Patient Experience and Recovery After Office-based Airway Procedures

Ali Zaidi BS[1] , Daniel S. Fink MD[2], Taylor Lackey MD[2]
[1]University of Colorado Anschutz School of Medicine
[2]U of Colorado Dept of Otolaryngology – Head & Neck Surgery

University of Colorado Anschutz Medical Campus

Abstract

Objective: Office-based airway procedures are increasingly used for evaluation and management of laryngotracheal disease, yet patient-centered outcomes following these interventions remain incompletely characterized. This study evaluates patient-reported comfort, symptom burden, analgesic use, and treatment preferences following office-based airway procedures.

Methods: From 2021 to 2024, a prospective observational cohort study enrolled adults with laryngotracheal disease undergoing diagnostic or therapeutic airway procedures at a tertiary laryngology clinic under topical anesthesia. Patient-reported comfort, symptom burden, analgesic use, and treatment preference were assessed using standardized surveys 72 hours and 30 days post-procedure. Analyses were descriptive.

Results: Seventy-five patients underwent 120 office-based airway procedures. Across comfort domains, most patients reported neutral to very comfortable experiences, with improvement over time. At 72 hours (n = 66), 42.4% of patients reported very comfortable experiences, while 19.7% reported moderate discomfort. The most common symptoms were globus sensation (40.9%) and coughing (40.9%), with no persistent symptoms at 30 days and a mean resolution time of 8.57 hours. Greater symptom burden at 72 hours correlated to longer symptom duration, with median durations of 3 hours (IQR 1.4–24.0) for 1–2 symptoms, 5 hours (IQR 2.0–12.0) for 3–4 symptoms, and 7 hours (IQR 5.8–18.0) for ≥5 symptoms. Eight patients used over-the-counter analgesics, most commonly acetaminophen or nonsteroidal anti-inflammatory drugs, averaging 2.25 doses over roughly two days; one patient used opioids. Patients with prior operative airway interventions preferred continued office-based management and reported less recovery-related pain compared with prior surgical treatment.

Conclusion: Office-based airway procedures were well tolerated, caused minimal symptoms and analgesic use, and allowed rapid recovery, supporting them as a patient-centered approach for managing laryngotracheal disease

Introduction

The management of laryngotracheal disease is increasingly transitioning from the operating room to the outpatient clinic [1]. Office-based airway interventions performed under topical anesthesia effectively bypass the morbidities and cardiovascular risks associated with general anesthesia [2]. Additionally, these awake procedures significantly reduce overall procedural time and healthcare costs compared to traditional operative management [2, 3].

Advancements in distal-chip flexible endoscopes have facilitated the routine implementation of techniques such as transnasal tracheoscopy (TNT) [4]. This approach allows for a safe, dynamic evaluation of the glottic and subglottic airway with characteristically high procedural success rates and excellent patient tolerance [4].

However, despite the clear logistical benefits and growing popularity of in-office procedures, patient-centered outcomes specifically: post-procedural symptom burden, longitudinal comfort tracking, and analgesic reliance remain incompletely characterized [5].

Objective: This study evaluates patient-reported comfort, symptom burden, analgesic use, and treatment preferences following office-based airway procedures, using transnasal tracheoscopy (Figure 1).

Methods and Materials

- From 2021 to 2024, a prospective observational cohort study enrolled adults with laryngotracheal disease undergoing diagnostic or therapeutic airway procedures at a tertiary laryngology clinic under topical anesthesia
- N=75 patients who underwent 120 office-based airway procedures.
- Subjects with severe tachycardia (>120) or hypertension (SBP>180 or DBP>100) prior to procedure initiation were excluded from the study. Additionally, subjects who are taking beta-blocker medications or are allergic to our anesthetic medications were excluded from study enrollment
- Questionnaires were filled out after the procedure by the patient evaluating discomfort including metrics of symptom burden, analgesic use, and treatment preference. Subject follow-up questionnaires were completed using standardized surveys 72 hours and 30 days following procedure completion.
- Descriptive statistics were used on data collected.

