

# Vocal Nodule and Polyp by Microlaryngoscopy and Cold Instruments

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## Abstract

**Aim and Objective:** To evaluate the usefulness of voice handicap index and seventy degree endoscopy for assessment of speech.

**Materials and Method:** The study was conducted in the department of Otorhinolaryngology, tertiary care hospital, between 2018 to 2019.

**Results:** Total of 42 cases underwent micro laryngeal surgery without any complications. voice Handicap index (VHI) and 70 degree endoscopy assessed after 10 days, 1<sup>st</sup> month and 3<sup>rd</sup> month interval. All cases improved voice on 10th day and symptoms were gradually decreased. Before surgery mean was 82.43 changed to 17.31 on 10th day to 1.45 on 3<sup>rd</sup> month follow up. p value <0.005

**Conclusion:** Early diagnosis is important to rule out malignant changes in cases with hoarseness of voice and early treatment with microlaryngoscopy is very effective shows significant improvement on voice handicap index and endoscopy and with patients satisfaction.

**Keywords:** Hoarseness, speech, endoscopy, voice

## Introduction

Your voice is one of the most important components of your identity. Each human being has a voice that is distinct and different from everyone else's. We can identify someone from their voice fairly easily. Change in voice (hoarseness) affects a person's confidence level and behavior. There are many different etiological factors for hoarseness like voice abuse, smoking, laryngopharyngeal reflux, recurrent dry cough, foreign body sensation, vocal fatigue. Benign laryngeal lesions like vocal nodules and polyps are seen commonly in ENT OPD caused by voice abuse. With conventional indirect laryngoscopy and newer techniques like seventy

degree rigid endoscopy or flexible fiber optic scope and stroboscopy helps for proper diagnosis. Medical Management of these lesions includes antireflux therapy, speech therapy. There are different options available for surgical treatment: CO<sub>2</sub> laser, cold instruments, powered instruments. In our study, the surgical method used is microlaryngoscopy using cold instruments. Voice handicap index is currently the gold standard for subjective assessment of voice which scores between 0 to 120 according to the severity of voice.

## Material and Method

A prospective study was carried out at the Otorhinolaryngology department, in a tertiary care teaching hospital during July 2018 to June 2019. Total of forty-two clinically diagnosed cases of vocal nodule and polyp found by seventy-degree endoscopy were evaluated having ages between 20 to 60 years, irrespective of gender and willing to participate in the study were included. All cases having previous history of laryngeal surgery, malignant lesions, immunocompromised and

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diabetes mellitus were excluded from the study. After pre anesthetic checkup cases were posted for micro laryngeal surgery under general anesthesia. Micro laryngoscopy were performed to expose lesions on vocal cord using operating ENT microscope with 400 mm objective lens, and the lesions were examined clearly. The cold laryngoscopic microsurgical instruments included microsurgical laryngeal forceps, scissors, and other instruments used for surgery. There are different

methods like micro flap surgeries and direct cutting method. After sub mucosal injection of 2% lignocaine with Adrenaline in the vocal cord, lesions removed after pulling it in midline. Haemostasis achieved with 4% lignocaine with adrenaline solution. Postoperative care we used injection dexamethasone 8mg for 3 days with other antibiotic and analgesic cover and tincture benzoin inhalation and complete voice rest for 5 days. We assessed voice and vocal cord on 10th day, 1 month and 3 month interval.

**Table1:Voice handicap index (VHI) assessment**

For the subjective assessment, the tools used were voice Handicap index (VHI).(Refer table 1)

Score Range	Severity	Common Association
0-30	Mild	Minimal amount of handicap
31-60	Moderate	Often seen in patients with vocal nodules, polyps, or cysts
60-120	Severe	Often seen in patients with vocal fold paralysis or severe vocal fold scarring.

**Statistical Method**

Using statistical analysis the frequency distribution of collected data was obtained with the help of IBM SPSS (Statistical Packaging for Social Sciences) IBM, INDIA, version 20.0 software.

**Observation and Results**

All patients underwent micro laryngeal cold instrument surgery without any complications assessed with voice Handicap index (VHI) and 70 degree scopy after 10days, 1month and 3 month interval.

