Long-Term Postoperative Outcomes in Chronic Rhinosinusitis: BMI-Associated Trends in SNOT-22 Score Improvements

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Background

Chronic rhinosinusitis (CRS) is a persistent inflammatory condition that significantly impacts quality of life and is broadly classified into two phenotypes: CRS with nasal polyps (CRSwNP) and CRS without nasal polyps (CRSsNP).[1] Postoperative recovery following functional endoscopic sinus surgery (FESS) varies widely among patients, and emerging evidence suggests that Body Mass Index (BMI) may influence symptom improvement trajectories.[2]

Short-term data from our group and others have shown that non-obese CRSwNP patients (BMI <30) tend to experience greater symptomatic relief postoperatively, while obese CRSsNP patients (BMI 30+) appear to benefit more than their non-obese counterparts.[3] However, the durability of these trends beyond the early postoperative period has not been established.

This study investigates whether BMI-associated differences in postoperative symptom improvement persist over time, using longitudinal SNOT-22 scores collected through 52 weeks.

Methods

Study Design & Setting
Prospective observational cohort study conducted at a tertiary academic rhinology clinic from Dec 2021 to Sept 2022.

Patient Population
Adults with CRS undergoing FESS were enrolled. All patients met diagnostic criteria for CRS and had failed maximal medical therapy.

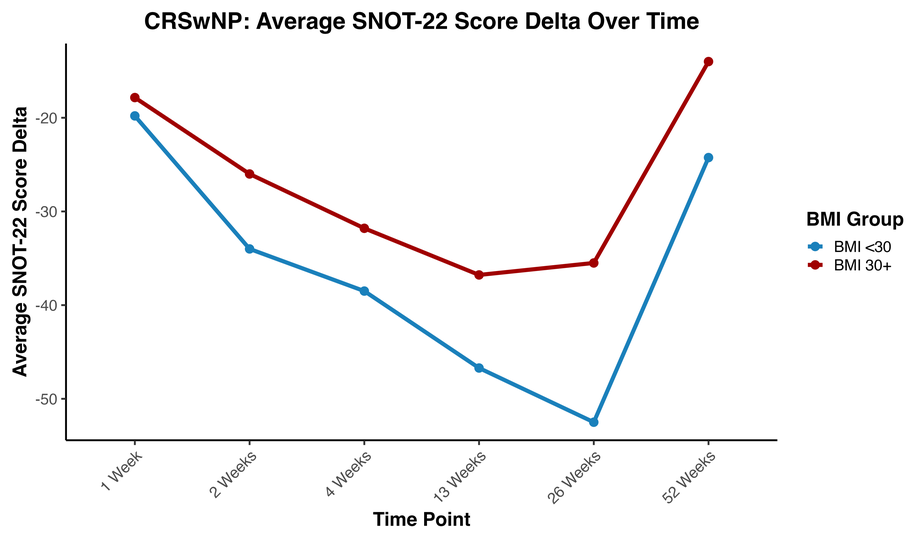
Phenotype & BMI Stratification
Patients were grouped by
- Phenotype: CRSwNP vs CRSsNP
- BMI: <30 (non-obese) vs 30+ (obese)

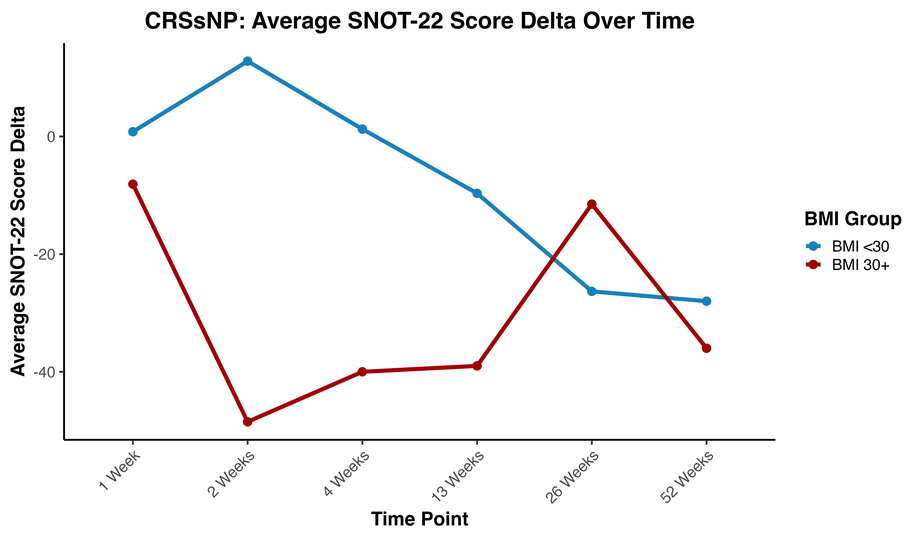
Outcome Measures
Change in SNOT-22 score from baseline to multiple time points postoperatively (up to 52 weeks).

Scores were collected at 0, 1, 2, 4, 13, 26, and 52 weeks as available.

Statistical Analysis
Group trends were assessed using mean SNOT-22 deltas over time, comparing obese vs non-obese groups within each phenotype. Differences at specific time points were evaluated for significance ($p < 0.05$).

Results





- In CRSwNP patients, those with BMI <30 showed consistently greater improvement in SNOT-22 scores compared to patients with BMI ≥30, with the difference sustained through 52 weeks postoperatively.
- In CRSsNP patients, the trend reversed: individuals with BMI ≥30 demonstrated greater and more sustained symptom improvement than their BMI <30 counterparts, persisting through 52 weeks.
- These findings suggest that BMI and CRS phenotype interact to influence long-term surgical outcomes, suggesting a need for BMI-stratified counseling and follow-up.

Conclusion

Long-term follow-up of CRS patients reveals sustained differences in postoperative outcomes based on BMI and disease phenotype. CRSwNP patients with BMI <30 consistently experienced greater symptom improvement up to 52 weeks, while CRSsNP patients with BMI ≥30 showed more favorable outcomes up to 78 weeks.

These opposing trends suggest that BMI may modify inflammatory response and recovery trajectory differently across CRS subtypes. Incorporating BMI into postoperative counseling and future phenotype-specific management strategies may enhance patient outcomes and personalization of care.

References

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