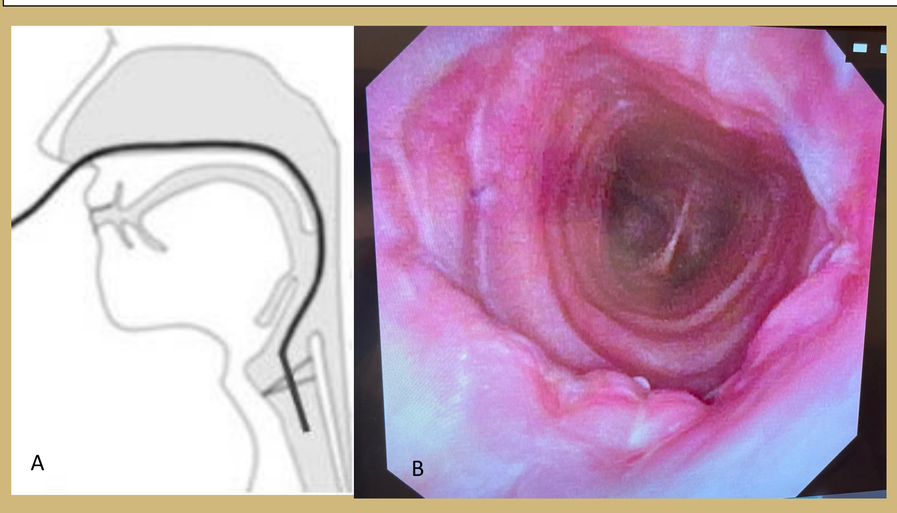
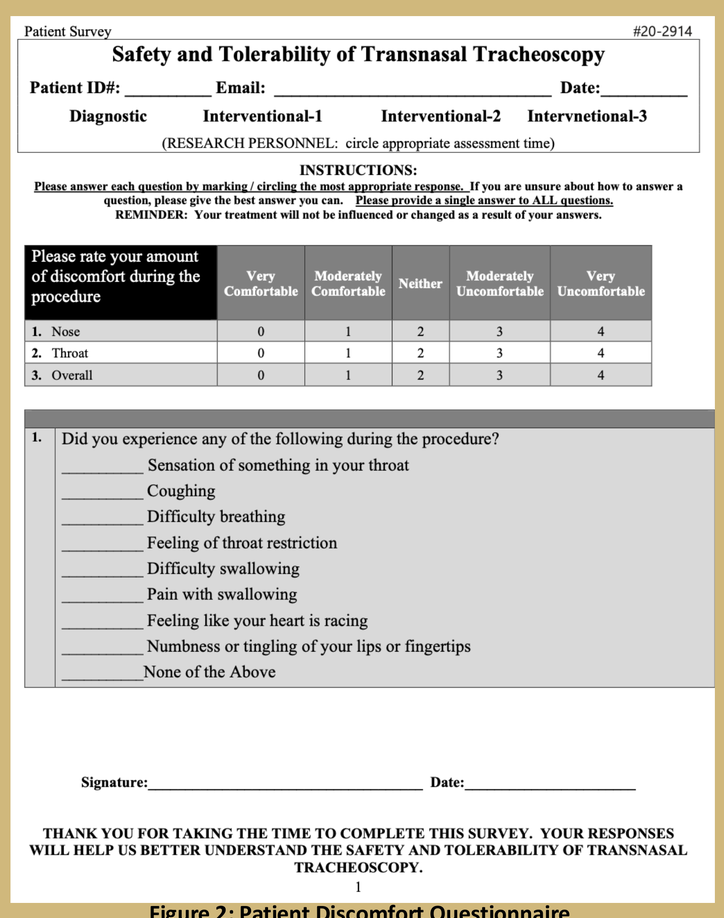


Figure 1: Transnasal tracheoscopy: A) diagram of flexible laryngoscope passing the vocal cords into the trachea and B) in-office view



Patient Survey #20-2914

Safety and Tolerability of Transnasal Tracheoscopy

Patient ID#: _____ **Email:** _____ **Date:**_____

Diagnostic **Interventional-1** **Interventional-2** **Intervnetional-3**

(RESEARCH PERSONNEL: circle appropriate assessment time)

INSTRUCTIONS:

Please answer each question by marking / circling the most appropriate response. If you are unsure about how to answer a question, please give the best answer you can. Please provide a single answer to ALL questions.

REMINDER: Your treatment will not be influenced or changed as a result of your answers.

Please rate your amount of discomfort during the procedure	Very Comfortable	Moderately Comfortable	Neither	Moderately Uncomfortable	Very Uncomfortable
1. Nose	0	1	2	3	4
2. Throat	0	1	2	3	4
3. Overall	0	1	2	3	4

1.	Did you experience any of the following during the procedure? _____ Sensation of something in your throat _____ Coughing _____ Difficulty breathing _____ Feeling of throat restriction _____ Difficulty swallowing _____ Pain with swallowing _____ Feeling like your heart is racing _____ Numbness or tingling of your lips or fingertips _____None of the Above

Signature:_____ **Date:**_____

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY. YOUR RESPONSES WILL HELP US BETTER UNDERSTAND THE SAFETY AND TOLERABILITY OF TRANSNASAL TRACHEOSCOPY.

