

## Peer Review File

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### Reviewer A

Whilst the measured thermal changes could not be used to predict nasal patency subjectively, the paper still adds value to the overall evolving body of literature on this topic.

**Reply: N/A**

### Reviewer B

This is an exceptional article which could readily be accepted in any journal. There are a couple of very minor suggestions:

-73. “33 patients (age  $33.94 \pm 11.65$  years, 39.4.% female, 66 nasal cavities) were included. The NOSE scale, VAS, and NAR were  $59.85 \pm 26.65$ ,  $7.03 \pm 28.35$  and  $0.67 \pm 0.62$  Pa/cm<sup>3</sup>/s (normal  $< 0.25$  Pa/cm<sup>3</sup>/s), respectively”: **(range 0-100)**

**Reply:** The range of NOSE scale and VAS was added. (Pages 4, Line 20-22)

*"The NOSE scale (0-100), VAS (0-100), and NAR were  $59.85 \pm 26.65$ ,  $57.03 \pm 28.35$  and  $0.67 \pm 0.62$  Pa/cm<sup>3</sup>/s (normal  $< 0.25$  Pa/cm<sup>3</sup>/s), respectively."*

-109 “dictates that simply providing nasal airflow does not always overcome "nasal obstruction": **Increased**

**Reply:** The sentence was edited. (Page 7, Line 37-39)

*"However, surgical experience dictates that simply providing increased nasal airflow does not always overcome "nasal obstruction".*

-164 “Method of assessment for subjective perception of nasal breathing and objective measurement”: **I would separate into 2 paragraphs**

**Reply:** Thank you for the suggestions. The method of assessment for subjective perception of nasal breathing and objective measurement was separated into 2 paragraphs. (Page 9-10, Line 98-121)

*"Method of assessment for subjective perception of nasal breathing" and "Method of assessment for objective measurement of nasal airflow"*

-446 "24. SIMOLA M, MALMBERG H. Sensation of nasal airflow compared with nasal airway": **Why capitals?**

**Reply:** The reference number 24 was edited. (Page 23, Line 403-405)

*"24. Simola M, Malmberg H. Sensation of nasal airflow compared with nasal airway"*

### **Editorial Comments**

1. In the Abstract, kindly provide the dates and settings of data collection, along with indicating whether the participants formed a consecutive, random, or convenience series.

**Reply:** The details of dates and settings of data collection was added in the ABSTRACT. (Page 5, Line 11-13)

**"A cross-sectional analysis of a single cohort of consecutively recruited and clinically evaluated patients with nasal obstruction at a tertiary rhinology center between August 2022 and February 2023 were recruited."**

2. It is essential to give an explanation of who carried out the measurements. How many researchers took part in the measurements? Did they all use the same guidelines?

**Reply:** The clarification of the measurement protocol was added in the METHODS. (Page 11, Line 135-136)

**"The intranasal mucosal temperature assessments were conducted by a single rhinologist utilizing a consistent protocol. "**

3. We would prefer a more thorough account of the credentials or prior experience of the researchers. If possible, include the inter and intraobserver variability in the text.

**Reply:** The coefficient of variation of  $\Delta\text{ExT-InT}$  of overall airway in pre- and post-decongestion states were added in the METHODS and RESULTS. (Page 13, Line 174-175 and Page 14, Line 203-205)

**"The coefficient of variation was calculated to test the intraobserver variability."**

**"The coefficient of variation of  $\Delta\text{ExT-InT}$  of overall airway in pre- and post-decongestion states were 47.4% and 44.3%, respectively."**

Additionally, the limitation was added in the DISCUSSION. (Page 18, Line 294-296)

**"Moreover, the coefficient of variation of temperature measurement is high due to the limitation in thermal camera technology that cannot identify the precise structure inside the nose."**

4. Are there any undesired reactions or consequences of the procedure? If not, please include this in the report.

**Reply:** There are no undesired reactions of the intranasal mucosal temperature measurements due to the non-contact measurement technique by IR camera. The detail was added to the RESULT. (Page 14, Line 205-206)

**"There are no undesired reactions of the intranasal mucosal temperature measurements due to the non-contact measurement technique by IR camera."**

5. Please state precisely which normality test method you employed - in SPSS it would most likely be one of Kolmogorow-Smirnow or Shapiro-Wilk. Alternatively, you could also check for normality visually with Q-Q plots.

