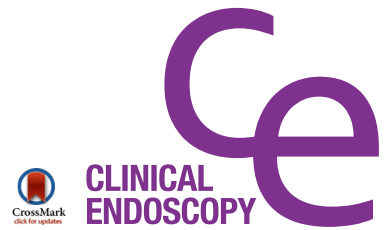


CASE REPORT

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Gastrointestinal Endoscopy-Assisted Minimally Invasive Surgery for Superficial Cancer of the Uvula

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Previous studies reported that endoscopic resection is effective for the treatment of superficial pharyngeal cancers, as for digestive tract cancers. However, the optimal treatment for superficial cancer of the uvula has not been established because of the rarity of this condition. We present two male patients in their 70s with superficial cancer of the uvula, detected with upper gastrointestinal endoscopy. Both patients underwent surgical resection of the uvula under general anesthesia. The extent of the lesions was determined by means of gastrointestinal endoscopy by using magnifying observation with narrow-band imaging, enabling the performance of minimally invasive surgery. Endoscopic submucosal dissection was performed to achieve en bloc resection of the intramucosal carcinoma that had infiltrated the area adjacent to the uvula. Gastrointestinal endoscopists should carefully examine the laryngopharynx to avoid missing superficial cancers. Our minimally invasive treatment for superficial cancer of the uvula had favorable postoperative outcomes, and prevented postoperative loss of breathing, swallowing, and articulation functions.

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Key Words: Superficial uvula cancer; Minimally invasive surgical procedures; Endoscopic submucosal dissection

INTRODUCTION

In almost all reported cases of superficial pharyngeal cancer (SPC), the cancer was located in the pyriform sinus, posterior wall of the pharynx, or lateral wall of the pharynx.¹ Superficial cancer of the uvula is very rarely detected, and, to our knowledge, no case reports describing this condition have been published.

The reported 5-year survival rate of patients with pharyngeal cancer is poor, ranging from 13% to 27%.²⁻⁴ Early detection is therefore important. However, most pharyngeal cancers are detected at an advanced stage because it is difficult to differen-

tiate between SPC and the normal mucosa.

Recent advances in endoscopic technology, such as magnifying observation and narrow-band imaging (NBI), can enhance the visualization of mucosal microstructures, including mucosal capillaries of the gastrointestinal tract, enabling the early detection of pharyngeal cancers.⁵⁻⁸ Recent studies reported that endoscopic resection, including endoscopic mucosal resection and endoscopic submucosal dissection (ESD), is effective for the treatment of SPCs.⁸⁻¹⁰ However, little is known about the clinicopathological features and clinical course of superficial cancer of the uvula. We report here two cases of superficial cancer of the uvula diagnosed by using upper gastrointestinal endoscopy (UGIE) and treated by means of resection with a minimally invasive approach.

