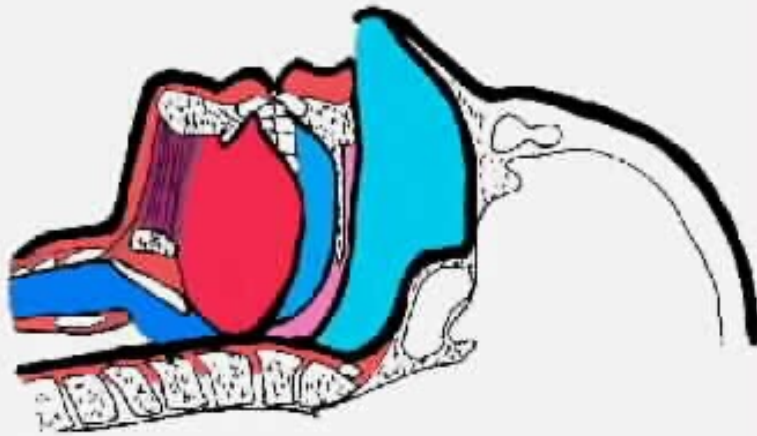
CONSERVATIVE MANAGEMENT

ORAL APPLIANCES

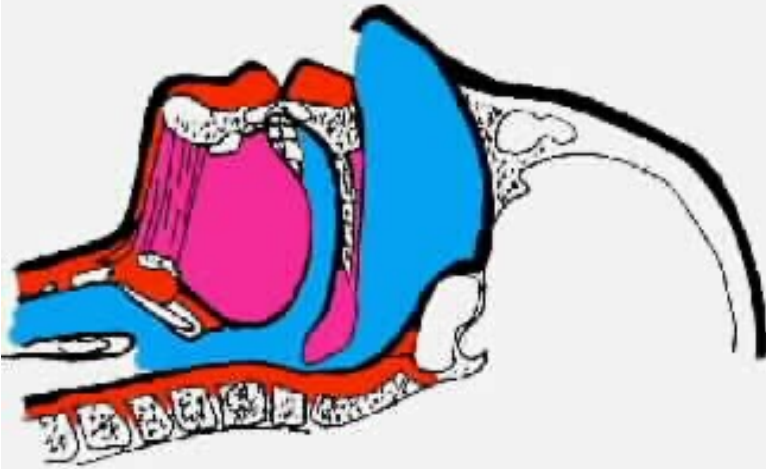
- ▶ **Mandibular advancement device**
- ▶ **Tongue retaining device**
 - Protrude the mandible forward and hold tongue more anteriorly, away from the posterior pharyngeal wall
 - More effective in patients with mild – moderate OSA, AHI 5–15

