

Preoperative CPAP Use Is Associated with Improved Outcomes in Patients with Obstructive Sleep Apnea Undergoing Orthopedic Surgery

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INTRODUCTION

- Obstructive sleep apnea (OSA) is associated with elevated complication risk among patients undergoing surgery, including high-volume procedures such as total hip or knee joint arthroplasty (TJA).
- While guidelines support preoperative initiation of continuous positive airway pressure (CPAP) therapy, it is unclear how prevalent this is and to what extent this modifies perioperative outcomes.
- Such data are especially prudent given the shift from inpatient to outpatient TJA surgery as the latter may prohibit adequate monitoring of patients for perioperative adverse outcomes.

OBJECTIVE

We assessed whether preoperative use of CPAP among OSA patients was associated with improved outcomes compared to OSA patients without preoperative CPAP therapy.

METHODOLOGY

- Using Merative MarketScan for families with employer-sponsored healthcare coverage, we analyzed outpatient hip and knee TJAs from 2018 to 2022.
- The main outcomes were ED visits within 1 day or 1 week after discharge (as a proxy for a post-discharge complication).
- The main effects of interest were OSA (Y/N) and preoperative CPAP use (Y/N) (defined by billing information).
- Three comparisons were made in multivariable mixed-effects regression models:
 - Patients with OSA and preoperative CPAP use compared to patients with OSA and no preoperative CPAP use (OSA+/CPAP+ versus OSA+/CPAP-)
 - Patients with OSA and no preoperative CPAP use compared to patients without OSA (OSA+/CPAP- versus OSA-)
 - Patients with OSA and preoperative CPAP use compared to patients without OSA (OSA+/CPAP+ versus OSA-).

RESULTS

- Overall, n=123,349 (36.6% THA/63.4% TKA) included 23,923 with OSA (53.2% with preoperative CPAP use).
- Among the OSA-, OSA+/CPAP+, and OSA+/CPAP- cases, incidence of 1-day ED visits was 2.0% (n=1,997), 2.0% (n=226), and 2.6% (n=331).
- After covariate adjustment, patterns persisted in the comparisons:
 - OSA+/CPAP+ versus OSA+/CPAP- OR 0.77 CI 0.65-0.92 (p=0.003)
 - OSA+/CPAP- versus OSA- OR 1.30 CI 1.16-1.46 (p<0.001)
 - OSA+/CPAP+ versus OSA- OR 1.01 CI 0.88-1.16 (p=0.932)
- Similar results were seen for 1-week ED visits post-surgery.

CONCLUSIONS

- While OSA without preoperative CPAP use is associated with increased odds of post-TJA ED visits (as a proxy for post-discharge complications), the preoperative use of CPAP appears to modify this risk to the extent that there is no difference between patients with OSA (and CPAP use) and those without OSA.
- Findings support current guidelines but suggest caution for same-day surgery patients with OSA that are not on CPAP preoperatively.