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Analysis of Patients Undergoing Direct Laryngoscopy for Vocal Fold Lesions

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Abstract

Objectives: *The aim of this study was to evaluate the pathologic diagnoses and clinical follow-up after Direct (suspension) Laryngoscopy in patients with pathologic findings in the endoscopic larynx examination.*

Materials and Methods: *The files of 118 patients who underwent direct laryngoscopy and biopsy in our clinic were reviewed and the pathology results were retrospectively analyzed.*

Findings: *Of 118 patients, 30 were female (25.4%) and 88 were male (74.6%). The ages of the patients ranged between 22 and 69 years (mean: 43.1). After pathologic examination, vocal polyps were found in 83 patients, vocal nodules in 16 patients, epidermoid carcinoma in 13 patients, laryngeal cyst in 4 patients and laryngeal intraepithelial neoplasia in two patients.*

Conclusions: *Laryngeal pathologies, which are among the common disease groups encountered in otolaryngology head and neck surgery clinics, can be easily recognized today with the widespread use of endoscopic imaging methods. Especially in malignant lesions, endoscopic laryngeal examination should be performed in patients presenting with complaints of hoarseness, globus sensation, dyspnea, and direct laryngoscopy should be performed under general anesthesia in patients with mass lesions or suspicious appearance.*

Keywords: *larynx, polyp, nodule, cancer, direct laryngoscopy, suspension laryngoscopy.*

Introduction

Problems related to the larynx are frequently encountered in Otorhinolaryngology and Head and Neck Surgery clinics. Laryngeal diseases can be detected more easily with the development of auxiliary diagnostic methods and the widespread use of endoscopic systems in recent years. Laryngeal pathologies requiring evaluation include masses, inflammations, trauma, neurologic disorders and malignancies. The most common symptoms of laryngeal pathologies are hoarseness, dyspnea, sore throat and globus [1,2]. Direct laryngoscopy should be performed under general anesthesia in patients with laryngeal pathology or in patients with undiagnosed laryngeal pathology, both for diagnosis and for treatment and biopsy [3]. In this way, all regions of the larynx can be examined in detail, biopsies can be taken from the detected pathologic areas and curative interventions can be performed if necessary. In this study, we retrospectively evaluated the pathology results of 118 patients with laryngeal pathology who underwent suspension laryngoscopy for diagnostic and therapeutic purposes.

Materials and Methods

The study was conducted in accordance with the Helsinki Declaration. Patients were informed about the study and written informed consent was obtained. Ethics committee approval of Fırat University was obtained for the study (Form No: 2018/10-15). Between August 2018 and April 2023, 118 patients who underwent suspension laryngoscopy operation for laryngeal fold pathology in Elazığ Fethi Sekin City Hospital Otorhinolaryngology Clinic were retrospectively analyzed. Patients who presented with hoarseness, dyspnea, sore throat and globus underwent routine otorhinolaryngologic examination. All patients underwent oropharyngeal, nasal, laryngeal, neck and systemic examinations. Videolaryngoscopy was performed to locate the lesion and patients with laryngeal pathology were evaluated for complete blood count, blood biochemistry, prothrombin time, activated partial thromboplastin time, chest radiographs were taken and prepared for general anesthesia.

Direct laryngoscopy was performed under orotracheal general anesthesia in patients with laryngeal pathology or mass. After anesthesia, a pillow was placed under the head so that the head was 15 cm high on the examination table. The surgeon inserted the laryngoscope with the right hand and from the right side of the tongue until the epiplot was seen. When the tip of the epiglottis was seen, the laryngoscope was moved to the midline and the larynx and cord vocal cords were completely visible and the laryngoscope was fixed. Then, all structures were examined from top to bottom under a microscope and depending on the pathology to be surgically intervened, either the lesion was completely removed or a biopsy was taken and sent to the pathology laboratory under sterile conditions and the diagnosis was made. The postoperative pathology results of 118 patients who underwent laryngeal biopsy were evaluated retrospectively.

Results

The records of patients who were diagnosed with laryngeal pathology and underwent direct laryngoscopy operation between August 2018- April 2023 in our clinic were retrospectively analyzed. Of the 118 patients, 30 (25.4 %) were female and 88 (74.6%) were male and their ages ranged between 22 and 69 years (mean 43.1). The most common symptoms were hoarseness (88%), sore throat (35%), dyspnea (18%) and globus (8%). Of the 118 patients who underwent direct laryngoscopy for laryngeal pathology, 83 patients (%71) had laryngeal polyps, 16 patients (% 13) had laryngeal nodules, 13 patients (% 11) had squamous cell carcinoma, 4 patients (% 3) had laryngeal cyst and two (% 2) patients had laryngeal intraepithelial neoplasia (Table 1). In Benign vocal fold lesions, the lesion was also excised in the same session. While cases with malignant lesions, the early stage patients were referred to radiotherapy, and the other patients underwent advanced oncologic surgeries in our clinic. No postoperative complications developed in any patient.