**Table2: Improvement of voice after vocal cord lesion treatment.**

Study Parameters	Before Surgery	On 10th Day	After 1 Month	After 3 Month
Mean	82.43	17.31	9.14	1.45
Standard Deviation	10.25	6.76	3.02	1.62
ANOVA F-value	1425			
p-value	<0.0001			

All cases improved voice on 10th day and symptoms were gradually decreased. Before surgery mean was 82.43 changed to 17.31 on 10 day to 1.45 on 3<sup>rd</sup>month.

p value<.0001 on all three post surgery readings which is significant.(Refer table 2)

**Table 3: Seventy degree rigid endoscopy.**

Vocal cord lesions	Phonatory gap	Irregular edges
B/L nodule	4	1
U/L Nodule	1	1
B/L Polyp	2	0
U/L Polyp	1	1

On 70 degree endoscopy vocal cord shows irregular edges with formation of pseudo membrane in 3 cases on 10<sup>th</sup> day then, 1 and 3 months follow up, the laryngoscopic examination shows a good healing, glottic closure and normal vocal cord movement. On 70 degree scope 5 cases of bilateral vocal nodule and 3 cases with vocal polyp shows phonatory gap on 10<sup>th</sup> day which disappears completely on 3<sup>rd</sup> month follow up except 1 case. Postoperatively, 1 case had persistent of the symptoms and 1 vocal polyp had recurrence during the 3<sup>rd</sup> month of follow-up period. (Refer table 3)

### Discussion

“Alexa, who am I?”..but no answer this is Amazon Echo’s voice-controlled virtual assistant, device cannot answer that question – yet. Artificial intelligence technology with other applications of speech technology, computer algorithms can recognise and identify individuals from voice recordings. Your *voice* is one of the most *important* components of your identity, each human being has a voice that is distinct and different from everyone else’s. we can identify someone from their voice fairly easily. Voice is produced by air column coming from lungs passing through larynx and vibrate vocal cords. Then it is modified by articulators (i.e. tongue, lips, teeth, jaw, cheeks) to make speech sounds. Each person has a unique voice which distinguishes them from another person. Voice has a number of features like pitch, volume, quality and resonance, which shows persons emotions.

Voice handicap index is currently gold standard for subjective assessment of voice assessment done on 3 parameters functional physical and emotional. Vocal nodules (e.g. singer’s nodes), also caused by

vocal misuse. Typically these nodules are bilaterally symmetrical in the middle third of the vocal fold and located superficially on the vibrating free edge of the cord it is often difficult to diagnose different lesions of the lamina propria histologically (eg. nodules, polyps and Reinke’s edema)<sup>[1]</sup>. Therefore, the correct diagnosis cannot be made purely on histological examination, but requires a complete assessment including history, voice assessment and laryngoscopic<sup>[2]</sup>. The available therapeutic measures for nodules are conservative voice hygiene and voice therapy. The patient’s motivation, vocal requirements in social and professional life together with the correct diagnosis allows an appropriate conservative treatment plan to be formulated. The specifically tailored program, including targeted voice therapy, achieves better results than a generic program<sup>[3]</sup>. Surgical management methods like CO<sub>2</sub> laser treatment and conventional microsurgery. Chances of CO<sub>2</sub> laser thermal damage deepens the surgical trauma and delays healing. Micro surgery treatment as benefit of precise visualization of lesion complete excision with less intervention minimal invasive with early functional improvement and less hospital stay<sup>[4]</sup>. In our study patients voice gradually improved on 10<sup>th</sup> day, 1 month and 3<sup>rd</sup> month assessment. These results are consistent with the results of clinical studies maximum recovery seen on 1 month bilateral vocal nodule voice Handicap index (VHI) changed to less than 10 on 1 month and less than 2 on 1 month.

In study comparison of CO<sub>2</sub> laser and conventional laryngomicrosurgery treatments of polyp and leukoplakia of the vocal fold by Ya Zhang et al shows that CO<sub>2</sub> laser laryngomicrosurgery will not cause high impact on the vocal cords for benign vocal cord lesions. For precancerous lesions, it can improve significantly the morphology of vocal cords and the quality of pronunciation. CO<sub>2</sub> laser laryngomicrosurgery is more effective than conventional surgery (cold instruments).<sup>[4]</sup>

### Conclusion

Early diagnosis is important to rule out malignant changes in patients with hoarseness of voice and early treatment with Microlaryngoscopy is very effective shows significant improvement on voice handicap index and rigid laryngeal endoscopy and with patients satisfaction.

**Ethical approval:** All procedures performed on human participants were in agreement with ethical standards of the Institutional and/or National Ethics Committee.

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**Conflict of Interest:** None.

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