

Major Difficulties experienced During Diagnostic Nasal Endoscopy In Aresident Learning Curve: A Descriptive Study

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ABSTRACT:

AIM: To evaluate major difficulties of nasal endoscopy in Resident learning curve in tertiary care hospital.

MATERIALS AND METHODS: This prospective study was conducted to ascertain the major difficulties of nasal endoscopy during Residency in the Department of ENT in NRI Institute of Medical Sciences, Sangivalasa over a period of 1 year from September 2020 to August 2021.

RESULTS: Majority of patients were in the age group of 20-40 years and 60% were males, 40% were females. The Major difficulty noted in the present study was sustaining mucosal injury (80%) and difficult hand-eye coordination (60%) which in turn caused mucosal injury during the initial training period which improved over to 10% and 6% respectively over a learning curve of 6 months. Patient discomfort drastically decreased from 80% (40 cases) to 20% (10 cases).

CONCLUSION: Endoscopic examination is an indispensable prerequisite for atraumatic surgery. During the training period there is a rapid improvement in the learning curve of Resident in order to get proper handling of scope and minimising the major difficulties. The overall experience of patients on rigid nasal endoscopy showed good tolerance.

KEY WORDS: Nasal endoscopy, Resident learning curve, Mucosal injury.

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I. INTRODUCTION:

Nasal endoscopy is currently a crucial tool for diagnosing sinonasal diseases. Rigid and flexible nasal endoscopes are used in the office for diagnostic nasal endoscopy¹. Although rigid endoscopes come in a variety of angles (0, 30, 45, and 70), the 0° or 30° are the most frequently used endoscopes for office endoscopy. Compared to the 0° endoscope, the 30° endoscope has the benefit of a wider panoramic vision.

The examination is performed on a patient in the recumbent position preferably after applying topical anaesthesia combined with a mild vasoconstrictor. Generally, 4% xylocaine with oxymetazoline is used as nasal packing. The topical anaesthetic with vasoconstrictor should be given a few minutes time to take effect. For areas upon which pressure is likely from the telescope or an instrument a topical anaesthetic should be directly applied with a cotton applicator.²

It comprises of three passes. First pass is general overview for orientation and then passage along the floor of the nose up to the choana. Examination of septal deviation, spur, mucous or purulent discharge in nasal cavity and colour of mucous membrane and the tubal orifice, Rosen muller's recess, as well as the nasopharynx with significant structures (e.g., the adenoids). When retracting the telescope, the orifice of the nasolacrimal duct (Hasner's valve) can be identified in the inferior nasal meatus, for which telescope is rotated beneath the turbinate. For the second step of examination, telescope is guided medial to the middle turbinate to the upper edge of the choana and from here upward into the sphenoidal recess. The superior turbinate and possibly a supreme turbinate with their corresponding nasal meatus are visible. The sphenoidal sinus ostium can be seen in certain cases, depending upon the pathology present.

The third examination step leads the telescope into the middle nasal meatus itself. The middle turbinate is carefully pushed medially with an elevator (Freer), without fracturing it. Depending on the anatomical proportions and prevailing pathology, one can identify the uncinate process, the hiatus semilunaris, the ethmoidal bulla, as well as the clefts behind and above the latter. There are numerous anatomical variants, extremely difficult anatomical situations may prevent here. The natural maxillary sinus ostium is normally "hidden" in the ethmoidal infundibulum, and is not visible even with the telescope. Often, one finds accessory ostia in the posterior, and more rarely in the anterior, fontanelles. Sometimes one can look through these into the maxillary sinus itself.^{2,3}

The endoscopic examination technique is an ideal opportunity to learn the correct handling of telescopes and instruments. This is an indispensable prerequisite for atraumatic surgery. The telescope should always be guided under direct vision, in order to avoid injuries, bleeding and pain of the very sensitive mucosa.²

Here in this study, documenting difficulties and major difficulties faced by Resident while doing nasal endoscopy at a tertiary care centre.

II. MATERIALS AND METHODS:

The descriptive study was conducted in Department of Otorhinolaryngology at NRI INSTITUTE OF MEDICAL SCIENCES, Sangivalasa, Visakhapatnam, over a period of 1 year from September 2020 to August 2021.

INCLUSION CRITERIA:

1. All Patients presented to the ENT OPD with Allergic rhinitis, Sinusitis between the age groups of 15 to 50 years
2. Patients who are giving consent to participate in the study

EXCLUSION CRITERIA:

1. Patients not giving consent for study
2. Patients with nasal polyposis, active epistaxis, suspecting cases of JNA
3. Patients who underwent previous nasal surgeries

DATA COLLECTION:

100 patients were selected based on inclusion and exclusion criteria from outpatient visit to ENT OPD. Verbal consent was obtained from each patient. Initial history noted. As per protocol each patient was informed that they could choose to have termination of endoscopy at any point of time due to inability to tolerate the pain. All 100 patients are divided into 2 groups. Group A included 50 patients for whom nasal endoscopy was done by Resident in first month of training period followed by consultant for each patient. Group B had 50 patients in whom endoscopic assessment by resident after 6 months of training period followed by consultant for each and every patient. 4mm⁰ rigid nasal endoscope was used. Application of topical anaesthesia with decongestant in the form of nasal packing to all the patients. After 10 mins, the cottonoids were removed and proceeded to the endoscopy. Patient discomfort, duration of procedure, ability to do all three passes and major difficulties like mucosal injury were noted after each procedure in both groups. Patient discomfort level was noted on standardized numerical pain scale (0 to 10, 0 is well tolerated).

