

ORIGINAL RESEARCH

Assessment of Indian otolaryngologists based on identification and managing of septal deviation and nasal valve collapse

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ABSTRACT

Introduction: Our aim in this study was to assess the Indian otolaryngologists based on Identification and managing of septal deviation and nasal valve collapse. **Materials and Methods:** All patients had a minimum of a one-month trial on a topical intranasal corticosteroid prior to enrollment in the study. Two email invitations were sent to all members in January and April 2017, which included the survey link and a description of the project. The survey closed in August 2017. **Result:** 96 otolaryngologists responded to our survey from a total of 499 invitations (19.2%). Respondents were General Otolaryngologists, Facial Plastics and Reconstruction Surgeons (FPRS), and Rhinologists, with the majority having less than 10 years of experience. Type of practice was evenly distributed between community, office and hospital. **Conclusion:** This study also suggests that a large proportion of patients with clinical evidence of NVC, based on the Cottle maneuver and physical examination, may not require advanced nasal valve procedures in addition to a septoplasty and turbinate reduction. **Keywords:** Septoplasty, DNS, Rhinologists, otolaryngologists.

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INTRODUCTION

However, many cases of septal deviation are asymptomatic, and the degree or severity of deviation has little to no correlation with the degree of obstruction.^{1,2} This paradox creates a diagnostic dilemma for some patients and surgeons. Not all patients, regardless of symptoms demonstrate an improvement as patient satisfaction after septoplasty ranges between 65 to 80%.³ One potential cause of treatment failure may be misidentification of other comorbid causes of nasal obstruction, specifically nasal valve collapse (NVC).^{4,5} Concurrent NVC is often viewed as an important feature to identify prior to a septoplasty to prevent need for revision surgery.^{6,7} Although physicians have studied objective measures to diagnose NVC, the vast majority rely on physical exam findings.⁸⁻¹⁰ A systematic review by Speilmann et al.⁹ identified 43 papers assessing the treatment of nasal valve collapse. Of those, 24 papers utilized the Cottle maneuver to diagnose nasal valve collapse,¹¹ did not specify the method of diagnosis, while only one study utilized objective measures, specifically rhinomanometry. Of the studies that employed the Cottle maneuver, five utilized the Cottle maneuver as

a single variable, while the remainder used a combination of the Cottle maneuver and a subjective assessment of intranasal support for their formal diagnosis of nasal valve collapse. Needless to say, the Cottle maneuver is a common component of the nasal examination^{11,12} and a common method to diagnose NVC. To conduct the Cottle maneuver, the patient is required to inspire while the physician applies tension on the skin lateral to the nasolabial fold, thereby increasing nasal wall tension and widening of the nasal valve. In patients who have narrowed or collapsing nasal valves, this maneuver improves nasal airflow, which constitutes a positive test. To many physicians, a positive test suggests that a functional rhinoplasty to specifically address the nasal valve may be necessary.⁹ Indeed, in a clinical consensus statement published by the American Academy of Otolaryngology Head and Neck Surgery (AAO-HNS),¹² the authors researched a consensus regarding the utility of certain physical exam findings in diagnosing NVC. These include: the subjective improvement in nasal airflow during a Cottle maneuver, the visible inspiratory collapse of the nasal wall and/or alar rim during inspiration, and the

increased nasal obstruction during deep inspiration. Audible improvement in nasal airflow along with subjective improvement during the Cottle maneuver reached consensus; however, audible improvement alone did not. Interestingly, there was a consensus that there is no gold standard test to diagnose NVC. As mentioned previously, results of a systematic review⁹ noted that the Cottle maneuver is the most common method used to diagnose clinically relevant NVC that requires surgical repair. Of the studies reviewed, 55% of papers reviewed relied on the Cottle maneuver alone or in combination with a physical exam as the definition of clinically relevant NVC. Despite the widespread acceptance of the Cottle maneuver as a physical examination test to diagnose and define NVC, it has never been validated, nor has it been confirmed that all patients with a positive Cottle maneuver require repair of the nasal valve. Due to these challenges, a better understanding of how otolaryngologists approach septal deviation and NVC will help guide development of guidelines as well as future research into the area. Therefore, the objective of this study was to determine the opinions of Indian Otolaryngologists regarding the diagnosis and management of nasal obstruction with septal deviation and NVC. Our secondary objective was to evaluate differences between sub-specialists.

