

## **Imaging of diffuse fibroepithelial polyps on surgical free flap in oral cancer patients: two case**

### **reports**

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## Abstract

Fibroepithelial polyp (FEP) is a common benign tumor occurring in the skin and genitourinary tract, and there are no reports of multiple FEPs occurring on the myocutaneous flap. We report two cases of FEPs occurring diffusely on the skin tissue of the free anterolateral thigh flap after surgical reconstruction for oral squamous cell carcinoma. Clinically, multiple papillary nodules on the myocutaneous flap gradually increased. CT and MRI showed multiple papillary nodules on an enhanced layer covering the entire myocutaneous flap. PET/CT showed high uptake. One case was diagnosed with FEPs by surgery; the other, by biopsy. The tumor-limited localization on the myocutaneous flap, characteristic morphology showing multiple papillary projection with an enhanced layer, and MRI signal showing patchy mild elevation of the apparent diffusion coefficient value may help in differential diagnosis from tumor recurrence or secondary carcinoma of the myocutaneous flap on diagnostic imaging.

## Keywords

Fibroepithelial polyp, myocutaneous flap, oral cancer, MRI, CT

## Statements and Declarations

The authors have no relevant financial or non-financial interests to disclose.

Conflicts of interest/Competing interests

All authors declare that they have no conflicts of interest.

Ethics approval

Our institutions do not require ethics approval for case reports.

Informed consent

Informed consent is obtained from all patients.

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## Abstract

Fibroepithelial polyp (FEP) is a common benign tumor occurring in the skin and genitourinary tract, and there are no reports of multiple FEPs occurring on the myocutaneous flap. We report two cases of FEPs occurring diffusely on the skin tissue of the free anterolateral thigh flap after surgical reconstruction for oral squamous cell carcinoma. Clinically, multiple papillary nodules on the myocutaneous flap gradually increased. CT and MRI showed multiple papillary nodules on an enhanced layer covering the entire myocutaneous flap. PET/CT showed high uptake. One case was diagnosed with FEPs by surgery; the other, by biopsy. The tumor-limited localization on the myocutaneous flap, characteristic morphology showing multiple papillary projection with an enhanced layer, and MRI signal showing patchy mild elevation of the apparent diffusion coefficient value may help in differential diagnosis from tumor recurrence or secondary carcinoma of the myocutaneous flap on diagnostic imaging.

## Introduction

Free flaps have been widely used for reconstruction following surgical excision of head and neck cancers. Tumors associated with the myocutaneous flap include recurrent tumor or malignant transformation of the skin graft; however, benign tumor derived from the myocutaneous flap is rare. Fibroepithelial polyp (FEP) is a common benign tumor occurring on the skin and in the genitourinary tract [1-5]. There are no reports of multiple FEPs occurring on a myocutaneous flap. Herein, we report characteristic imaging

findings of two cases of multiple FEPs occurring on the flap that had to be differentiated from tumor recurrence or cancerization of the myocutaneous flap.

## Case reports

### Case 1

A 73-year-old man underwent resection of squamous cell carcinoma of the left floor of the mouth with reconstruction using a free anterolateral thigh flap 6 years prior. There was no historical presence of genital or cutaneous FEPs remote from the donor sites. From 2 years after the surgery, the surface of the myocutaneous flap showed papillary nodules which gradually increased. The patient presented with sleep apnea syndrome due to myocutaneous flap mass. The patient had poor oral hygiene. MRI showed a papillary mass on the myocutaneous flap, narrowing the airway (Fig. 1). The mass presented as multiple enhanced papillary nodules overlying an enhanced thick layer. T2-weighted image (T2WI) showed heterogeneous intermediate signal intensity on multiple papillary nodules and low signal intensity on the thick layer. The apparent diffusion coefficient (ADC) value of the mass was patchy and mildly elevated. Florine 18-fluorodeoxyglucose (18F-FDG) PET/CT showed high uptake; the maximum standardized uptake value ( $SUV_{max}$ ) was 15.2 in the mass. Tumor recurrence was suspected, and a biopsy was performed; however, no malignancy was revealed. The patient underwent resection to improve airway stenosis. Macroscopic findings showed multiple papillary nodules. The lesion histopathologically showed multiple polypoid lesions covered by squamous epithelium with irregular thickening and elongated epithelial legs. Lymphoplasmacytic

inflammation was observed, and actinomycetes were found in the crypts of the polyps. The lesion was diagnosed as a FEP. The lesion has not recurred since surgery.