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CASE REPORTS

Case 1

A 71-year-old man with a history of bladder cancer and

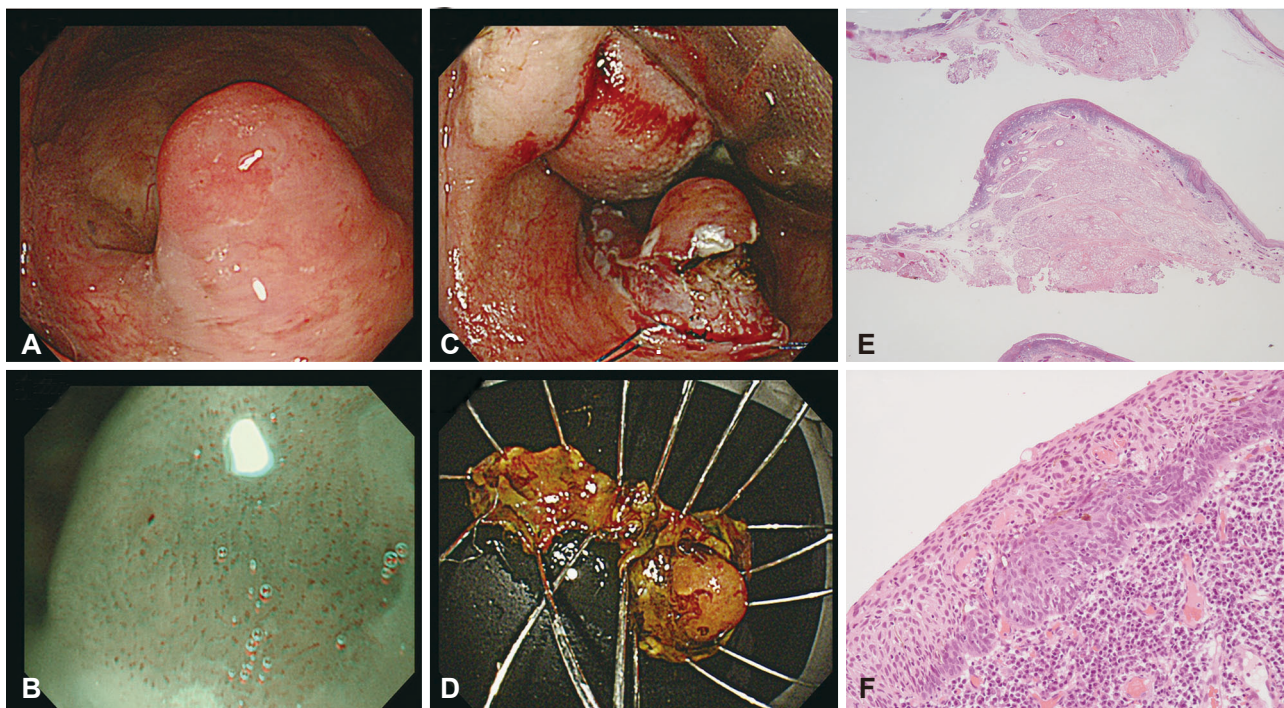


Fig. 1. Images of case 1. (A) Gastrointestinal endoscopy with white light revealed a small red area on the patient's uvula, and (B) magnifying endoscopy with narrow-band imaging showed the redness as a brownish area. (C) Endoscopic submucosal dissection was performed to resect the mucosal lesion surrounding the uvula (H&E stain, $\times 4$). (D) The lesion including an affected mucous membrane around the uvula was removed as an en bloc specimen. (E, F) Histopathological examination of the resected specimen showed oropharyngeal carcinoma *in situ* (H&E stain, $\times 200$).

early esophageal cancer underwent follow-up UGIE after an esophageal ESD, which revealed a light red and slightly depressed area in the mid-esophagus. This lesion was suspected to be metachronous early esophageal cancer, and the patient was admitted to our hospital for further investigation.

Physical examination revealed a urostomy stoma in his right lower abdominal wall. His laboratory test results were all normal, including the levels of tumor markers. He had smoked 20 cigarettes per day for 50 years and consumed 55 units of alcohol per week.

Magnifying endoscopy (ME) revealed a small red area on his uvula (Fig. 1A) in addition to the esophageal lesion. Examination of the lesion on his uvula by using ME with NBI revealed a brownish area with outgrowth and dilatation of atypical vessels (Fig. 1B). Examination of an incisional biopsy specimen from the uvula showed high-grade intraepithelial neoplasia or squamous cell carcinoma. Computed tomography and ultrasonography did not show lymph node or distant metastasis. Three weeks after the esophageal ESD, he underwent surgical resection of the lesion on the uvula under general anesthesia. To minimize the invasiveness of surgical resection, the attending gastrointestinal endoscopist determined the extent of the lesion by using ME with NBI and iodine staining, and placed marking dots to delineate the edges of the lesion. The affected mucous membrane

around the uvula was then resected via ESD (Fig. 1C). Finally, an otolaryngologist resected the body of the uvula after ligation at the base, resulting in the successful *en bloc* removal of the lesion (Fig. 1D). Histopathological examination of the resected lesion showed oropharyngeal carcinoma *in situ*, with negative surgical margins (Fig. 1E, F). No microscopic lymphovascular or venous invasion was observed. The patient was discharged without postoperative complications and remained free of recurrence during 4 years of follow-up.