III. RESULTS:

DEMOGRAPHIC DATA:

In this study, there are 6 male, 5 female patients in age group of 15 to 20 years. Between 20-30 years, 25 males and 23 females. In age group of 30 -40 years 20 males and 14 were female patients. In 40 -50 years, there are 9 male patients and 8 female patients. It indicates that majority of patients were in the age groups of 20 to 30 years followed by 30 to 40 years with 48% and 34 % respectively.

Table 1 Demographic data

Age	Male	Female
15 -20	06	05
20-30	25	23
30-40	20	14
40-50	09	08
Total	60	50

Out of 100 patients 60 were male patients (60%), 40 were female patients (40%).

Table 2 SEX distribution of patients

Gender	Male	Female
Total	60	40

Major difficulties faced by resident in his/her 1st month of training period with maximum complication being mucosal injury and difficult hand eye coordination of hand. Table 4, depicting same major difficulties in another 50 patients when endoscopy carried out by resident after 6 months of training period versus consultant.

Table 3major difficultiesin 1st month residency period vs consultant

Complication	In the 1 st Month of residency period	Consultant
Difficult hand eye coordination	30 (60%)	0
Mucosal injury to surrounding structures	40 (80%)	02
1 st pass	05 (10%)	50
2 nd pass	0	48
3 rd pass	01 (2%)	49
Average duration of procedure	15-20mins	5-10mins
Patient discomfort	40 (80%)	02

Table 4major difficultiesobserved after 6 months of training vs consultant

Complication	After 6months of residency training	Consultant
Difficult hand eye coordination	03 (6%)	0
Mucosal injury to surrounding structures	05 (10%)	0
1 st pass	45 (90%)	50 (100%)
2 nd pass	36 (72%)	45 (90%)
3 rd pass	40 (80%)	50 (100%)
Patient discomfort	10 (20%)	01 (2%)

IV. DISCUSSION:

Rigid nasal endoscopy was first employed over a century ago.¹ Most patients who expressed discomfort were observed to do so during examination of the spheno-ethmoid recess and the middle meatus.²

In the present study, there was a significant improvement in the learning curveof Resident over 6 months. Initially, the Resident faced so many difficulties in handling the endoscope and to negotiate through nose, resulting in mucosal injury which was highest (40 cases comprising of 80% of all major difficulties) followed by difficult hand eye coordinationin 30 cases comprising of 60%.In spite of good care, there were 2 cases (4%) with mucosal injury by consultant because of gross deviation of septum.Epistaxis caused by Mucosal injury was mild which was subsided by packing nose with vasoconstrictor. As there is stand by consultant for each procedure, the technique of holding the scope and negotiation was explained, so that the resident had a chance to improve their technique and skill in order to minimise the major difficulties. Since the procedure was done neitherby a single Resident noron the same patient, there is always subject variability as well as patient variability.

In the 1st month of training period, they could able to do 1st pass in 10% of cases and 2nd pass, residents couldn't able to do, 3rd pass in 2% of cases. Two cases were stopped because of development of vasovagal attack. Patient was stabilised immediately.

With constant training and correction of techniquesand minimising the mistakes the resident learning cure was improved. Difficult hand eye coordination which was initially 60 % later decreased to 6% (p value ,0.05). This indicates that resident trained well in basic things like handling the scope in order to minimise the mucosal injury, which was decreased to 10% (initially it was 80%) i.e., for 5 cases out of 50.After 6 months they could able to do 1st pass in about 90%, 45 cases out of 50,in close reach to the consultants (100%). But still there is difficulty to do 2nd pass and 3rd pass and they have succeeded in 42%and80%respectively (p < 0.05). While for consultants it was around 90 % for both.

Patient discomfort also drastically decreased from 80 % (40 cases) in 1st month of training to 20 % (10 cases) after 6 months. They succeeded in proper nasal packing with local anaesthetic before procedure and explained the procedure to patient indetail beforehand and gained patient confidence, especially in apprehensive patients. 4 patients in group B were uncomfortable during procedure due to bitter taste in throat due to local anaesthesia and 1 is because of continuous sneezes.Hand eye coordination of resident can be improved if the residents are trained in skill lab and attending hands on cadaveric programmes.Previous studies have evaluated

the role of topical anaesthesia in performing rigid nasal endoscopy in terms of visualization and patient comfort.^{7,8} However, to our knowledge, no study has reviewed patient comfort during rigid nasal endoscope.

Limitation of the present study:

Since the present study was conducted in a teaching hospital for 6 months duration and all endoscopies were not done by same resident, there is a slight variation from resident to resident depending upon their individual skill making it difficult to assess the accuracy of the learning curve.

V. Conclusion:

Diagnostic nasal endoscopy is an ideal opportunity to learn the correct handling of endoscopes and instruments. The telescope should always be guided under direct vision, in order to avoid injuries, bleeding and pain because of sensitive nasal mucosa.

To conclude, residents in teaching hospital over 6 months training period had their learning curve improved resulting in minimising the major difficulties, thereby offering good patient care.

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