

Accuracy of Fiberoptic Nasopharyngoscopy in the Diagnosis of Pharyngolaryngeal Diseases

Ragheed Turkey Miteab

ABSTRACT:

BACKGROUND:

In recent years, flexible laryngoscope is a major contribution to endoscopic technique and is a standard method in diagnosis of many laryngeal and pharyngeal diseases.

OBJECTIVE:

To show the accuracy of flexible fiberoptic endoscope in the diagnosis of laryngeal and pharyngeal disorders in comparison with direct laryngoscopy

PATIENT AND METHOD:

A prospective study conducted at otolaryngology department, Surgical Specialties Hospital, Medical City, Baghdad between Feb.2008 and Feb. 2009 with fifty patients were included in the study. All patients with laryngeal or pharyngeal symptoms were examined by flexible fiberoptic endoscope and direct laryngoscope under general anesthesia.

RESULTS:

Male to female ratio was 1.8:1; dysphonia was the main chief complains in 66% followed by dysphagia in 16%. The commonest finding of flexible fiberoptic endoscope was laryngeal mass in 58% patients followed by impaired or immobile vocal cords in 18%. The accuracy of flexible fiberoptic endoscope in diagnosis of pharyngolaryngeal disease was 76% while of the direct laryngoscope accuracy was 92%.

CONCLUSION:

Flexible fiberoptic endoscope is vital instrument in outpatient clinic especially when indirect laryngoscope is unsatisfactory, but don't supplant direct laryngoscopy specially when biopsy is indicated.

KEY WORDS: flexible fiberoptic endoscope, direct laryngoscope.

INTRODUCTION:

The flexible fiberoptic endoscope was first introduced by Sawashima & Hirose in 1968. ⁽¹⁾In the recent years, the flexible fiberoptic endoscope becomes to have a major contribution in the ENT clinics as it gives excellent images, easily handled^(2, 3) and when the instrument linked to a strong light source or a stroboscope makes possible to examine all the regions of the dynamic larynx. ⁽⁴⁾

Advantages of the fiberoptic endoscope are safety and easy handling, it can be used in all age groups, bed side and it has a great value in the diagnosis of functional voice disorder. Photography is easily accomplished through video camera as well as television screen. ⁽⁵⁾Its flexibility allows it to bend around a septal spur, it can observe natural act of swallowing, speaking. It permits visualization of larynx and

Medical City-Ghazi Hariri Surgical Specialize Hospital .

pharynx in those with severe gag reflex, unconscious and those with anatomical abnormality. ⁽⁴⁾ While the disadvantages of the fiberoptic endoscope are being small, less clear picture, do not show minor mucosal abnormalities or early vocal folds lesion, misinterpretation can be happened. Need more powerful light source since the distance between the source and the object is long. ^(6,7,8,9)

Direct laryngoscopy has advantages over flexible fiberoptic endoscope in that it can be used to diagnose laryngeal disease when flexible endoscope failed and can provide tissue for histopathology examination, also direct laryngoscope used for therapeutic purposes as for removal of foreign body, treatment of various laryngeal lesions and for laryngeal intubation. ^(9, 10, 11)

Flexible pharyngolaryngoscopy has been established as a valuable tool and is feasible at a very early stage and in critically ill patients; it is

FIBEROPTIC NASOPHARYNGOSCOPY

not invasive and frequently repeatable.⁽¹²⁾ Periodic flexible pharyngolaryngoscopy can provide early detection of squamous cell carcinoma of the head and neck particularly in male patients, heavy smokers or alcohol drinkers.⁽¹³⁾

AIM OF STUDY:

To show the accuracy of flexible fiberoptic endoscope in the diagnosis of laryngeal and pharyngeal disorders in comparison with direct laryngoscopy.

PATIENTS AND METHODS:

This is a prospective study conducted at otolaryngology department, Surgical Specialties Hospital, Medical City, Baghdad during one year period (Feb.2008 to Feb. 2009) in which fifty patients were included in the study.

