

Flexible Fiberoptic Naso-pharyngo-laryngoscopy: Indications and Outcome

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ABSTRACT

Objective To find the indications and outcome of flexible fiberoptic naso-pharyngo-laryngoscopy in ENT practice.

Study design Case series.

Place & Duration of study Department of E.N.T. & Head Neck surgery, Liaquat University Hospital Hyderabad, from February 2013 to January 2015.

Methodology All patients with upper airway problems in whom flexible fiberoptic naso-pharyngo-laryngoscopy (FFONPL) performed were included.

Results A total of 437 patients were included in this study. There were 228 (52.2%) males and 209 (47.8%) females. The age range was from 8 year to 80 year with mean age of 45.87 year. It was performed for diagnostic purpose in 351(80.3%) patients having voice and swallowing problems. It was possible to identify structural etiology in all cases.

It was used in follow up of 73 patients for residual disease who had chemo radiotherapy for different tumors. Of these, in 54 (73.97%) patients the airway was patent to allow the removal of tracheostomy tubes. In 13 cases it was used to facilitate passage of nasotracheal tube in patients with ankylosis of temporomandibular joint. It was successful in 12 cases.

Conclusion FFONPL is an effective and safe tool for various ENT related pathologies.

Key words Flexible fiberoptic naso-pharyngo- laryngoscopy, Naso tracheal intubation, Laryngeal pathologies.

INTRODUCTION:

Endoscopy is the visualization of a hollow viscus by illuminating it through an instrument, the endoscope. Endoscopy can be utilized in almost any structure of the body to visualize its interior. Endoscopy can be performed by two types of instruments; rigid and flexible. First practical rigid endoscope was developed in 1806 by Phillip Bozzini in Mainz.¹ Similarly flexible fiberoptic endoscopy was introduced in 1957 by Basil Isaac Hirschowitz.² In the E.N.T. practice, FFONPL has revolutionized the diagnosis of the airway tract diseases without any significant invasive intervention.

With the passage of time, the horizon of its utility are broadened and is being used for many different indications.

The posterior rhinoscopy and laryngoscopy with mirrors have been integral components of a thorough E.N.T. examination. These examinations require unequivocal expertise on the part of the examiner, coupled with favorable anatomy and full cooperation on the part of the patient. Many a times, absence of any of these components results in failure of the procedure. For such a situation examination under general anesthesia used to be performed. With the advent of FFONPL, upper airway from nose up to the level of vocal cords can be visualized even in the awake patient under local anesthesia with additional advantages of simplicity and cost effectiveness. Additionally, the pooling of saliva in pyriform fossae may be seen, signifying the upper

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esophageal obstruction due to any etiology.

The aim of this study was to assess the usefulness of FFONPL to effectively diagnose any pathology of the airway from the level of the nose to the level of larynx and hypo pharynx as an outpatient procedure, to find out if had any value in laryngeal cancer patients for residual disease jeopardizing the patency of the airway and hence negate the decannulation of the tracheostomy tube following radio chemotherapy and to study its usefulness in nasotracheal intubation in patients with limited mouth opening due to temporomandibular joint dysfunction.

METHODOLOGY:

This was a descriptive study conducted at the Department of E.N.T. and Head & Neck Surgery Liaquat University Hospital Hyderabad, from February 2013 to January 2015. Olympus® flexible fiberoptic naso-pharyngo- laryngoscope along with camera, light source and color video monitor was used for various indications.

For the preparation of the procedure, both nasal cavities and throat were sprayed with 4% lignocaine solution five to ten minutes before the procedure. The distal portion of the scope was lubricated with 2% lignocaine jelly. The scope was passed usually through wide and patent nasal cavity. In cases of significant D.N.S. the concave side was chosen, sometimes with additional use of local vasoconstrictor. Whole airway was serially observed up to the larynx and hypo pharynx to visualize any pathology.

It was also used to assist the anesthetist in intubating patients with limited mouth opening. In such cases first the endotracheal tube was passed through the more patent nasal cavity up to just beyond the choana. Then flexible fiberoptic naso-pharyngo-laryngoscope was passed through the tube. After advancing and visualizing the vocal cords, endotracheal tube was glided to enter trachea through the vocal cords. All the data was entered into SPSS version 16 and descriptive statistics was used for analysis.

RESULTS:

A total of 437 patients were included in this study. It included 228 (52.2%) males and 209 (47.8%) females. The age range was from 8 year to 80 year with mean age of 45.87 year. The diagnostic endoscopy was done in 351(80.3%) patients. This included patients with voice problems (n=187 - 42.8%), swallowing problems (n=84 - 19.2%), nasal and nasopharyngeal problems (n=46 - 10.5%) and combined voice and swallowing issues (n=34 -

7.8%). Structural abnormalities found are documented in table I.

