

## ORIGINAL RESEARCH

# Autoimmune Diseases with Laryngeal Disorders and their Management: A Hospital based Study

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## ABSTRACT

**Intoduction:** Autoimmune diseases can be one of the important cause for the vocal cord dysfunction. Many of those require surgical treatment. Vocal cord lesions with autoimmune diseases generally are indication for laryngeal micro-surgery. Vocal cord dysfunction presents as a unique challenge to the anesthetists. Aim of the study was to conduct a study of laryngeal lesions along with autoimmune diseases and their management by microlaryngoscopy along with the anaesthetic challenges met.

**Material and method:** The main objective being to highlight the management of autoimmune diseases along with laryngeal pathologies. A total of 147 patients were studied and out of which 7 cases were of autoimmune diseases and 6 were operated under general anaesthesia during the study period (Jul 14 – Sep15 ). Examination of all the patients was done to get results.

**Results:** Vocal cord polyps, nodules, Reinke's oedema, keratosis, papilloma, fibroangioma, endocrine small cell carcinoma of vocal cord etc were diagnosed. Most of these patients were female. Microlaryngoscopic excision was both diagnostic and therapeutic and proved to be an important guide to the management of laryngeal pathologies. Autoimmune diseases proved a challenging task for us to be dealt with.

**Conclusion:** The long term voice results following indirect microlaryngoscopic surgery demonstrated a statistically significant improvement for the maximum dynamic intensity range at habitual speaking pitch. Autoimmune diseases showed that they can also lead to dysphonia by affecting the laryngeal structures. All the anaesthetic complications were dealt accordingly and no mortality was seen.

**Keywords:** Autoimmune Diseases, Laryngeal Pathologies and Management

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## INTRODUCTION

Microlaryngoscopy has changed the whole perspective of laryngeal surgery. Credit for this major contribution to laryngology is given to Manuel Garcia (1805-1906), a Spanish vocal pedagogist. Direct examination of the larynx with the rigid laryngoscope, first performed by Kirsten in 1895, and standardized by Killian, the Santa Claus, early in the last century. Chance favours the mind prepared. Professor Seiffert accidentally found the the gallows of the Killian's apparatus supported the laryngoscope even after collapsing onto the chest. This discovery lead to the birth of suspension microlaryngoscopy.<sup>1</sup> Autoimmune disease affects mainly the adult population. It is characterized by the formation of both articular and extra-articular lesions with predilection for small joints. There are ubiquitous reports on the head and neck manifestations of RA with emphasis on the larynx. The laryngeal presenting features of this systemic disease may mimic a plethora of medical conditions, inflammatory and neoplastic. The main phonatory and respiratory symptoms are often subtle and misleading.<sup>2-4</sup> An early diagnosis of laryngeal involvement may prevent drastic complications. However, different anaesthetic complications should be borne in mind. Profound muscle relaxation is needed along with proper oxygenation and ventilation. CVS instability can be encountered and postoperative spasm or edema can occur. Its unique treatment modalities must be

implemented to avoid increased morbidity and possible mortality. Manual jet ventilation is generally used in microlaryngoscopic surgery however in our study we used nasotracheal intubation. Jet ventilation technique carries a risk of barotrauma, gastric distention, blowing of blood and debris into the distal trachea and inability to monitor end tidal CO<sub>2</sub>.

**MATERIALS AND METHODS**

The main objective being to highlight the management of autoimmune diseases along with laryngeal pathologies. A total of 147 patients were studied and out of which 7 cases were of autoimmune diseases and 6 were operated under general anaesthesia during the study period (Jul 14 – Sep15 ). History recording and full clinical examination of the patients, examination of blood, sputum for AFB, plain X-rays, CT scan, MRI, ECG were done. Antinuclear antibody test, ASO titre (quantitative), CRP, RH Factor, serum T<sub>3</sub>, TSH etc were done. The largest possible laryngoscope was used. The working distance was 20 cm. Most common complaint was dysphonia (Table 1). Laryngoscopic findings were almost equal for autoimmune diseases (Table 2). 6 patients with autoimmune diseases went for microlaryngoscopic surgery under general anaesthesia (Table 3).

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**Pre-operative care**

All the patients were treated with proper autoimmune medications. Hypothyroidism was treated with thyroxine substitute. Lupus was treated with tapering doses of steroids. Neuroendocrine cancer was planned properly for biopsy and further chemoradiation. The effect of steroid treatment is less pronounced in cases of laryngeal nodules, probably due to the late diagnosis and the subtle clinical course of these lesions. The surgical treatment of these lesions consists in excision under general anaesthesia using microlaryngeal suspension with preservation of the overlying mucosa.

**Intraoperative and Anaesthetic Care**

The patients showed the following findings

	Blood Pressure	Pulse rate	SPO <sub>2</sub>
Baseline	118/72 mm Hg	98	100%
After Induction	110/72 mm Hg	88	100%
After Intubation	118/74 mm Hg	92	100%
Intra-operative	98/60 mm Hg	72	100%

Premedication was given with Ramosetron---0.75 mg, Glycopyrolate—0.2 gm, Midazolam—2 mg, Fentanyl—100 µgm. Induction was done with Propofol—100mg and muscle relaxant for maintenance Succinylcholine- 90 mg.

