

## BACKGROUND

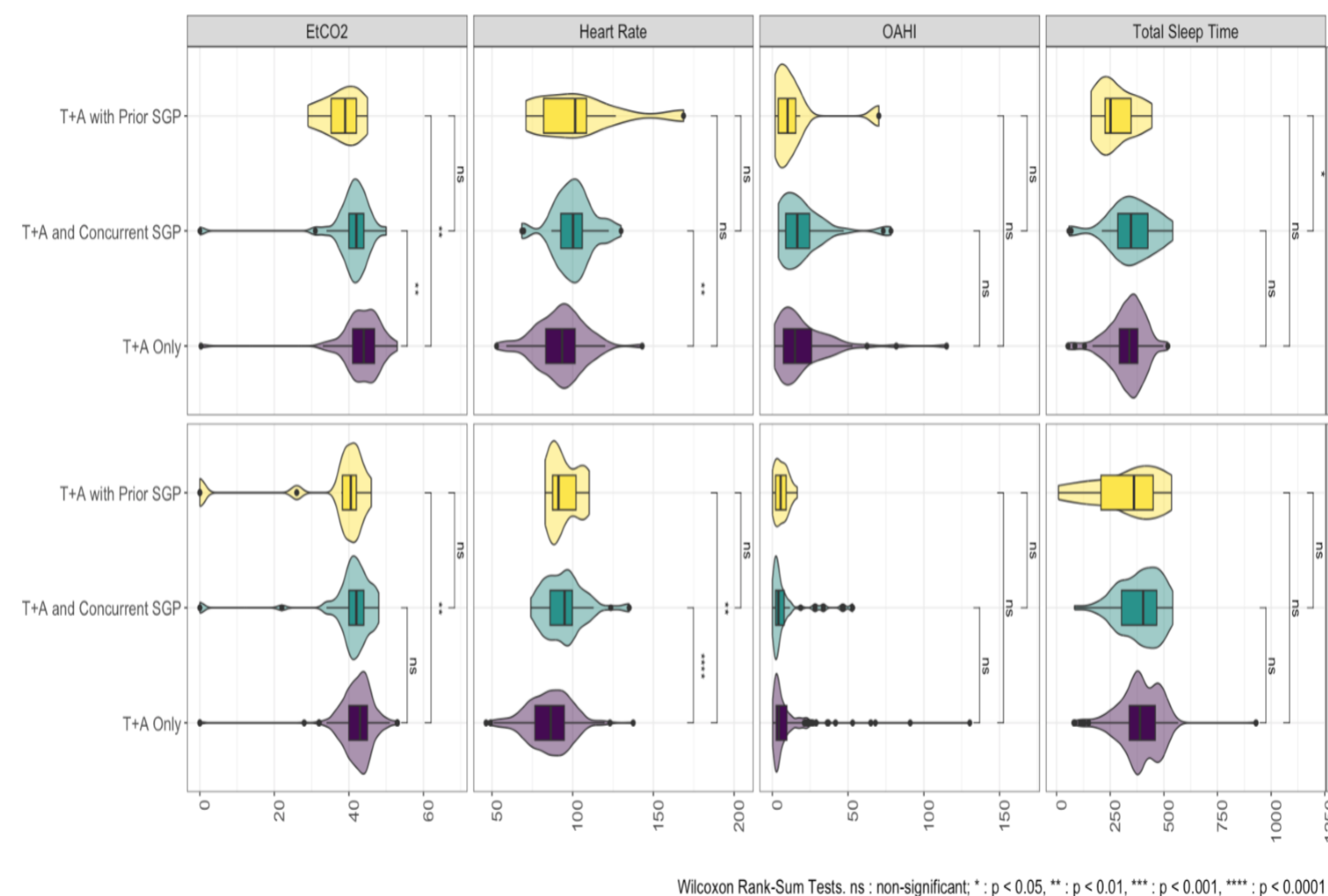
- ~50% of children with Down Syndrome (DS) still have moderate-to-severe Obstructive Sleep Apnea (OSA) on polysomnogram (PSG) after Adenotonsillectomy (T&A)<sup>1</sup>
- Supraglottoplasty is a surgical procedure to make the larynx more patent.
- Moderate-to-severe OSA is defined as Obstructive Apnea-Hypopnea Index (OAHI)  $\geq$  5 events/ hour on PSG
- Objective: Does the addition of a supraglottoplasty to T&A result in greater improvement in OSA compared to T&A alone in children with DS?**

## METHODS

- Retrospective case control study
- Children who had T&A with concurrent supraglottoplasty (T&A with concurrent SGP) or T&A with prior supraglottoplasty (T&A with Prior SGP) between Jan 2012 – May 2020 were compared with controls who underwent T&A alone.
- Pre-op and post-op PSG within 18 months of surgery were compared
- Differences between groups were tested with Kruskal-Wallis and Fisher's Exact tests with an assumed type 1 error rate of 0.05. Pairwise differences were subsequently tested with Wilcoxon Rank Sum tests and Fisher's Exact tests with a Bonferroni adjustment.

## RESULTS

- 412 individuals included in analysis (n=27 T&A with prior SGP, n= 57 T+A with concurrent SGP, n = 334 T+A only)**
- T&A+S patients were younger (mean age 2.2 in T+A with prior SGP, 2.1 in T+A with concurrent SGP, 4.2 in T&A only group, p value<0.001)
- No significant difference in length of stay between the groups



- No statistical difference in median percent change in OAHI pre-op to post-op (p = 0.578)
  - T &A with prior SGP group median decrease in OAHI of 71.7% (IQR -83.3%, -40%)
  - T&A with concurrent SGP group median decrease in OAHI of 70.2% (IQR -85.7, -23.2)
  - T&A alone group median decrease in OAHI of 59.3% (IQR-89.2%, -22.6%)

## CONCLUSIONS

- Among children with DS who underwent T&A for OSA, a concurrent or prior supraglottoplasty was not associated with significant improvements in OAHI when compared to T&A alone, however, the SGP groups trended towards more successful outcomes than those that underwent T&A alone.
- This study was powered to detect a 25% difference but a 11-12% difference between OAHI decrease among T&A compared to T&A+SGP was identified, which while not statistically significant, is compelling.

## IMPLICATIONS

- Further investigation is warranted to determine the impact of SGP prior or concurrently with a T&A for children with DS.
- Additional directions for this research may include evaluation of change in OSA severity categorically (mild, moderate, severe) between T&A and T&A+S. The natural history of OSA often involves progression to a more severe category, so the longitudinal impact of T&A + SGP on this process may yield interesting results.

## REFERENCES

- Ingram DG, Ruiz AG, Gao D, Friedman NR. Success of Tonsillectomy for Obstructive Sleep Apnea in Children With Down Syndrome. *J Clin Sleep Med.* 2017;13(8):975-980. Published 2017 Aug 15. doi:10.5664/jcsm.6698