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ORIGINAL RESEARCH

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Decision aid and preference assessment of topical anesthesia for otolaryngology procedures

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Abstract

Objectives: To determine preference patterns for topical anesthesia in patients undergoing endoscopy pre-coronavirus (2019 coronavirus disease [COVID-19]) pandemic and analyze outcomes based on preference, using a decision aid format.

Methods: A decision aid was developed with expert and patient input. New patients presenting to subspecialty clinics over a 2-month pre-COVID-19 period completed a pre-procedure survey about their priorities, then were asked to choose between topical oxymetazoline/lidocaine spray or none. A post-procedure outcome survey followed.

Results: Of 151 patients, 90.1% patients elected to have topical anesthesia. Top patient priorities were "I want the scope to be easy for the doctor" and "I want to be as comfortable as possible." Patients who strongly wanted to avoid medication ($P = .002$) and bad taste ($P = .003$) were more likely to select no spray, whereas those who wanted to avoid pain received anesthetic ($P = .011$). According to the post-procedure assessment, 95.4% of patients were satisfied or strongly satisfied their choice, and this did not correlate with anesthetic vs none.

Conclusions: Patient preferences are easily elicited and correlate with treatment choices. Most patients chose to have topical anesthetic and were willing to tolerate side effects; however, both patients with and without topical anesthetic were satisfied with their choices. This decision aid can be used to optimize shared decision making in the otolaryngology clinic. Given the aerosolizing potential of both spray and no spray conditions, this insight may be consequential when devising office protocols for post-COVID-19 practice.

Level of evidence: II.

KEYWORDS

anesthetics, local, coronavirus, COVID-19, decision making, shared, patient preference, SARS-CoV-2, surveys and questionnaires

1 | INTRODUCTION

Nasal and laryngeal endoscopies are essential components of the physical examination performed by otolaryngologists in the evaluation of head and neck disease. While the procedure is generally well tolerated,[1-3] it can be uncomfortable and even intolerable to patients, sometimes limiting the accuracy of the assessment.[4] As such, patients are generally offered an intranasal anesthetic prior to the exam to decrease discomfort and aid in visualization.[1]

While topical medications are routinely used by otolaryngologists performing nasal or laryngeal endoscopy, debate remains as to their efficacy. Although it is often assumed that these medications improve patient satisfaction and comfort, studies have not consistently demonstrated an advantage in using topical anesthetic prior to endoscopy.[5-13] In most randomized controlled trials, no significant difference was found in participants' pain or discomfort as a result of the intervention.[5-11] Furthermore, minor side effects were associated with the use of topical medications, including complaints of unpleasant taste and altered sensation in the throat.[1,5,7] However, given the fact that overall pain scores were low with nasal and laryngeal endoscopy, it may have been difficult to capture any significant improvements offered by topical anesthetics.[14] As such, many otolaryngologists continue to offer them to patients despite potential side effects and lack of evidence showing benefit.[5]

The 2019 coronavirus disease (COVID-19) resulting from the novel coronavirus-2 (SARS-CoV-2) has garnered unprecedented concern for the infectious risks associated with aerosolized respiratory secretions. Since its discovery in December 2019 in Wuhan, China, the virus has spread across the world with considerable morbidity and mortality, and was deemed a global pandemic by the World Health Organization on March 11, 2020.[15] SARS-CoV-2 is carried in respiratory droplets,[16] with higher viral loads detected in the nose and throat soon after symptom onset.[17] As such, there is serious concern regarding the safety of aerosol-generating procedures, particularly in otolaryngology.[18-20] Diagnostic nasal endoscopy is inherently aerosol-generating, and topical nasal anesthesia and decongestion sprays are associated with significant number of aerosols.[21] In addition, such interventions carry a distinct and unpredictable risk of triggering sneeze events, associated with maximal aerosolization even greater than decongestion sprays.[22] Hospitals and clinics are confronted with devising guidelines for safely permitting elective visits and procedures, including nasal endoscopy with or without anesthetic spray.

With the literature demonstrating no difference in patient benefit associated with the use of topical anesthetics prior to nasal or laryngeal endoscopy, the decision should be guided by patient preferences on a case-by-case basis. In routine practice, the preferences of patients are not formally elicited, and little is known about how these preferences affect satisfaction with the subsequent procedure. In addition, insight into the patient experience may have meaningful implications in how providers manage this component of office practice during reopening phases of the COVID-19 pandemic. Thus, the goal of this research was to determine preference patterns for topical anesthesia in patients undergoing nasal or laryngeal endoscopy and to analyze outcomes based on presence or absence of topical anesthesia using a decision aid format.

