PATHOGENESIS OF CYCLICAL OSA

ANATOMICAL PREDISPOSITION TO AIRWAY CLOSURE

- Adipose soft tissue deposition
- Compromised craniofacial structures
- ↓ Lung volume
- Airway edema
- Surface tension
- Muscle injury

↑ Passive P_air

SLEEP (+ sleep state discontinuity)

Critical dependence of respiratory rhythm on ↓PaCO₂ - Importance of controller/plant gains

UNSTABLE CENTRAL RESPIRATORY MOTOR OUTPUT

- ↓ Motor output to airway and chest wall = central apnea/hypopnea
- Passive airway narrowing/closure
- ↑ Chemoreceptor stimuli/arousal/ventilatory overshoot, hyopnea

UPPER AIRWAY CLOSURE/APNEA

- ↓ Tonic activity to upper airway dilator muscles, ↑ airway compliance, ↑ P_air

Cyclical OSA

Arousal → airway open

Ventilatory overshoot, hypocapnia

↓ motor output to airway/chest wall = apnea/hypopnea