

Difference Between Apnea and Hypopnea

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Key Difference – Apnea vs Hypopnea

Hypopnea and apnea are two closely related conditions that are caused by various structural and functional deformities of the respiratory tract, predominantly in the laryngeal region. Sleep disturbances are the most troublesome clinical feature of these disorders. Although the airflow is compromised in both these situations, **there is a complete occlusion of the airway in apnea whereas, there is only a partial obstruction of the airway in hypopnea, allowing a limited flow of air through the respiratory tract.** This is the key difference between apnea and hypopnea.

What is Apnea?

Apnea is the cessation of breathing that lasts for 10 seconds or more during sleeping. But if the number of episodes per cycle of sleep is less than five this is not considered as a pathological condition.

Main three types of apnea have been described

1. Obstructive Sleep Apnea (OSA)
2. Central Sleep Apnea
3. Mixed Type

Obstructive Sleep Apnea

Because of different causes, the upper airway can collapse, impeding the flow of air through it. Apnea due to any obstruction of the nose, [pharynx](#) or [larynx](#) also falls under this category.

Pathophysiology of OSA

Apnea compromises the supply of oxygen to the body tissues and leads to the retention of carbon dioxide. As a consequence of this gaseous imbalance, the pulmonary vasculature is constricted, causing pulmonary [hypertension](#). This, in

turn, can give rise to cardiac hypoxia, congestive cardiac failure, and cardiac arrhythmias.

Consequences of OSA

- Sleep fragmentation and daytime sleepiness
- Congestive heart failure and cor pulmonale
- Cardiac arrhythmias
- Polycythemia and hypertension
- Snoring spouse syndrome
- Loss of memory
- Decreased libido

Risk Factors

- Male gender
- Age above 40 years
- Obesity

Management

Clinical Evaluation

In taking the history, it is important to have the presence of the patient's bed partner because the information given by the patient is not authentic most of the time. During the clinical examination, emphasis should be on the basic areas mentioned below.

- BMI
- Collar size
- Complete head and neck examination
- Muller's maneuver
- Systemic examination should be carried out to look for hypertension and signs of any other systemic illness
- Cephalometric radiographs – the purpose of them is to exclude the possibility of any craniofacial anomalies and obstruction at the base of the tongue.
- Polysomnography

This is the gold standard investigation for the diagnosis of sleep apnea. The following records and measurements are taken during polysomnography;

EEG, ECG, Electroculogram, Electromyography, pulse oximetry, nasal and oral airflow, blood pressure, esophageal pressure and sleep position.



Treatment

Nonsurgical

- Lifestyle modifications such as the reduction of body weight, adherence to a balanced and healthy diet, and minimizing the consumption of alcohol.
- Positional therapy
- Intraoral devices
- Continuous positive airway pressure

Surgical

- Tonsillectomy and/or adenoidectomy
- Nasal surgery
- Oropharyngeal surgery
- Advancement genioplasty with hyoid suspension
- Tongue base frequency radiography
- Maxillomandibular advancement osteotomy

What is Hypopnea?

Hypopnea is defined as a drop of 50% of air flow from the baseline associated with an EEG defined arousal or a 4% drop in the oxygen saturation.

The causes, risk factors, clinical features and management of hypopnea are same as that of apnea. Usually, both apnea and hypopnea are seen concurrently in a majority of the patients.

What are the Similarities Between Apnea and Hypopnea?

- The airflow is compromised in both these situations
- The causes, clinical features and the management of both these conditions are the same.

What is the Difference Between Apnea and Hypopnea?

Apnea vs Hypopnea	
Apnea is the cessation of breathing that lasts for 10 seconds or more during sleeping.	Hypopnea is defined as a drop of 50% of air flow from the baseline associated with an EEG defined arousal or a 4% drop in the oxygen saturation.
Occlusion of Airway	
The airway is completely occluded.	The airway is only partially occluded.

Summary – Apnea vs Hypopnea

Hypopnea is defined as a drop of 50% of air flow from the baseline associated with an EEG defined arousal or a 4% drop in the oxygen saturation whereas apnea is the cessation of breathing that lasts for 10 seconds or more during sleeping. The main difference between apnea and hypopnea is that, **in apnea, there is a complete occlusion of the airway but in hypopnea, the airway is only partially occluded.**

References:

1. Dhingra, P L. *Diseases of Ear, Nose and Throat*. 5th ed., Elsevier, 2010.

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