2 | METHODS

2.1 | Study design and participant selection

The Massachusetts Eye and Ear Institutional Review Board approved the planned protocol for data collection and analysis. The study cohort was comprised of new patients presenting consecutively to subspecialty rhinology and laryngology clinics at a tertiary academic medical center over a period of 2 months in the pre-COVID-19 era. Demographic information was collected concurrently as part of the enrollment process. Patients were invited to complete a pre-procedure survey regarding their priorities for the procedure, further detailed in the "Decision Aid Content and Administration" section below. Patients who agreed were verbally consented. They were then asked to choose between 2% oxymetazoline/lidocaine spray or no spray. A post-procedure outcome survey followed. Complications (bleeding, inability to tolerate the exam, vasovagal episodes) were recorded. The only exclusion criteria were participant age less than 18 years, designation as an established patient, and failure to complete all study instruments.

The study variables and data analytic plan were chosen in advance of data collection. The primary outcome was patient satisfaction with their choice, as defined by the post-procedure survey. As a secondary outcome, we assessed the ability for individual priority items to predict patient choice.

2.2 | Decision aid content and administration

The decision aid was built using qualitative techniques. This started with expert opinion collected from five board-certified otolaryngologists (three laryngologists, one rhinologist, one comprehensive otolaryngologist) who were provided background material as well as literature review. A draft decision aid was created that incorporated recommendations from the International Patient Decision Aid Standards guidelines.[23] The decision aid was piloted in the office with 10 patients, who all demonstrated understanding of the survey. Specific alterations were made based on feedback: the words "laryngoscopy" and "rhinoscopy" were changed to "scope procedure"; reasons to choose or not choose topical anesthesia were expanded; font was enlarged. This resulted in the final version of the decision aid approved by experts.

The decision aid (Appendix S1) contained several sections. The first section introduced the concept of scope examination for evaluation of ENT problems. The second section elicited preferences along six attributes, on a three-point Likert scale ("Not important," "Somewhat important," "Very Important"). The third section asked about past experience with scope examinations. The fourth section asked patients to review their options (including risks and benefits) in detail

and to choose either spray or no spray. This decision aid was administered to study participants during the office visit, directly prior to nasal or laryngeal endoscopic examination. Those who elected to have nasal spray received 2-m sprays per nostril using an atomizer[24] per our standard clinic protocol, which delivers atomized spray of approximately 30-100 μm. A specialist rhinologist or laryngologist subsequently performed the rigid nasal or flexible laryngeal endoscopy. Option selected, completion under original selection, and adverse events were recorded. A follow-up survey was given after the doctor's visit, which asked about satisfaction, comfort during the procedure, and the decision-making process. Response choices ranged from strongly agree, agree, neutral, disagree, to strongly disagree. The patient was allowed to fill out this survey in isolation in order to elicit honest responses.

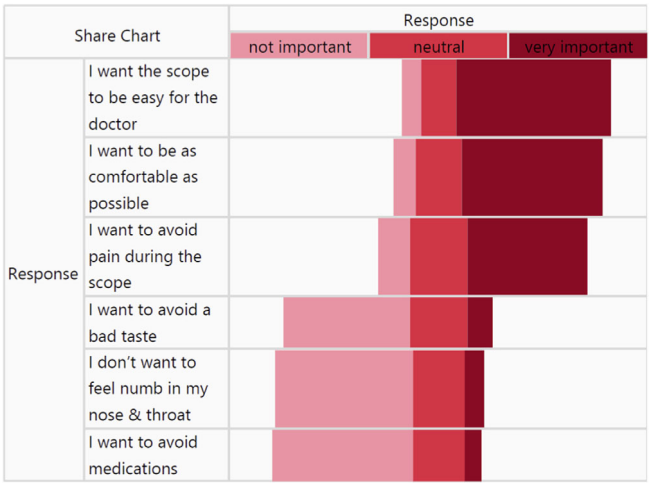

FIGURE 1 Response distributions to priority items

2.3 | Data analysis

Responses were evaluated for completion, and any responses demonstrating incomplete information to the following degrees were excluded from subsequent analysis: those not indicating a choice preference question for nasal spray; and those leaving the entire pre- or post-survey blank. Patient demographics and response distributions were calculated using standard statistics. Fisher's exact tests and logistic regression were utilized to assess correlation between individual priority variables and choice of topical anesthesia.