Patient was intubated with 7mm I.D. ET-Tube. The advantages was that its small size did not impede the surgeon’s view and its cuff prevented the aspiration of blood or debris. It also allowed the introduction of inhalational agents. It also allows the monitoring of ET CO<sub>2</sub>. All cases were given a loading dose of Atracurium of 30 mg after intubation. Anaesthesia was maintained with oxygen, nitrous oxide, isoflurane and atracurium. Reverse and extubate with Neostigmine – 2.5 mg and

Presenting symptoms	No of patients	%
Disorder of voice	147	100
Respiratory obstruction	121	82.31
Cough and expectoration	11	7.48
Repeated clearing of throat	86	58.50
Pain in throat	87	59.18
Dysphagia	69	46.93
Mass in the neck	79	53.74

**Table-1:** Chief complaints of patient

Disease	70° endoscopy	Anaesthetic complication
Vocal nodule with colloid goiter of thyroid	1	Surgical space reduction, possibility of tissue loss by friction injury
Vocal polyp with hypothyroidism	1	Surgical space reduction, possibility of laceration of the vocal cord
Vocal polyp with hypothyroidism with oesophageal cancer	1	Surgical space reduction, friction injury
Vocal nodule with hypothyroidism	1	Surgical space reduction, possibility of tissue loss by friction injury
Lupus with vocal cord nodule	1	Surgical space reduction
Neuroendocrine cancer of vocal cord	2	Surgical space reduction

**Table-2:** Laryngoscopic findings with autoimmune disease

Disease	Patients undergoing MLS
Vocal nodule with hypothyroidism	1
Lupus with vocal cord nodule	1
Vocal polyp with hypothyroidism with oesophageal cancer	1
Vocal nodule with colloid goiter of thyroid	1
Vocal polyp with hypothyroidism	1
Neuroendocrine cancer of vocal cord	1
<b>Table-3:</b> Table on surgical procedure	

Glycopyrolate- 0.5 mg when patient was awake and responding to verbal commands.

### Post-Operative Care

The voice of the patient was evaluated for further problems. Hydrocortisone- 100 mg was given once daily.

### Outcome

All the patient received utmost care and needful treatment. The patient received surgical treatment. No recurrence was found.

## DISCUSSION

In 1953, the Zeiss operating microscope was introduced, Kleinsasser (1961) revolutionized the diagnosis and treatment of a laryngeal lesion using microlaryngoscopy. He adopted the binocular Zeiss microscope to direct laryngoscope, using a 400mm objective lens.<sup>2</sup> Andrew D. Whymark et al (2006) in a study observed that Laser Assisted Microlaryngoscopy for epiglottopexy in cases of laryngomalacia surgery had comparable success to other surgical techniques without having the risks of permanent scarring to the supraglottis.<sup>3</sup>

Filho et al (2013) in a study observed that Microlaryngoscopic surgery helped to differentiate the characteristic changes in both angiomatous and gelatinous vocal fold polyps. They found that angiomatous polyps were common in men, medium sized, positioned in middle third of vocal fold and more frequently associated with minimal structural alterations where as gelatinous polyps were common in women, small sized, positioned in posterior third of vocal fold and not associated with minimal structural alterations.<sup>4</sup> Thus the role of hormones and therapeutic treatment with microlaryngoscopy can be done.

Early diagnosis and treatment of the laryngeal manifestation of RA are essential in preventing nonreversible

sequel of this disease. The treatment may be medical, phoniatric, or surgical. The medical treatment consists of administering steroids or nonsteroid anti-inflammatory drugs to avoid the formation of nodules and fibrosis. The effect of steroid treatment is less pronounced in cases of laryngeal nodules, probably due to the late diagnosis and the subtle clinical course of these lesions. The steroids may be given systemically or locally into the joint as reported by Habib.<sup>5</sup> The local injection can be administered alone or in parallel with parental treatment. A second line of treatment is the administration of methotrexate especially for the treatment of advanced cases of active arthritis. It is important to note the precipitating effect of this drug in the formation of nodulosis as a potential complication. Kerstens et al. have reported accelerated nodulosis in 5–10% of patients with RA treated with low-dose methotrexate therapy.<sup>6</sup> With respect to the Bamboo nodes, these lesions may be treated either surgically or conservatively. Hilgert et al. favor conservative approach to these lesions and have reported good outcome with logopedic therapy.<sup>7</sup> The recommendation is to start voice therapy, and if patients are still dysphonic, then steroid injection and surgical intervention are advised. The surgical treatment of these lesions consists in excision under general anesthesia using microlaryngeal suspension with preservation of the overlying mucosa.

David et al (2008) in a study observed that optical coherence tomography is able to produce high-resolution images of vocal fold mucosa to a maximum depth of 1.6 mm which may be used in the diagnosis of vocal fold lesions, particularly early squamous cell carcinoma and further help in the OCT-guided microsurgery of larynx.<sup>8</sup> T. Just et al (2012) in a study observed that Confocal endomicroscopy can detect dysplastic cells close to the basal cell layer and within the subepithelial space in lesions with small leukoplakia. These findings will help to improve the precision for biopsy and onmicrolaryngoscopic laser surgery of larynx to identify the margins of the premalignant lesion.<sup>9</sup> Dikkers FG et al in a study observed that microlaryngostroboscopic surgery offers a very good functional result in cases of dysphonia due to a benign lesion of the vocal fold.<sup>10</sup>

## CONCLUSION

In our study microlaryngoscopy proved to be a better guide to the management of laryngeal pathologies and a good tool for further research for the benefit of mankind. Different anaesthetic complications should be

borne in mind while dealing with autoimmune diseases along with laryngeal pathologies. Its unique treatment modalities must be implemented to avoid increased morbidity and possible mortality.

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