Case 2

A 74-year-old man with a history of colon cancer, lung cancer, and early esophageal cancer underwent follow-up UGIE after an esophageal ESD. He had smoked 20 cigarettes per day for 40 years and consumed 55 units of alcohol per week. The UGIE revealed a small nodule on the posterior aspect of the uvula (Fig. 2A), and ME with NBI clearly showed an outgrowth with atypical dilated vessels on the posterior aspect of the uvula (Fig. 2B). Examination of an incisional biopsy specimen of the nodule showed carcinoma *in situ*. Computed tomography and ultrasonography did not show lymph node or distant metastasis. He underwent surgical resection of the lesion on his uvula under general anesthesia. The attending gastrointestinal endoscopist performed ME with NBI and

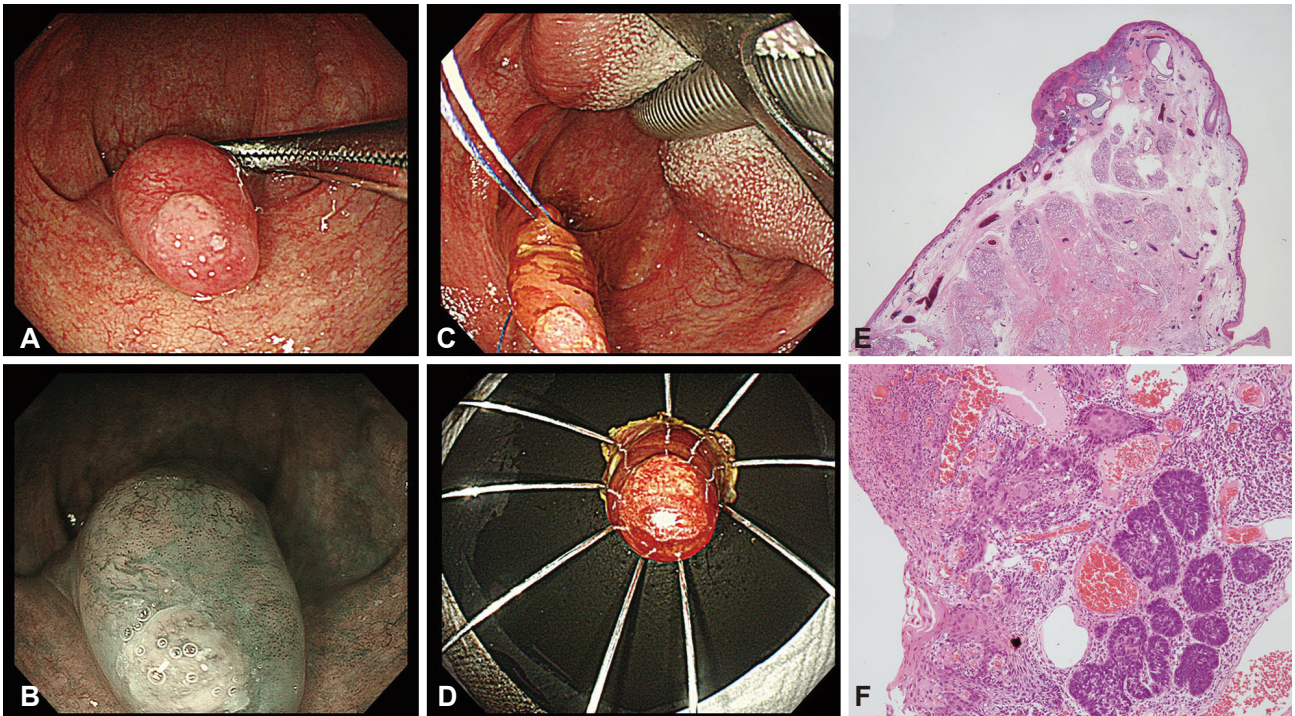


Fig. 2. Images of case 2. (A) Gastrointestinal endoscopy with white light revealed a small nodule on the posterior aspect of the patient's uvula, and (B) magnifying endoscopy with narrow-band imaging clearly showed an outgrowth with atypical dilated vessels on the uvula. (C) Magnifying endoscopy with narrow-band imaging and iodine staining revealed that the lesion was limited to the uvula (H&E stain, $\times 4$). (D) Simple uvulectomy without endoscopic submucosal dissection of the surrounding mucosa was performed. (E, F) Histopathological examination of the resected specimen showed the en bloc removal of the lesion with negative surgical margins; however, the tumor had invaded into the submucosa, with a basaloid pattern (H&E stain, $\times 200$).

iodine staining, and determined that the lesion was limited to the uvula (Fig. 2C). An otolaryngologist therefore performed simple uvulectomy without ESD of the surrounding mucosa (Fig. 2C, D). Histopathological examination of the resected specimen showed *en bloc* removal of the lesion with negative surgical margins. The tumor had invaded approximately 850 μm into the submucosa, with a basaloid pattern (Fig. 2E, F). No microscopic lymphovascular or venous invasion was observed. The patient was discharged without postoperative complications, and remained free from recurrence during 3 years of follow-up.