	Vocal polyp	**Vocal nodule**	**Carcinoma**	**Vocal cyst**	**LIN**	Total
Female	22	4	1	3	-	30
Male	61	12	12	1	2	88
Total	83	16	13	4	2	118

Table 1. Distribution of patients' lesions according to gender

Discussion

Laryngeal diseases are frequently encountered in otorhinolaryngology practice. Laryngeal diseases have become easier to diagnose in recent years with the development and widespread use of diagnostic methods, especially endoscopic imaging systems. All patients presenting with hoarseness, shortness of breath, pain or mass in the neck should definitely undergo a laryngeal examination. Hoarseness, weakness in the voice, whispering, sudden interruptions are mostly findings related to vocal fold diseases and laryngeal abnormalities. Any patient with hoarseness lasting more than two weeks should be examined for organic laryngeal pathologies and especially malignancies should be ruled out [1]. Laryngeal disorders requiring evaluation include masses, inflammatory pathologies, trauma, congenital anomalies, neurological disorders, benign and malignant tumors [2-4]. Massive space-occupying lesions are the most common causes that require a detailed laryngeal examination including direct laryngoscopy. Among these, vocal polyps are the most common. They occur mostly on the free marginal surface of the vocal fold and the most common symptom is hoarseness [4,5]. Vocal fold polyp (Figure 1 A,B) is a benign laryngeal lesion that usually develops following bleeding under the vocal fold epithelium following an acute vocal trauma (such as yelling). It is almost always unilateral. It is mostly seen in middle-aged men. In vocal polyps, vocal hygiene and voice therapy have a high chance of successful outcome in small lesions, whereas this chance is reduced in large vocal polyps, and often large polyps do not respond well to vocal hygiene and voice therapy. In addition, surgical intervention is prominent for patients who want early results(6-10). Ogawa et al. (11) stated in their literature review that some authors recommended voice therapy in the treatment of benign vocal cord lesions, but they reported that the effectiveness of voice therapy was insufficient as a result of their literature study. The treatment is surgical excision of the polyp under direct laryngoscopy. We excised the vocal polyps in 83 patients in the same session in patients with vocal polyps on direct laryngoscopic examination. Gocal et al.(12) reviewed 11 articles including 1085 patients and reported that the most common benign lesions were vocal polyps (53.7%), vocal cysts, vocal nodules, vocal pseudocysts, respectively. Similar to this study, the most common vocal fold lesion in our study was vocal polyps.

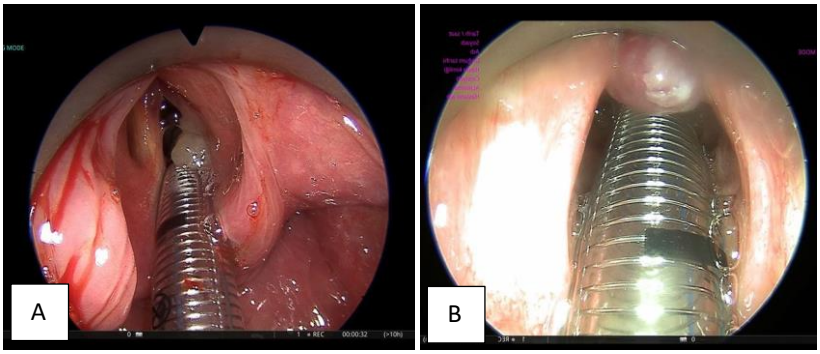

Fig 1 A,B: Direct laryngoscpic views of vocal polyps(A,B)

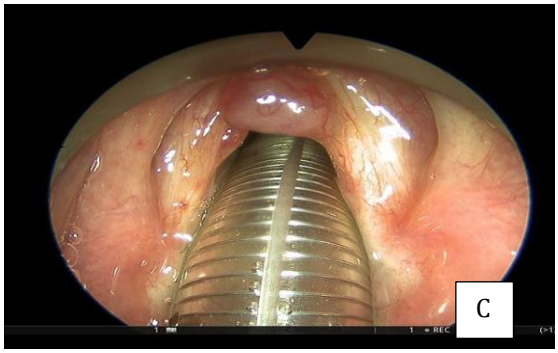

Fig 2: Vocal cyst on the right vocal fold anterior 1/3

Vocal fold nodules are benign laryngeal lesions that develop as a result of chronic voice trauma due to incorrect phonation technique **(Fig 2).** They are typically located at the 1/3 anterior-2/3 posterior junction of the vocal folds, which are most in contact with each other, and are bilateral. They are also called singer's nodules. They are observed more frequently in occupational groups who use their voice professionally [2-4]. Voice therapy techniques are recommended as first-line treatment in vocal fold nodules . Even in patients in whom surgery is planned, voice therapy is recommended for 4-6 weeks before the operation(13-16). In pediatric patients, no surgical intervention should be performed until puberty(17,18). In our clinic, we recommended voice therapy, vocal hygiene and smoking cessation to 29 patients who were found to have vocal nodules on endoscopic examination. We performed surgical intervention in 16 patients who had no improvement in their clinic after 3 months of follow-up.