3 | RESULTS

During the 2-month study period, the decision aid was administered to 164 patients. Of these, 13 had incomplete information which excluded them from the analysis, leaving 151 responses for analysis. The mean age was 56 years (range, 18-92 years), and the majority of patients were female (59.6%). Ninety-four patients presented to laryngology clinic, whereas 57 presented to rhinology clinic.

Of the 151 included patients, 137 (90.1%) of participants elected to have topical anesthesia. All patients completed the procedure with the option initially selected, and there were no adverse events. Response distributions to priority items are listed in Figure 1. Top patient priorities were "I want the scope to be easy for the doctor" ("very important" in 74.0%) and "I want to be as comfortable as possible" ("very important" in 67.3%). Low priorities included "I want to avoid medications" ("not important" in 67.6%) and "I don't want to feel numb" ("not important" in 66.0%). Notably, 69.3% of patients reported having had a previous scope exam in the past and of these 81.7% reported receiving topical anesthetic for this.

Several variables were correlated with anesthetic choice (Table 1). Patients who had previously received nasal spray for a scope were far more likely to request this again (98.8% vs 45.5%; $P < .0001$) than those naïve to topical nasal anesthesia. Patients were more likely to avoid topical anesthesia spray if their initial survey indicated that they wanted to avoid medication ($P = .002$) and bad taste ($P = .003$), whereas those who wanted to avoid pain chose to receive anesthetic ($P = .011$) (Table 1).

According to the post-procedure assessment, 95.4% of patients were satisfied or strongly satisfied with their choice, and this was not statistically correlated with anesthetic choice (no spray 100%, spray 95%; $P = .92$). Ratings of comfort during scope also did not differ significantly between groups ($P = .40$). Patients overwhelmingly indicated that they valued making the decisions themselves and appreciated learning about their options (95.4% agreed or strongly agreed), which was not different between groups.

4 | DISCUSSION

Topical medications are routinely used prior to nasal or laryngeal endoscopy, despite limited evidence regarding their effectiveness. Patient priorities and values regarding the decision to use topical anesthesia are not typically elicited in clinical practice, and little is understood about how such principles affect satisfaction with the procedure. The use of topical anesthetic and decongestive sprays during nasal endoscopy is of particular interest during the COVID-19 pandemic as such interventions are associated with significant airborne aerosol production. These data demonstrate that patient preferences regarding the use of topical anesthetics are easily elicited and correlate with treatment choices. Most patients chose to use a topical anesthetic and were willing to tolerate side effects; however, both patients with and without topical anesthetic were satisfied with their choices. This study illustrates how decision aids may be used to optimize shared decision making in the otolaryngology clinic, particularly when they are used to actively elicit preferences.

While it may be unsurprising that the preferences elicited correlate with choice, this is not always the case, as patient preferences are not often formally considered by physicians and are not understood as well as may be desired.[25,26] Studies have shown that physician's perception of patient preferences do not always reflect actual

TABLE 1 Assessment of correlation between priority items and anesthetic choice

		Do you want a spray in your nose today?		
		No (%)	Yes (%)	*P* value
I want the scope to be easy for the doctor	Not important	15.4	8.3	0.619
	Neutral	15.4	17.3	
	Important	69.2	74.4	
I want to be as comfortable as possible	Not important	15.4	10.2	0.146
	Neutral	38.5	20.4	
	Important	46.1	69.3	
I want to avoid pain during the scope	Not important	15.4	14.8	**0.011***
	Neutral	61.5	24.4	
	Important	23.1	60.7	
I want to avoid a bad taste	Not important	35.7	63.7	**0.003***
	Neutral	21.4	28.0	
	Important	42.9	8.3	
I don't want to feel numb in my nose and throat	Not important	46.2	67.9	0.224
	Neutral	38.5	23.7	
	Important	15.3	8.4	
I want to avoid medications	Not important	30.8	71.3	**0.002***
	Neutral	38.5	23.3	
	Important	30.7	5.4	

*Statistical significance.

preferences.[27,28] Doctors often overestimate the importance of treatment efficacy and effectiveness, while underestimating the impact of potential adverse effects as well as negative impact on quality of life.[29,30] When given deliberative informed consent, patients often choose different treatment options than those exposed to the usual informed consent process.[31,32] Furthermore, patients who are asked about their preferences feel more knowledgeable and better informed, reporting less regret, increased confidence and improved adherence to the chosen treatment plan.[33,34] As such, preference assessment is integral in helping patients and providers make optimal treatment choices, as part of a shared decision-making process.