**Reply:** Thank you for your suggestion. The Q-Q plot was used to test the normality. Details were added in the METHODS and RESULT. (Page 12, Line 166-167 and Page 13, Line 182-183)

**"Q-Q plots were used for the normality test."**

**"The data appeared to have a normal distribution when visually assessed using Q-Q plots."**

6. As stipulated in the STROBE guidelines, the author should insert a paragraph discussing the recruitment procedure. Additionally, add a figure of the flow-chart to demonstrate the process with the number of participants from selection of potential eligibles to the final included ones, and reasons for exclusion.

**Reply:** The paragraph of the recruitment procedure was added in the RESULTS. However, there are only two steps in the process, from the selection of potential eligibles to the final included ones. Consequently, we described the number of participants and reasons for exclusion in the paragraph. (Page 13, Line 177-180)

**"Of the 57 patients who were presented with primary symptoms of nasal obstruction, blockage, or congestion, 15 who had undergone prior septoplasty and/or turbinate reduction were excluded. Additionally, 9 patients with a history of anxiety were also excluded. Consequently, 33 patients were included in the study."**

7. In the "Association of intranasal mucosal temperature with symptoms and airway resistance" section, kindly supply the correlation coefficient (r value) with 95%CI and p value.

**Reply:** The correlation coefficient (r value) with 95%CI and p value was added. (Page 14-15, Line 210-223)

**" No correlations were found between intranasal mucosal temperature and subjective perception of nasal breathing ( $\Delta\text{ExT-InT}$  of overall airway and VAS pre-decongestion: Pearson  $r = -0.06$ ; 95% CI  $-0.31$  to  $0.19$ ;  $P = 0.612$ ,  $\Delta\text{ExT-InT}$  of overall airway and NOSE pre-decongestion: Pearson  $r = -0.17$ ; 95% CI  $-0.42$  to  $0.07$ ;  $P = 0.165$ ,  $\Delta\text{ExT-InT}$  of overall airway and VAS post-decongestion: Pearson  $r = -0.20$ ; 95% CI  $-0.44$  to  $0.05$ ;  $P = 0.109$ ,  $\Delta\text{ExT-InT}$  of overall airway and NOSE post-decongestion: Pearson  $r = 0.19$ ; 95% CI  $-0.06$  to  $0.43$ ;  $P = 0.138$ ), and intranasal mucosal temperature and objective measurement of nasal airflow ( $\Delta\text{ExT-InT}$  of overall airway and NAR pre-decongestion: Pearson  $r = -0.02$ ; 95% CI  $-0.27$  to  $0.23$ ;  $P = 0.886$ ,  $\Delta\text{ExT-InT}$  of overall airway and NAR post-decongestion: Pearson  $r = 0.11$ ; 95% CI  $-0.14$  to  $0.36$ ;  $P = 0.385$ ) at pre- and post-decongestion states. Additionally, correlation analysis was also performed between  $\Delta\text{ExT-InT}$ pre-post,  $\Delta\text{VAS}$ pre-post, and  $\Delta\text{NAR}$ pre-post at all areas. No correlations were found between  $\Delta\text{ExT-InT}$ pre-post and  $\Delta\text{VAS}$ pre-post (Pearson  $r = -0.12$ ; 95% CI  $-0.37$  to  $0.12$ ;  $P = 0.321$ ), and between  $\Delta\text{ExT-InT}$ pre-post and  $\Delta\text{NAR}$ pre-post (Pearson  $r = 0.03$ ; 95% CI  $-0.22$  to  $0.28$ ;  $P = 0.837$ ) (Figure 5)."**

8. We are unaware of the source of the nasal obstruction. The authors could expound upon this in the Results section.

**Reply:** The source of nasal obstruction was reported in the result section. (Page 13, Line 181-183)

**"Fifteen patients were diagnosed with allergic rhinitis, and eighteen patients had non-allergic rhinitis."**

9. Is there a variance in the nasal mucosal temperature between the left and right nasal cavities?

**Reply:** There is no variance in the nasal mucosal temperature between the left and right nasal cavities.  $\Delta ExT-InT$  of the overall airway between left and right nasal cavities were added in the result. (Page 13, Line 191-193)

**" $\Delta ExT-InT$  of the overall airway between left and right nasal cavities were not different in pre- ( $-0.23 \pm 0.51$  °C;  $P = 0.66$ ) and post-decongestion states ( $-0.51 \pm 0.42$ ;  $P = 0.23$ )."**