

## **Surgical Treatment of OSA on Cardiovascular Outcomes - A Systematic Review**

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**BACKGROUND:** OSA is an increasingly prevalent clinical problem with significant effects on quality of life and cardiovascular risk. Surgical therapy represents an important treatment for those unable to use positive airway pressure. This systematic review examines the available cardiovascular risk reduction data for the surgical treatment of OSA.

**METHODS:** A comprehensive literature search was performed. Articles were included if they met the following criteria: (1) the sample population consisted of adults (age $\geq$ 18 years); (2) OSA was diagnosed according to a sleep study; (3) surgical intervention was performed for OSA; and (4) one or more physical or biochemical cardiovascular and/or cerebrovascular variables was measured preoperatively and at  $\geq$ 14 days postoperatively.

**RESULTS:** Thirty-three articles were included. The majority of studies were case series and cohort studies (42% and 44%, respectively), with wide-ranging follow-up periods (4 weeks-9 years) and sample sizes (range, 6-10,339; median, 34). The following classes of surgical intervention were examined: pharyngeal surgery (n=23), tracheostomy (n=6), maxillomandibular advancement (n=3), and hypoglossal nerve stimulation (n=1). In total, 19 outcome measures were assessed. Tracheostomy was most consistently associated with improvement in cardiovascular end points. Pharyngeal surgeries (eg, uvulopalatopharyngoplasty) were variably associated with improvement in cardiovascular end points.

**CONCLUSIONS:** The published literature examining cardiovascular end points following surgical treatment of OSA is limited and generally of poor quality. However, available data from mainly small and observational studies suggest that surgical treatment of OSA may provide improvement in some cardiovascular end points. Larger, randomized, and prospective trials with more rigorous study designs are needed.