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What is This?
Surgical Treatment of Laryngeal Papillomatosis Using Narrow Band Imaging

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Abstract
Laryngeal papillomatosis has a high rate of recurrence after surgery. Narrow band imaging (NBI) is a novel optical enhancement technology used for the diagnosis. This is the first report to date to indicate the availability of the combination of laryngomicro surgery and videoendoscopic surgery for laryngeal papillomatosis using NBI technology. The patients were a 34-year-old man and a 30-year-old man. Both patients underwent surgery in another hospital. However, due to recurrence, they were subsequently referred to the authors’ department for further evaluation. The presence of papillomas was confirmed by NBI, and the papillomas were removed using an XPS Micro Debrider and a CO2 laser. Using the NBI system, the border between the normal mucosa and the papillomas could be clearly identified, allowing precise resection. Further treatment on the lesions has been carried out several times to date using NBI. The lesions have now been eradicated without further recurrence.

Keywords
laryngeal papillomatosis, surgical treatment, NBI

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Laryngeal papillomatosis has a high rate of recurrence after surgery and is difficult to completely eradicate.1,2 It is also important to resect only the tumor and to preserve normal tissue to prevent functional loss. Thus, total resection of papillomatosis is difficult and can require frequent intervention.

Narrow band imaging (NBI) is a novel optical enhancement technology used for the diagnosis of superficial lesions. By filtering light to narrow bands, NBI enhances imaging of the mucosal microstructure and vasculature and also provides high-contrast visualization of mucosal vasculature in the early stages of head and neck cancer.3,4 We performed tumor resection with the combination of laryngomicro surgery and videoendoscopic surgery for laryngeal papillomatosis using NBI. We report 2 cases of laryngeal papillomatosis resected with NBI. The use of NBI allowed clear identification of the involved mucosa and satisfactory resection of the laryngeal papillomatosis. The lesions have been completely eradicated.

This study was approved by the institutional review board at Fukushima Medical University on January 16, 2012 (confirmation number 1296), which is guided by local policy, national laws, and the World Medical Association Declaration of Helsinki.

Case 1
A 34-year-old man with 2 months of hoarseness visited our clinic. Examination by flexible laryngeal endoscopy using NBI (CLV-S40Pro, ENF-V2, Olympus, Tokyo, Japan) revealed papilloma-like mucosal changes, and laryngeal papillomatosis was diagnosed. Laryngomicroscopic findings under general anesthesia, obtained using a conventional technique, confirmed mucosal changes (Figure 1A). NBI enhanced the identification of papillomas on the vestibular folds (Figure 1B). The papillomas were removed from the right vocal fold and bilateral vestibular folds using an XPS Micro Debrider and CO2 laser (Lezawin CH S, J. Morita, Kyoto, Japan). Two months later, CO2 laser resection using a flexible laryngeal endoscope under topical anesthesia was undertaken in an outpatient setting, for recurring or remaining papillomas on the right vocal cord, vestibular folds, and laryngeal ventricle. Further treatment on the lesions has been carried out 6 times under general anesthesia laryngomicroscopic surgical procedures and under topical anesthesia resection 7 times to date using NBI. The lesions have

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now been eradicated without further recurrence for a half year.

Case 2

A 30-year-old man with 5 months of hoarseness visited our clinic. Examination by flexible laryngeal endoscopy using NBI revealed papilloma-like mucosal changes, and laryngeal papillomatosis was diagnosed. Laryngomicroscopic findings under general anesthesia confirmed mucosal changes (Figure 2A). NBI was useful in the identification of papillomas on the vestibular folds and the posterior surface of the epiglottis (Figure 2B). The papillomas were removed using an XPS Micro Debrider and CO2 laser. However, the posterior surface of the epiglottis could not be treated because its anatomical location impeded laryngomicroscopic surgical views. Two months later, outpatient CO2 laser resection using a flexible laryngeal endoscope under topical anesthesia was undertaken for the remaining lesions on the posterior surface of the epiglottis. Further treatment on the lesions has been carried out 1 time to date under general anesthesia using NBI. The lesions have now been eradicated without further recurrence for one and half years.

Discussion

This is the first report of the combination of NBI-assisted videoendoscopic surgery and laryngomicrosurgery for the treatment of laryngeal papillomatosis. The addition of NBI facilitated appropriate tumor resection with minimal invasiveness. The lesions were more clearly visualized by a videoendoscope using NBI than by a conventional videoendoscope. Further, clearer identification of the lesion borders allowed for effective laser ablation and microdebrider excision. In addition, CO2 laser resection using a flexible laryngeal endoscope under topical anesthesia with NBI in an outpatient setting will allow us to resect the recurring or remaining papilloma lesions as a minimally invasive procedure.

In NBI, light absorption depth is confined to the superficial mucosa because the bandwidth is filtered to highlight vasculature and glandular structures. By this method, changes in the blood vessels in the superficial mucosa in the early stages of cancer can be recognized. In recent years, it has been reported that the use of NBI has allowed the identification of superficial lesions of the oropharynx and hypopharynx as well as the minimally invasive resection of the mucosal lesions with the NBI view. These benefits may lead to a higher rate of complete disease eradication. We report disease eradication after serial resections in these 2 patients and imply that the NBI gives accurate detection of papillomas. This in turn allows for all diseased areas to be targeted and more normal structures to be preserved. Although both patients in this study achieved disease eradication, a larger-scale study using NBI in the treatment of laryngeal papillomas is necessary to clarify its true benefit in preventing papilloma recurrence and dissemination while maximizing postoperative laryngeal function.

Conclusion

Herein we reported 2 cases of laryngeal papillomatosis that were surgically treated using NBI. Clearer identification of the tumor border was obtained by this technique. This article demonstrates the applicability of the NBI system to the identification and resection of laryngeal papillomatosis.

Author Contributions

Mitsuyoshi Imaizumi, drafted manuscript; Wataru Okano, contributed images; Yasuhiro Tada, contributed images; Koichi Omori, designed study and made critical revisions to manuscript.

Disclosures

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References


