

# Does Transition from CPAP to BiPAP Improve Symptoms of Aerophagia?

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## Introduction

Adherence to continuous positive airway pressure (CPAP) therapy has been an ongoing dilemma in obstructive sleep apnea patients and up to 83% of patients are noncompliant. It is believed that mask discomfort or pressure intolerance are the major causes. Aerophagia, or “air swallowing” may be an under-recognized and insidious cause for CPAP nonadherence. Patients generally complain of belching, bloating, abdominal pain and distention. Some studies have reported worsening gastrointestinal reflux symptoms from PAP-induced aerophagia. Although bi-level positive airway pressure (BiPAP) is often utilized in such circumstances, this practice had not been examined. We hypothesized that transitioning patients from CPAP to BiPAP would relieve aerophagia and improve compliance.

## Methods

We reviewed clinical charts of patients who had undergone BiPAP titration studies between January, 1997 and December, 2017 and who had previously been treated with CPAP, and whose treatment was complicated by aerophagia during CPAP use. We retrieved data regarding apnea-hypopnea index (AHI), compliance, mean pressures, maximum pressures, 90th percentile pressures, average leak, blood pressure, and Epworth Sleepiness Scale scores (ESS) during both CPAP and BiPAP use. Patients were excluded if transition for intolerance was ill-defined or if they were lost to follow up.

## Results

14 patients were transitioned from CPAP to BiPAP due to history of aerophagia. Mean age was 58.71 and mean BMI was 33.49. 9 patients were male and 5 patients were female. 10 patients (71.4%) experienced a resolution of aerophagia and related symptoms after transition to BiPAP, 3 (21.4%) did not improve, and 1 (7.1%) was lost to follow up. During the BiPAP condition, mean AHI and expiratory (EPAP) pressures were lower ( $p < 0.05$  on **Table 1**). Conversely, inspiratory (IPAP) pressures during BiPAP treatment were higher than maximum CPAP pressures ( $p < 0.05$ ). There was no significant change in compliance, average leak level, systolic blood pressure, diastolic blood pressure, and ESS scores.

Table 1. Comparisons of CPAP to BiPAP Use			
	CPAP	BiPAP	P-value
AHI	7.25	2.71	0.044
Compliance (%)	46.9	52.1	0.764
ESS	11.91	11.09	0.436
90th % Press vs IPAP (cm of H <sub>2</sub> O)	12.93	14.06	0.197
90th % Press vs EPAP (cm of H <sub>2</sub> O)	12.93	10.71	0.03
Peak Avg Press vs IPAP (cm of H <sub>2</sub> O)	14.01	17.54	0.016
Mean Press vs IPAP (cm of H <sub>2</sub> O)	12.88	15.6	0.083
Mean Press vs EPAP (cm of H <sub>2</sub> O)	12.88	10.6	0.152
Median Leak (%)	2.67	5.58	0.529
Systolic BP	117.08	125.83	0.128
Diastolic BP	71.92	73.17	0.475

## Conclusion

In patients complaining of aerophagia during CPAP use, transitioning to BiPAP resolved symptoms in the majority of patients, and resulted in a decrement of residual AHI. In addition, successful treatment was accomplished at lower EPAP levels. However, transition to BiPAP did not improve compliance.

## References

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