MATERIALS AND METHODS

The survey was divided into the following areas: diagnosis, management, and prognosis. All questions were mandatory, and additional responses could be added if required. Our team constructed a twenty question survey for our study. All patients had a minimum of a one-month trial on a topical intranasal corticosteroid prior to enrollment in the study. Two email invitations were sent to all members in January and April 2017, which included the survey link and a description of the project. The survey closed in

August 2017. Consent to participate was implicit on response, and all responses were gathered anonymously.

Data analysis

All information was treated confidentially. Data was exported to excel (Microsoft®, 2018) and Minitab 18 (Minitab Inc) for analysis. Survey data that included continuous data was assessed using an ANOVA for normally distributed data and Kruskal Wallis test for non-normally distributed data. Categorical data was analysed using Chi-square testing. Significance was defined as $p \leq 0.05$.

RESULTS

96 otolaryngologists responded to our survey from a total of 499 invitations (19.2%). Respondents were General Otolaryngologists, Facial Plastics and Reconstruction Surgeons (FPRS), and Rhinologists, with the majority having less than 10 years of experience. Type of practice was evenly distributed between community, office and hospital. Demographic data is outlined in Figure No. 1.

DISCUSSION

Respondents in our study identified a wide variety of diagnostic methods, with the assumption that multiple tests are utilized to come to a diagnostic conclusion. Although we attempted to determine what examination physicians felt was most important, it is unclear from our survey what the relative weight each physician applies for each test when there is a discrepancy between tests. Research assessing the relative efficacy of each test as well as the combined effect of tests may assist surgeons in making evidence based decisions. Our survey demonstrated that the Cottle Manoeuvre is both a common and important tool for NVC diagnosis. These

Figure No. 1 Demographics

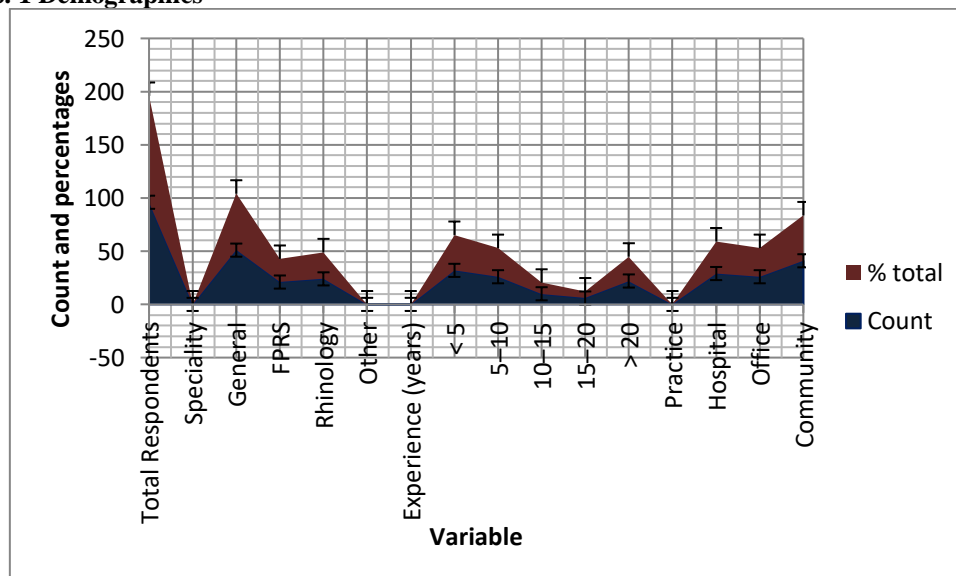


Table No. 1 Methods Used to diagnose Nasal Valve Collapse in a typical clinical encounter