DISCUSSION

We experienced two rare cases of superficial cancer of the uvula that were diagnosed with UGIE. As minimally invasive surgery is essential for the prevention of postoperative complications, we performed minimal resection of the lesions after determining their extent by using ME with NBI and iodine staining. In case 1, ESD enabled the successful *en bloc* removal of the lesion. Surgical resection after marking the mucosa with ME and NBI without ESD would also be a plausible alternative; however, a clear surgical margin can be

achieved when making a surgical incision with ESD, allowing a more accurate histopathological evaluation.

According to a nationwide questionnaire survey conducted by the Japan Society for Head and Neck Cancer, 88 new cases of upper oropharyngeal cancer (including cancer of the uvula) were reported from 2001 to 2003. However, no cases of intramucosal carcinoma of the upper oropharynx were reported. Most oropharyngeal cancers were detected at an advanced stage.¹¹

The laryngopharynx has important functions, including breathing, swallowing, and articulation. Curative resection of advanced laryngopharyngeal cancer reduces the patient's quality of life because of the cosmetic consequences and loss of pharyngeal functions.¹²

Laryngopharyngeal cancer is generally detected and treated by otolaryngologists, and gastrointestinal endoscopists may pay little attention to the laryngopharyngeal area during a UGIE examination. However, UGIE is generally more suitable for the detection of early laryngopharyngeal cancer than nasopharyngoscopy because it allows a clearer visualization of the gastrointestinal mucosa.⁷ Recent advances in endoscopic technology, such as ME and NBI, have enabled the easier detection of SPC by gastrointestinal endoscopists.^{6,13,14} During UGIE examinations, especially in

patients at a high risk of upper aerodigestive tract cancers such as heavy smokers and drinkers,¹⁵ gastrointestinal endoscopists should pay careful attention to the pharyngeal area to avoid missing superficial cancers marked by subtle mucosal changes.

Some patients experience pain and discomfort of the laryngopharynx due to pharyngeal reflux. A systematic approach to the examination of the laryngopharynx is important, as follows: (1) the hard and soft palates, (2) uvula, (3) right and left arches of the palate, (4) posterior wall of the oropharynx, (5) right and left walls of the oropharynx, (6) right and left sides of the epiglottic vallecula, (7) posterior wall of the hypopharynx, (8) right and left sides of the piriform sinus, and (9) arytenoid region. This systematic approach may reduce the number of missed early cancers. If the pharyngeal area is too narrow to be observed by means of UGIE, using a mouthpiece and asking the patient to articulate a sound may expand the pharynx and improve the visual field for UGIE examination.

Several previous studies reported that detection of a slight change in microvascular structure was useful for diagnosing superficial cancers of the gastrointestinal tract.^{16,17} ME with NBI is a well-validated procedure that clearly demonstrates areas with changes in microvascular structure as brownish spots.⁵ However, routine endoscopic examination by using ME with NBI may be far from feasible. Gastrointestinal endoscopists should pay careful attention to changes in mucosal color and texture when performing UGIE with white light.

The clinicopathological features of cancer of the uvula are poorly understood because of the rarity of this condition.^{18,19} Treatment of advanced cancer of the uvula may include surgical resection, radiotherapy, and chemotherapy, and the need for lymph node dissection (LND) should be considered. A study of 21 patients with T1 or T2 cancer of the uvula reported that these lesions were associated with high rates of metastasis because of the abundance of lymphatic vessels beneath the mucosa.¹⁸ In patients with intramucosal carcinoma as in case 1, LND may not be necessary. However, pharyngeal cancers with submucosal invasion as in case 2 require close follow-up. A recent study of 47 patients with SPC who underwent endoscopic treatment reported that recurrence was only detected in those patients with submucosal invasive cancers.²⁰ We did not perform LND in case 2 because the preoperative computed tomography and ultrasonography did not reveal metastasis. However, careful follow-up should be continued for this patient.

Velopharyngeal insufficiency may occur after the surgical resection of oropharyngeal cancer; however, this risk can be reduced by minimizing the invasiveness of surgery. Our

surgical approach was effective at maintaining the patients' quality of life. Further follow-up is required to determine the long-term prognosis of patients with superficial cancer of the uvula.

Conflicts of Interest

The authors have no financial conflicts of interest.

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