1

Figure 2: Patient Discomfort Questionnaire

Results

- Seventy-five patients underwent 120 office-based airway procedures.
- At 72 hours (n = 64), 42.4% of patients reported very comfortable experiences, while 19.7% reported moderate discomfort (Figure 4A). The most common symptoms were globus sensation (40.9%) and coughing (40.9%), with no persistent symptoms at 30 days and a mean resolution time of 8.57 hours (Figure 3A).
- Greater symptom burden at 72 hours correlated to longer symptom duration, with median durations of 3 hours (IQR 1.4–24.0) for 1–2 symptoms, 5 hours (IQR 2.0–12.0) for 3–4 symptoms, and 7 hours (IQR 5.8–18.0) for ≥5 symptoms. (Figure 3B).
- Eight patients used over-the-counter analgesics, most commonly acetaminophen or nonsteroidal anti-inflammatory drugs, averaging 2.25 doses over roughly two days; one patient used opioids (Figure 4B).
- Patients with prior operative airway interventions preferred continued office-based management and reported less recovery-related pain compared with prior surgical treatment. Among interventional TNT patients who responded (n = 46), 15 preferred office-based TNT and 8 preferred surgery. Diagnostic patients showed more mixed preferences without a dominant trend (Figure 5).

Discussion and Conclusion

- ***Favorable Tolerability Profile***: The data confirms that office-based airway procedures are highly tolerable, with 42.4% of patients reporting a "very comfortable" experience by 72 hours. The swift mean symptom resolution time of 8.57 hours and the complete absence of persistent symptoms at 30 days emphasize the low morbidity of this outpatient approach.
- ***Predictive Value of Symptom Burden***: A distinct correlation was observed between the initial number of symptoms and overall symptom duration. Patients experiencing ≥5 symptoms had a median duration of 7 hours, compared to just 3 hours for those with 1–2 symptoms. This provides actionable data for clinicians to tailor anticipatory guidance during patient counseling regarding expected recovery.
- ***Minimal Reliance on Analgesia***: Post-procedural pain management needs were remarkably low. Only 8 out of 75 patients required over-the-counter analgesics, and merely one patient utilized opioids. This highlights the safety and comfort of topical anesthesia versus general anesthesia.
- ***Drivers of Patient Preference:*** Patient preference leans heavily toward continued office-based management, particularly among those with prior surgical experiences who noted less recovery-related pain.

Conclusion: These patient-centered outcomes validate the increasing transition of laryngotracheal disease management to the outpatient clinic. Office-based interventions successfully balance clinical efficacy with rapid recovery, minimal discomfort, and strong patient approval.

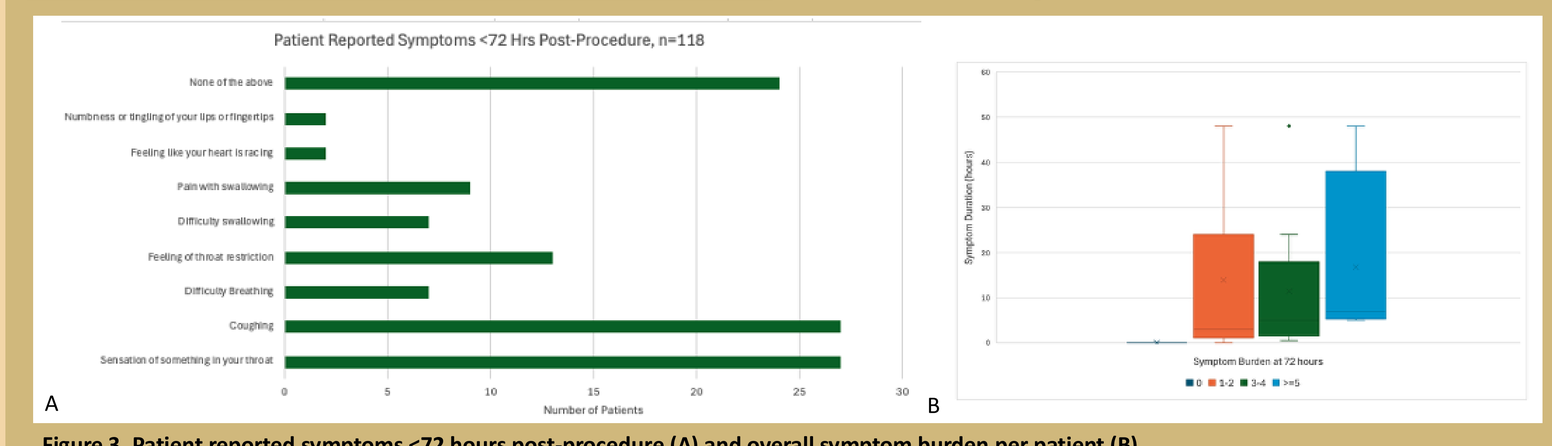


Figure 3. Patient reported symptoms <72 hours post-procedure (A) and overall symptom burden per patient (B).