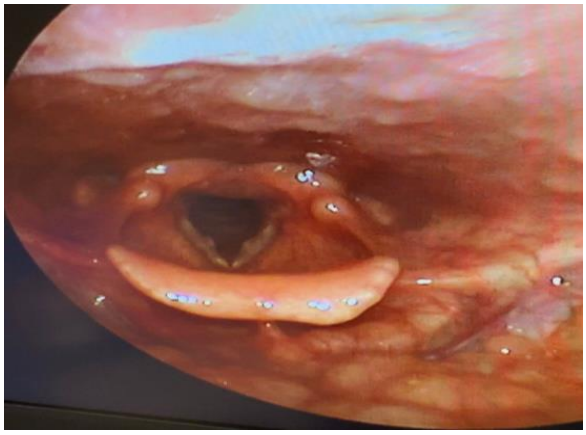

Fig 3: Endoscopic view of vocal nodules

While the main risk factor for benign vocal cord lesions is incorrect phonation techniques and overuse of the voice, the main risk factor for laryngeal cancers is smoking(19). Alcohol is less implicated in glottic cancers than in other laryngeal and extralaryngeal locations. However, the risk is indisputably increases with smoking (50% of glottic cancers) and increases linearly with consumption. (20,21). Patients with pathologic appearance on endoscopic examination should be followed closely and patients with suspected malignancy should undergo direct laryngoscopic examination under general anesthesia. Since the location, extension and anterior commissure involvement of the lesion in direct laryngoscopy are extremely important for staging and treatment planning in laryngeal malignancies, all glottic areas should be carefully examined by using 30 and 70 degree endoscopes along with 0 degree endoscopes(21,22). In this study, we found laryngeal intraepithelial neoplasia in 2 patients and squamous cell carcinoma in 13 patients in whom we performed direct laryngoscopy.

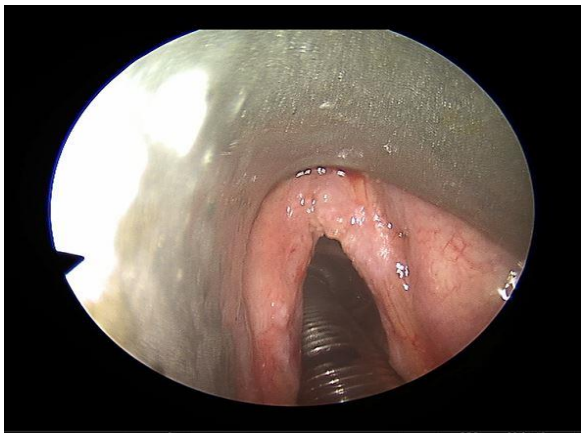

Fig. 4: Vocal fold squamous cell carcinoma

Conclusions

Endoscopic examination of the larynx is necessary once it is determined that the symptoms are larynx-related [1,4]. In patients with laryngeal pathology or in undiagnosed patients, direct laryngoscopy should be performed for diagnosis, treatment and biopsy. Laryngeal pathologies requiring evaluation include masses, inflammation, trauma, congenital abnormalities, neurological disorders and malignancies. Direct laryngoscopy is necessary not only for easily recognized benign or malignant lesions, but also for suspicious lesions detected by imaging techniques or for patients with laryngeal findings not diagnosed by other examination methods [2]. While masses affecting the glottis cause early symptoms in the form of hoarseness, mass lesions in other parts of the larynx cause globus sensation, cough and pain due to irritation. Respiratory distress is observed only after the formation of a large mass. In our cases, hoarseness was the most common presenting complaint (88%).

Direct laryngoscopy should be performed in patients with a mass lesion in the larynx and the diagnosis should be supported pathologically. Direct laryngoscopy is usually performed under general anesthesia. Thus, it can be tolerated more easily by the patient and the surgeon can reach the areas that need to be seen and intervened more easily [5]. The technique of exposing the larynx is similar for all laryngoscopists [6]. The patient is placed in the supine position with the head elevated with a head restraint so that the head, nose and chin are parallel to the floor (Boyce position). The right-handed surgeon holds the laryngoscope with the left hand, leaving the right hand free to use other instruments. The endoscope is inserted through the right lingual sulcus and advanced into the pharynx, tongue root, valleculae and lingual surface of the epiglottis for examination. Sliding the hand slightly forward along the horizontal handle of the instrument, the laryngoscope is

advanced just below the tip of the epiglottis, then lifted and advanced a little further to observe the sinus piriformis. Advancing the laryngoscope further into the laryngeal vestibule slightly separates the plica aryepiglottica and the false cords, revealing both the vocal cords along their entire length and the shape and dimensions of the opening of the glottis. Using 0-degree and angled endoscopes, all regions of the larynx can be evaluated in detail and the origin and extension of the lesions can be clearly identified. This allows biopsy of lesions or removal of polyps-cysts.(23,24) At the end of direct laryngoscopy, when the laryngoscope is removed, all blood and excess secretions in the larynx, trachea and pharynx should be aspirated to avoid contamination of the lower airways [7-10]. Massive space-occupying lesions and lesions suspicious on endoscopic examination can be diagnosed and, if necessary, treated by direct laryngoscopy.

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