Inclusion criteria: All patients presented with predominant laryngeal or pharyngeal symptoms of any duration and who were candidates for direct laryngoscope under general anesthesia.

Exclusion criteria: children, i.e. below 14 years old.

All patients were subjected to proper history taking elaborating their symptoms, onset, duration, followed by general examination, full ear, nose and throat examination then all patients were examined by a Pentax type flexible fiberoptic endoscope FNL-10RP3 which is a

diagnostic type and has a length of 30cm, angulations up & down, right and left 130/130. Angle of view 75, distal tip diameter 3.4 mm

The fiberoptic examination started by explanation to the patient the nature of the procedure, the nares is anesthetized with lidocain (xylocain). Most often a 2% or 4% solution is used. About 5 minutes is required to achieve adequate topical anesthesia^(14, 15) the position of patient was in sitting position. The tip of the scope is inserted into nares along the nasal floor to the nasopharynx, once the tip is in the nasopharynx it should be turned inferiorly and advanced past the soft palate, uvula, base of tongue, just past the epiglottis, the larynx comes into view.

The lateral & posterior hypopharyngeal walls, vallecula, epiglottis, aryepiglottic fold, pyriform sinuses, false & true vocal folds, sub-glottis should be observed during respiration & vocalization.

Comparison was done between the findings of the fiberoptic endoscope and the findings of the direct laryngoscope which was done for all fifty patients under general anesthesia.

RESULTS:

The commonest age group affected by laryngeal disease was 61-70 years old. Thirty two patients (64%) were male and eighteen patients (36%) were female with 1.8:1 the male to female ratio.

Table 1: The distribution of patients according to age group & gender.

Age/year	No.	%
15- 20	2	4
21-30	3	6
31-40	4	8
41-50	6	12
51-60	12	24
61-70	19	38
71 and above	4	8
Total	50	100

The voice changes was the commonest chief complains in our patients (66%) followed by difficulty of swallowing in (16%).

Table 2: Frequency of chief complains.

Clinical symptoms	No.	%
Dysphonia	33	66
Dysphagia	8	16
Stridor	4	8
Neck mass	2	4
Sore throat	1	2
Foreign Body sensation in the throat	1	2
Cough	1	2
Total	50	100

FIBEROPTIC NASOPHARYNGOSCOPY

examination but the most common clinical finding was laryngeal mass in 29 patients (58%) followed by impaired or immobile vocal cords in 9 patients(18%).

Fiberoptic examination of the upper aero digestive tract was successfully done in all patients (100%) and , each patient may have one or more clinical findings on

Table 3: Flexible Fiberoptic Endoscopy findings.

Clinical signs	No.	%
Laryngeal Mass	29	58
Impaired or immobile vocal cord	9	18
Pooling of saliva	8	16
Hypo pharyngeal mass	4	8
Vocal cord polyp	4	8
Vocal cord nodule	2	4
Laryngeal Edema &or congestion	3	6
Reike's odema	2	4
Vocal cord thickening	1	2
Leukoplakia	1	2

The most common provisional diagnosis of the examination under general anaesthesia was studied group after Direct Laryngoscopic laryngeal carcinoma in 32 patients (64%)

Table 4:Final diagnosis after direct laryngoscopy

Final diagnosis	No.	%
Suspected Carcinoma of larynx	32	64
Suspected Hypopharyngeal carcinoma	7	14
Vocal cord polyp	6	12
Vocal cord nodule	2	4
Reink's Edema	2	4
Laryngeal Granuloma	1	2
Total	50	100

Table 5: Comparison of the accuracy of flexible fiberoptic endoscope versus direct laryngoscopy in relation to anatomical view:

Final diagnosis	Flexible Endoscope		Direct Laryngoscope	
	No.	%	No.	%
Base of tongue	48	96	50	100
Vallecula	48	96	50	100
Epiglottis(lingual)	45	90	50	100
Epiglottis(laryngeal)	38	76	43	86
Aryepiglottic folds	39	78	40	80
Anterior commissure	39	78	41	82
False vocal cords	42	84	42	84
True vocal cords	42	84	43	86
Posterior commissure	38	76	46	92
Arytenoids	44	88	46	92
Pyriform fossae	35	70	49	98
Posterior commissure	16	32	50	100
Subglottic	15	30	40	80%

DISCUSSION:

In our study, the most common complaint was voice changes in (66%) of patients, followed by difficulty of swallowing in (16%).Strong et al. (1993) reported the result of a review of 200 cases of laryngoscopy done over a three years period. 50% of cases were done for patients with

hoarseness⁽¹⁶⁾. AL-Azzawi M. J. et al (2002) stated that hoarseness was the most frequent presenting symptoms in their study (74.1%) followed by stridor (33%)⁽¹⁷⁾.

In the current study all patients underwent the Flexible Fiberoptic Endoscope under local

anaesthesia with laryngeal mass being the commonest clinical findings in 29 patients (58%) followed by impaired or immobile vocal cords in 9 patients (18%), these findings were similar to that of AL-Azzawi M. J. et al (2002) when laryngeal mass was observed in 42.3% of patient with laryngopharyngeal symptoms examined by the Flexible Fiberoptic Endoscope followed by immobile vocal cords in 20%.⁽¹⁷⁾

The final diagnosis achieved in all our patients in the study after direct laryngoscopic examination under general anesthesia, the laryngeal cancer was the most frequent diagnosis (64%) followed by hypopharyngeal tumour (14%). AL-Mansouri et al.⁽¹⁸⁾ (1993) & AL-Agili S.M.⁽¹⁹⁾ (1996) reported that laryngeal cancer was the most frequent final diagnosis among patients underwent direct laryngoscopy with frequencies of 49% & 46% respectively.

The malignant disease in our study account for 39 patients (78%) with the remaining 11 patients (22%) with benign conditions. The most common malignant disease was laryngeal carcinoma (64%) while the most common benign lesion was vocal cord polyp (12%), followed by vocal cords nodule (4%) and reink's odema (4%). In AL-Azzawi M. J. et al study (2002)⁽¹⁷⁾ 40% of patients had malignant lesions with the laryngeal carcinoma was the main tumor in (40%) while in 60% of patients they were with benign lesions among them the vocal cord polyps are the commonest (21%)

In our study the accuracy was determined depending on visualization of anatomical laryngeal & pharyngeal landmarks, since in evaluation of patients with laryngeal & pharyngeal tumors, extension of tumor is very important to verify exactly during endoscopy, it will affect patient plan for management & follow up. We depend also, on how this technique was applicable or not & in certain pathologies, we found anatomical landmarks obscured from vision so the accuracy decreased so that flexible fiberoptic endoscope accuracy in diagnosis of pharyngolaryngeal disease was 76% when compared to direct laryngoscope accuracy which was 92%. AL-Azzawi M. J. et al (2002)⁽¹⁷⁾ found that the diagnostic accuracy of fiberscope was 73.8% & direct laryngoscope was 85%. Shehab et al (1997)⁽²⁰⁾ report that diagnostic accuracy of indirect laryngoscopy compared with direct laryngoscopy was (61%). Zbaren P. et al.⁽¹⁹⁾ (1997) stated that the assessment of tumor site is more accurate using endoscopic evaluation than CT & MRI.

CONCLUSION:

Dysphonia is the commonest indication for Flexible fiberoptic endoscope.

Flexible fiberoptic endoscope is vital instrument in the outpatient clinic and its accuracy is high but it does not replace the need for direct endoscopic examination under general anaesthesia especially for biopsy purposes.