In follow up cases, out of 73 patients, 54 (73.97%) had their airways patent to allow the removal of tracheostomy tubes. In 19 (26.02%) patients residual disease precluded the removal of tracheostomy tubes. In 12 cases nasotracheal intubation was made possible through FFONPL while it was not possible in one case. All these cases had limited mouth openings due to temporomandibular joint ankylosis.

DISCUSSION:

Flexible fiberoptic endoscope has become an essential office tool for various diagnostic and therapeutic indications. As a diagnostic tool it has established itself as a simple, cost effective, minimally invasive technique with good diagnostic yield. Its role as a therapeutic tool is still being researched upon. With increasing experience and learning curve many procedures are now performed with this equipment.

In the current study, nasal and naso pharyngeal problems were most common indications for which endoscopy was performed to find out the etiology like the unidentified site of epistaxis and hidden causes of nasal obstruction. These problems accounted 10.5% cases in our study in comparison to Iqbal et al study who found such pathologies in 18.6% patients.³ As regards the commonest indication for naso laryngoscopy, voice problems remained on the top. This accounted for 50.6% of the patients. In 7.8% patients there was a combination of voice and swallowing problems, indicating the involvement of both airway and digestive tracts. Wilkins et al and Al Juboori noted hoarseness of voice to be the commonest indication in their studies representing 51.3% and 51.5% patients respectively.^{4,5} Similarly, Iqbal et al also noted the structural abnormalities of vocal cord to be the common finding in 50.5% patients in their study.³

Different pathologies have been found to be the commonest structural abnormalities in different studies. In our study, laryngeal malignancy was the commonest finding which was noted in 45.1% patients. Batra et al found laryngeal malignancy in 18% of their cases while studying functional voice disorders.⁶ Similarly, vocal cords nodule, laryngo pharyngeal reflux and vocal abuse were the commonest findings in the studies by Iqbal et al, Wilkins et al and Al Juboori which accounted to be 19.2%, 42.5%, and 32.4% respectively.³⁻⁵

Table I: Structural Pathologies Found At Endoscopy

Findings	Frequency (n)	Percentage (%)
Identification of site of epistaxis	18	4.1
Hypertrophied adenoids	13	3.0
Nasal polyps	11	2.5
Naso pharyngeal tumors	04	0.9
Acute laryngeal edema	04	0.9
Chronic hypertrophic laryngitis	11	2.5
Functional aphonia	07	1.6
Intubation granuloma	03	0.7
Vocal nodules	29	6.6
Vocal cord polyps	17	3.9
Vocal cord paralysis	22	5
Laryngeal cancer	198	45.3
Tuberculous laryngitis	05	1.1
Vallecular cyst	02	0.5
Globus sensation	07	1.6
Total	351	80.3

Blind nasal intubation has high failure rates and increased chances of trauma to the laryngeal structures.⁷ Unanticipated difficult intubation can be dangerous. There are many clinical tests for predicting difficult intubation.⁸ Conventionally, evaluation of the difficult airway includes the LEMON scoring as well as newer assessment technique such as the height-to-thyrosternal distance ratio and the upper lip bite test.⁹ The LEMON airway assessment method comprises a five point scoring system devised by US National Emergency Airway Management Course.¹⁰ In this study, we were able to use FFONPL in 12 (3%) patients to intubate them transnasally in patients who had limited mouth opening. To operate them under general anesthesia, tracheostomy was the only remaining option, thus this procedure avoided morbidity and assisted the anesthetist in providing anesthesia. In one case failure was due to distorted anatomy. This compared well to Ovassapian et al and Ajay et al failure rates of 1.21% and 3.85% respectively.^{11,12}

Repeated FFONPL during radio or chemo therapy allows precise monitoring of the resolution of the supraglottic edema and to decide the time to extubate the tracheostomy tube.¹³ In this study 73 patients were followed with this approach. Out of them, 73.97% had their airways patent to allow the removal of their tracheostomy tubes. Rest of 26.03%

patients had enough residual disease to preclude removal of their tracheostomy tubes. The facility of recording the procedure is another provision present in the equipment.¹⁴ With this the procedure can be shown to under and postgraduate students. This helps in teaching and learning skills. The electronic record is also helpful in follow up of the patients.

CONCLUSIONS:

FFONPL can be used for various indications. It is an effective and safe tool with direct visualization of pathologies that helps in making early diagnosis. It has a definite role in follow up cases as well as for therapeutic purposes.

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