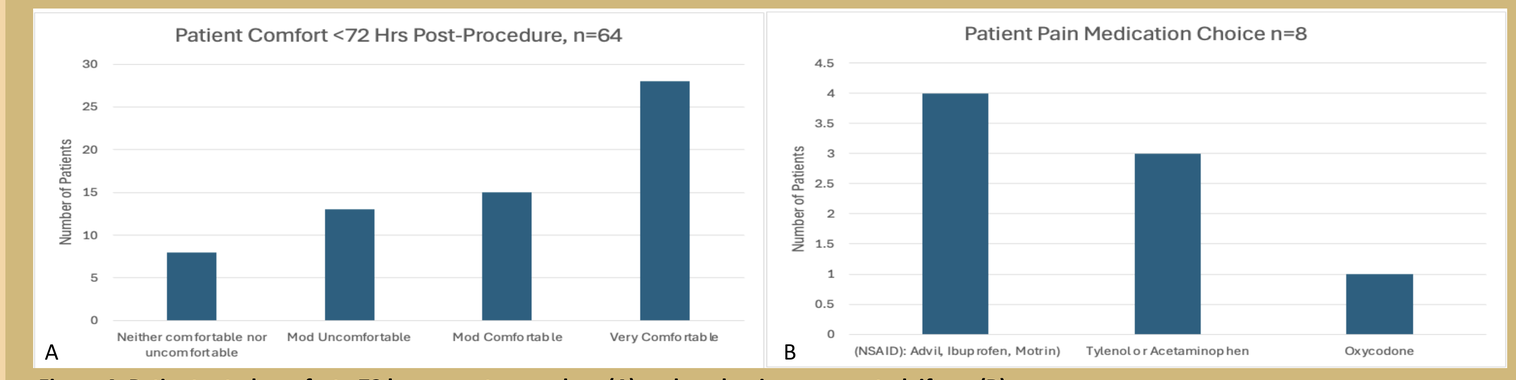


Figure 4. Patient rated comfort <72 hours post-procedure (A) and analgesic use reported, if any (B).

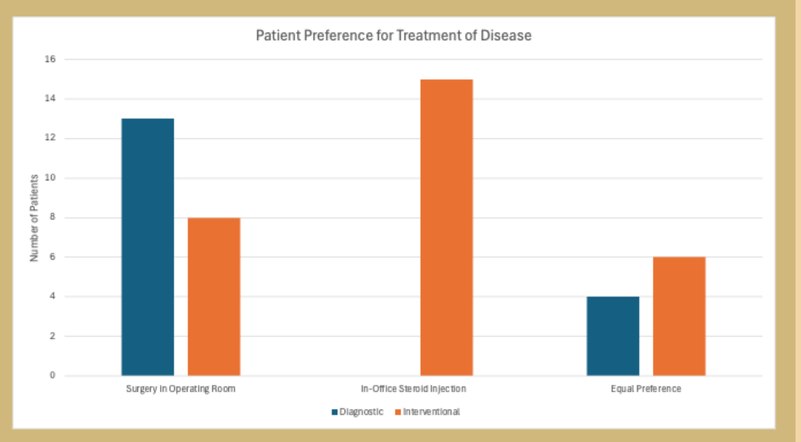


Figure 5. Post-procedural treatment preferences based on TNT indication (diagnostic vs. interventional).

Contact

Ali Zaidi, BS
Medical Student
University of Colorado School of Medicine
Aurora, CO
ali.2.Zaidi@cuanschutz.edu

References

1. Haddad, R., et al. (2024). Impact of the in-office surgical activity on the classical phonomicrosurgical interventions in a laryngology referral center. *European Archives of Oto-Rhino-Laryngology*, *281*, 6547–6553.
2. Filauro, M., et al. (2021). Office-based procedures in laryngology. Acta Otorhinolaryngologica Italica, 41, 243–247.
3. Hwang, S. M., et al. (2015). Office-Based Laser Surgery for Benign Laryngeal Lesion. Medical Lasers, 4, 65–69.
4. Verma, S. P., et al. (2012). Transnasal tracheoscopy. The Laryngoscope, 122, 1326–1330.
5. Zubiaur Gomar, F. M., & Lagunes Costales, V. (2024). Procedimientos laríngeos en el consultorio: una perspectiva moderna para las intervenciones de cuerdas vocales. Revista de Investigación e Innovación en Ciencias de la Salud, 6, 215–224.

Funding

N/A