REFERENCES:

1. Robert Anunez; dynamic voice evaluations using flexible endoscope. WWW.emedicine.com 2003.
2. Silberman, Harry D; Wilf, Harold &tucker, John A; Flexible Fiberoptic nasopharyngoscopy Ann. Otol. 1976; 85:640-41.
3. Daris, Ns; A new fiberoptic laryngoscopy for nasal intubations. J. Anes. Anal. 1973; 52:807.
4. Al-Samarrae, Furat T. &Mohammed Shakir (causes of hoarseness with emphasis on the role of flexible laryngoscopy in diagnosis) a thesis submitted to the scientific council of otolaryngology 1996.
5. Al-Azzawi, Mazin J & Hazim mohammed (The role of fiberoptic nasopharyngoscope in the diagnosis of nasopharyngeal carcinoma) A thesis submitted to the scientific council of otolaryngology 2000.
6. William G.T., Farquharson I.M. &Anthony J.; Fiberoptic laryngoscopy in the assessment of laryngeal disorders Laryngology & otology 1975; 89: 229-316.
7. Jason T. Hayes, Robert Houston; Flexible nasolaryngoscopy. Postgraduate medicine 1999;106.
8. Selkin, S.G.; The otolaryngologist & flexible fiberoptic laryngoscopy: photographic consideration. Laryngoscope 1983;12:423-27.
9. Welch A.R.; The practical &economic value of flexible system laryngoscopy. The journal of laryngology & otology 1982; 96:1125-29.
10. Yanagisawa E. & Carlson R.D.; video laryngoscopy &laryngeal photography in: cumming, charles W. et al, otolaryngology head & neck surgery third edition missouri, mosby 1998;3 :1868-76.
11. Silberman HD; Hampel A; Kominsky AH; New technique for the sterile introduction of flexible nasopharyngolaryngoscopes. Ann. Otol. Rhinol laryngol 1993;102: 687-89.

12. Schroter-Morasch H. etal; Values and limitations of pharyngolaryngoscopy (Transnasal, Transoral) in patients with dysphagia. Journal Folia Phoniatica et Logopaedica ISSN: 10217762 Year: 1999;51:172-82.
13. Masao Hosokawa etal; Periodic pharyngolaryngoscopy detects early head and neck cancer and improves survival in esophageal cancer. The Annals Of Thoracic Surgery November 2003; 76,: 1699-1705.
14. Paul E.Johnson MD, Peter C., Belafsky.; We recommend used of local anesthesia before fiberoptic .Otolaryngology head &neck surgery 2003;128:452-54.
15. Frosh A.C., Jayaraj S., Porter G et al.; is local anesthesia actually benefited in flexible fiberoptic endoscopy? Clin. Otolaryngol. 1998;23: 259-62 .MIDLINE.
16. Strong, M.S; microscopical laryngoscopy. A review & appraisal; laryngoscope 1993;80:1540-45.
17. Al-Azzawi, Mazin J. & Ali sagban (comparative study of visual assessment of laryngeal mirror, fiberscope, rigid telescope & direct laryngoscope) A thesis submitted to the scientific council of otolaryngology 2002.
18. Al-Mansouri, Adil M. & Ammar Hadi; incidence of malignant laryngeal tumor & other pathologies diagnosed by direct laryngoscopy & biopsy. a thesis submitted to the scientific council of otolaryngology 1993.
19. Al-Agilli, S.M. & Mazin Fatoohi (direct laryngoscopy & indirect laryngoscopy, comparative & analytic study) A thesis submitted to the scientific council of Otolaryngology 1996.
20. Shehab, Nafi M. & Ali A. (direct laryngoscopy a prospective study) A thesis submitted to the scientific council of Otolaryngology 1997.
21. Zbaren P, Beckr, M & Lang, H; pretherapeutic staging of hypopharyngeal carcinoma. Clinical finding, computed tomography & magnetic resonance imaging compared with histopathological evaluation; Arch. Otolaryngol. Head & neck surgery 1997;123 9990: 908-13 MIDLINE.