Shared decision making is a collaborative process during which patients, families and clinicians devise a treatment plan based on a combination of current evidence and individual patient preferences, best employed in clinical situations where more than one reasonable treatment option exists.[35,36] To date, shared decision making and related research has not been widely explored in otolaryngology, despite ample clinical scenarios where a range of treatment options may be appropriate for a given condition.[37-39] Topical nasal anesthesia is one such scenario, in which there are two reasonable options for management, and for which patient preference should be a guiding factor. In the current study, 95.4% of patients indicated that they were satisfied or strongly satisfied with their choice, demonstrating how decision aids may facilitate shared decision making in the otolaryngology ambulatory setting. Importantly, the process of shared decision making has been shown to decrease decisional conflict while increasing patient satisfaction with treatment choice, in addition to improving compliance and clinical outcomes.[35,36,40-43]

Our approach in developing this decision aid adhered to the general principles of conducting a needs assessment and involving multiple stakeholders, incorporating a panel of expert clinicians as well as patient representatives in order produce a tool meeting the needs of the individuals for whom it was intended.[44,45] Further optimization of this decision aid prototype will involve iterative implementation in different centers and communities in order to improve its comprehensibility, feasibility, and acceptability to patients and providers. Data from this study suggest that ratings of comfort were not significantly different between groups, consistent with the previous literature regarding the efficacy of topical anesthetics[1,5-11] and overall tolerability of in-office otolaryngologic procedures.[2] Avoidance of pain and maximization of physician and patient comfort were of highest priority to patients, which may be considered by clinicians when performing in office procedures.

Nasal endoscopy can generate airborne aerosol production irrespective of whether a rigid or flexible scope is used[21,22] and requires prolonged proximity to the patient, thus may carry a similar risk profile as established aerosol-generating procedures such as endotracheal intubation, noninvasive ventilation, and tracheotomy.[46,47] While accompanying patient behaviors such as panting and coughing do not produce significant airborne aerosols compared to background conditions, sneezing is associated with the greatest number of airborne particles per minute by an order of magnitude.[21] However, topical nasal anesthetic used to potentially reduce risk of sneeze produces comparable airborne aerosols.[22] Fortunately, N95 respirators can successfully protect against airborne aerosols at high velocities; it is incumbent upon institutions to

devise policies as to whether enhanced personal protective equipment during nasal endoscopy in the outpatient setting is necessary.[48] Given the aerosolizing potential of both spray and no spray conditions, insight into the patient experience of nasal endoscopy may have meaningful implications for this aspect of office practice in the post-COVID-19 world. Doctors' offices and hospital facilities may decide to use alternate means of topicalization (lidocaine jelly, cotton pledgets soaked in lidocaine, etc.) or no topicalization at all.

This study has limitations. Although this project was prospective and included multiple providers, it was not randomized or blinded, and included only one institution. The decision aid prototype was developed by patients and clinicians from one tertiary academic healthcare center, which may limit its generalizability. In addition, patient groups were not equal with fewer participants in the no spray group, which may have skewed ratings of individual priorities assessed. Use of a three-point Likert scale may represent a limitation, as a scale with five or seven options may allow greater degree of granularity in study responses and potential identification of statistically significant differences. Additional important variables may not have been included in this decision aid, and inclusion of these may provide additional insight into patient decision making regarding the use of topical anesthetic. Of note, it is possible that our decision aid biased patients toward requesting the anesthetic, as it did not report mixed the efficacy and at worse no efficacy of topical anesthetic. Finally, data were collected before the COVID-19 pandemic. We believe that this would not change the rating scales assessed, but it is important to recognize that individual preferences may have changed as a result of COVID-19.

5 | CONCLUSION

Most patients chose to have topical anesthetic and were willing to tolerate side effects; however, both patients with and without topical anesthetic were satisfied with their choices. This insight may be consequential when devising office protocols for post-COVID-19 outpatient practice. Furthermore, patient preferences regarding the use of topical anesthetics are easily obtained through use of a decision aid, and these preferences guide the patient's decision. This study illustrates how decision aids may be used to optimize shared decision-making in the otolaryngology clinic.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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