Examination*	Internal		External	
	n	%Total	n	%Total
Visual Inspection	81	84.3%	80	83.3%
Cottle Maneuver	47	48.9%	35	36.4%
Modified Cottle Maneuvre	36	37.5%	32	33.3%
Failed Septoplasty	37	38.5%	22	23.9%
Bachman's	12	12.5%	12	12.5%
Trial of BreathRight	3	3.1%	0	0.0%
Fiber-optic Nasolaryngoscopy	0	0.0%	0	0.0%
Acoustic Rhinometry	4	4.1%	3	3.1%

Furthermore, with respect to diagnostic accuracy (the ability to predict which patients with a septal deviation also required nasal valve surgery), most physicians believed the physical exam provided moderate accuracy. There was a trend towards FPRS indicating a higher level of accuracy compared to other specialists however this did not reach statistical significance (Table No. 2, $p = 0.24$).

Table 2: Statistical Significance

	All Physicians		General Otolaryngology		FPRS		Rhinology	
	n	%	n	%	n	%	n	%
Low	18	18.7%	11	18.4%	4	21.0%	3	16.6%
Moderate	51	53.1%	33	55.9%	7	36.8%	11	61.1%
High	27	28.1%	15	25.4%	8	42.1%	4	22.2%
*p = 0.24								

findings are consistent with a recent systematic review, which demonstrated that the CottleManoeuvre was the most common method used to determine whether a patient required surgical repair.¹³ This manoeuvre however, has been described in literature as non-specific, as many patients without NVC will also feel an improvement in airway patency.^{14,15} Furthermore, false negatives can occur such as in the case of osteuminternum fibrosis.¹⁶ A recent study demonstrated no change in outcome in surgical success after a septoplasty in patients with either positive or negative Cottle Maneuver.¹⁷ These results put into question the utility of the notion that patients with a positive CottleManoeuvre, when used as a single examination, truly benefit from anything more than a septoplasty. Interestingly, there were differences in opinions between subspecialties. FPRS indicated a higher failure rate of septoplasty alone, as well as a higher percentage of patients who require nasal valve surgery than other subspecialties. There may be multiple reasons for this discrepancy. First, the indication for referral to subspecialists may vary, such as nasal polyps referred to Rhinology versus nasal trauma referred to FPRS. Furthermore, more complicated cases of NVC may be referred to FPRS from other otolaryngologists, and both patient and physician may be more open to surgery as a final option. Another limitation of this study is that a single surgeon performed all assessments. Given a lack of a validated grading scheme, a general assessment of NVC is therefore subjective. Finally, biases can occur in assessment of surgical failure, and therefore a more robust and preferably blinded assessment would be optimal to validate these findings studies. However,

we chose to use a patient centered definition of surgical failure, therefore limiting this bias.

The findings of this study have considerable applicability in terms of patient safety and health care resource utilization. Potential complications, as well as morbidity of more advanced surgical procedures are likely greater for a functional rhinoplasty than for a standard septoplasty, particularly if grafting is required from sites other than the nasal septum. With respect to health economics, in the practice of the primary author, a septoplasty and turbinate reduction can be performed rapidly, resulting in less time in the operating room and less post-operative care compared to more advanced functional rhinoplasty techniques specific for nasal valve collapse. The reduction in operative time, healing time and complications likely all contribute to lower health care costs, both direct and indirect. Future studies will be required to assess these questions.

CONCLUSIONS

The CottleManoeuvre is often relied on for external NVC; however its effectiveness has been challenged. Stratifying by speciality, FPRS note a higher failure rate of septoplasty alone, and believe more patients require NVC surgery than other specialists. This study also suggests that a large proportion of patients with clinical evidence of NVC, based on the Cottle maneuver and physical examination, may not require advanced nasal valve procedures in addition to a septoplasty and turbinate reduction. Certainly there remains a role for functional rhinoplasty to address the nasal valve; however, future studies are necessary to determine the variables that predict which patients

are at a high risk of surgical failure, and to more accurately determine which patients with nasal obstruction and NVC require a functional rhinoplasty.

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