

Elevated Upper Body Position Improves Pregnancy-Related OSA Without Impairing Sleep Quality or Sleep Architecture Early After Delivery

Sebastian Zaremba, MD; Noomi Mueller, Cand Med; Anne M. Heisig, MD; Christina H. Shin, BA; Stefanie Jung, MD; Lisa R. Leffert, MD; Brian T. Bateman, MD; Lori J. Pugsley, RN, BSN; Yasuko Nagasaka, MD, PhD; Ingrid Moreno Duarte, MD; Jeffrey L. Ecker, MD; and Matthias Eikermann, MD, PhD

BACKGROUND: During pregnancy, upper airway resistance is increased, predisposing vulnerable women to pregnancy-related OSA. Elevation of the upper body increases upper airway cross-sectional area (CSA) and improves severity of OSA in a subgroup of nonpregnant patients (positional-dependent sleep apnea). We tested the hypothesis that elevated position of the upper body improves OSA early after delivery.

METHODS: Following institutional review board approval, we conducted a randomized, crossover study on two postpartum units of Massachusetts General Hospital. Women during the first 48 h after delivery were included. Polysomnography was performed in nonelevated and 45° elevated upper body position. Upper airway CSA was measured by acoustic pharyngometry in nonelevated, 45° elevated, and sitting body position.

RESULTS: Fifty-five patients were enrolled, and measurements of airway CSA obtained. Thirty patients completed polysomnography in both body positions. Elevation of the upper body significantly reduced apnea-hypopnea index (AHI) from $7.7 \pm 2.2/h$ in nonelevated to $4.5 \pm 1.4/h$ in 45° elevated upper body position ($P = .031$) during sleep. Moderate to severe OSA (AHI > 15/h) was diagnosed in 20% of postpartum patients and successfully treated by elevated body position in one-half of them. Total sleep time and sleep architecture were not affected by upper body elevation. Change from nonelevated to sitting position increased inspiratory upper airway CSA from $1.35 \pm 0.1 \text{ cm}^2$ to $1.54 \pm 0.1 \text{ cm}^2$ during wakefulness. Position-dependent increase in CSA and decrease in AHI were correlated ($r = 0.42$, $P = .022$).

CONCLUSIONS: Among early postpartum women, 45° upper body elevation increased upper airway CSA and mitigated sleep apnea. Elevated body position might improve respiratory safety in women early after delivery.

TRIAL REGISTRY: ClinicalTrials.gov; No.: NCT01719224; URL: www.clinicaltrials.gov

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