CONSERVATIVE MANAGEMENT

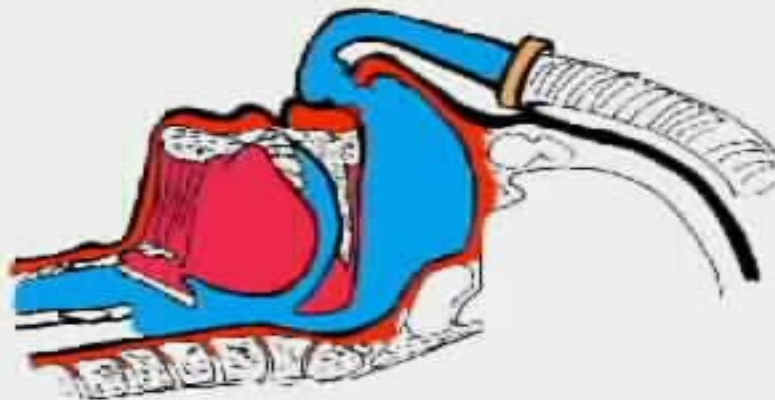




OSA showing closed upper airways

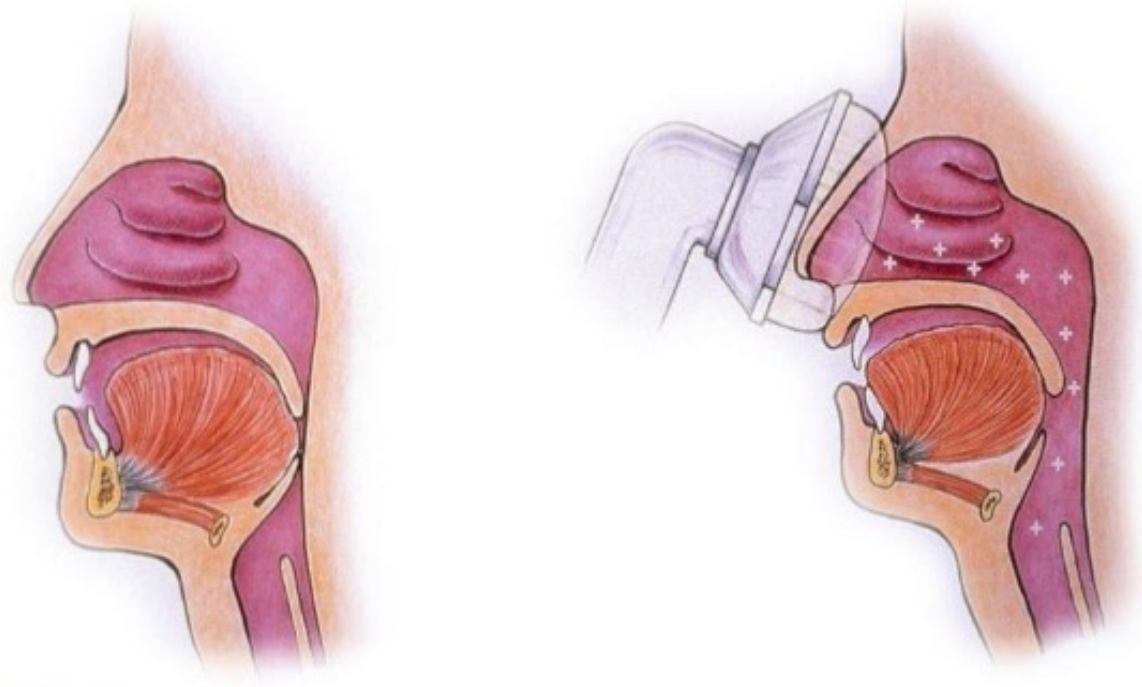


Snoring: showing partially close upper airways



CPAP: showing the opening of the upper airway

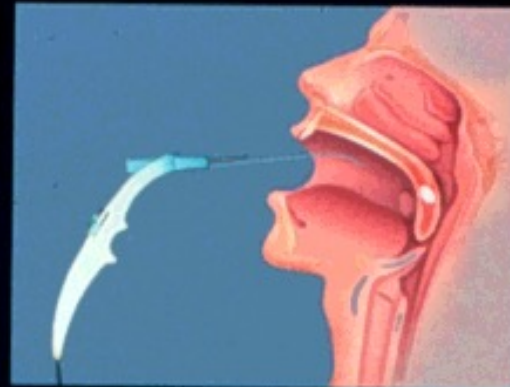
CPAP



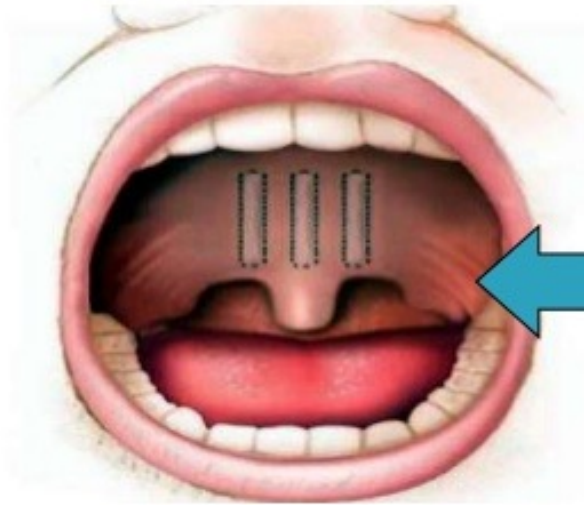
Treatment

- * adenotonsillectomy - preferred treatment in children
- * tracheostomy - cure for OSAS
 - used for failure of more conservative treatment
 - life threatening cardiopulmonary complications
 - alternative techniques to lessen complications
- * Uvulopalatopharyngoplasty (UPPP)

The Somnoplasty Procedure: Soft Palate



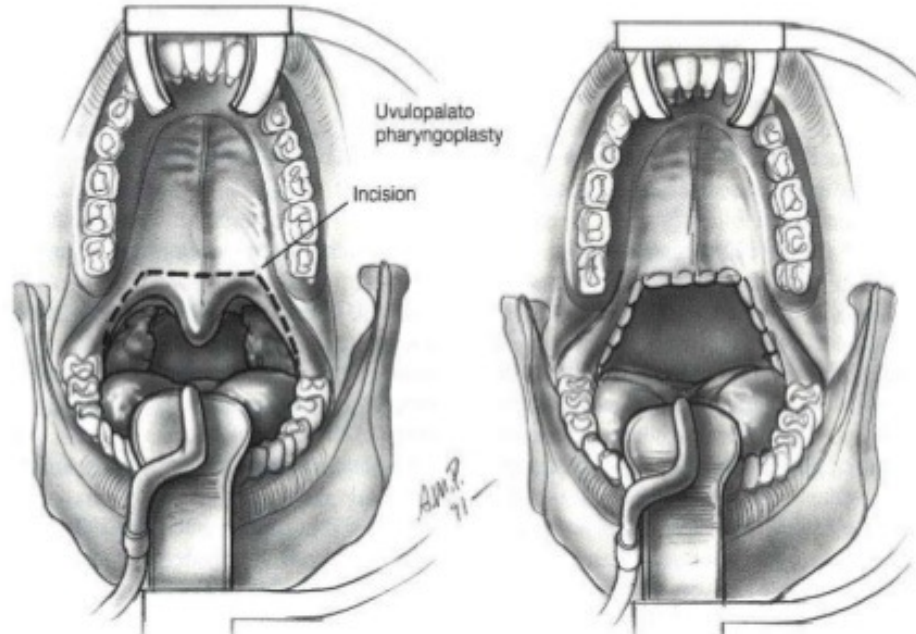
SURGERY



2 m.m. apart

**Minimum
Palate Length
25 mm**

SURGERY



TERIMAKASIH