## Case 2

A 73-year-old man underwent subtotal glossectomy for squamous cell carcinoma of the right side of the tongue followed with reconstruction using a free anterolateral thigh flap 10 years prior. There was no historical presence of genital or cutaneous FEPs remote from the donor sites. Eight years after the surgery, the myocutaneous flap showed papillary proliferation which gradually increased (Fig. 2). The patient had poor oral hygiene. Contrast-enhanced CT and MRI showed a papillary mass overlying the myocutaneous flap (Fig. 2). The mass presented as multiple enhanced papillary nodules overlying an enhanced thick layer. T2WI showed heterogeneous intermediate signal intensity on multiple papillary nodules and low signal intensity on the thick layer. The ADC value of the mass was patchy and mildly elevated. Tumor recurrence was suspected; however, biopsy assessment revealed no malignancy. Microscopic findings of the biopsy specimen show polyp-like lesions of stratified squamous epithelium with a stroma composed of inflammatory cells, fibrosis, and small blood vessels. Pathology findings were consistent with FEP. The patient was followed up for observation but remained asymptomatic.

## Discussion

Both of our cases revealed that multiple FEPs occur diffusely on the myocutaneous flap following

oral cancer surgery. FEPs are benign tumors occurring mostly in the skin and genitourinary tract [1, 6]; they can also occur in the respiratory and gastrointestinal tracts [2-5]. In the head and neck region, they occur in the tonsils, buccal mucosa, tongue, lips, inferior turbinate, epiglottis, and oropharynx [1, 6, 7]. Among benign exophytic lesions in the oral cavity, the frequency of FEP is reported to be 12.0 lesions/1000 population and is a relatively common lesion [8]. FEP often presents as a single nodule appearance, not multiple [1-8]. To the best of our knowledge, our cases were the first report of FEPs occurring on the myocutaneous flap. Moreover, the lesions were multiple and diffusely cover the whole surface of the flap. Symptoms of FEP in the head and neck are mainly caused by mass effect and vary in size and location, and include foreign body sensation, cough, and dyspnea [6, 7]. In both our cases, FEPs were detected without symptoms during routine follow-up examination, but Case 1 presented with airway stenosis in the course of the subsequent follow-up.

The etiology of the PEPs has not been established, but inflammation, infection, trauma, and congenital anomaly are hypothesized [1, 5]. In our cases, the lesions occurred in an oral cavity with poor hygiene, and inflammatory cells and actinomycetes were found in the pathological specimen. Therefore, we speculate that chronic inflammation may be one of causes of their occurrence. Although FEPs are often reported as a single papillary lesion, our cases showed diffuse multiple papillary nodules on the myocutaneous flap. This may be due to a chronic inflammation in an unhygienic oral cavity.

Although there are no reports summarizing imaging findings of FEP, there are some case reports that include imaging findings. A case report of FEP of the vulva revealed that they contained layered low-



signal areas on T2WI, reflecting fibrous components, and high-signal areas on T2WI, reflecting edematous stroma with few fibers and many spindle- and satellite-shaped cells enhanced peripherally on MRI [3]. In our cases, heterogeneous signal intensity on T2WI and heterogeneity of elevated and decreased ADC value possibly reflect differences in degrees of fibrosis and edema. Moreover, the papillary nodules were overlaid on the characteristic enhanced layered structure with low signal intensity on T2WI between the FEPs and fat tissue of the myocutaneous flap. This layered structure histologically showed most of the fibrous tissue, mainly collagen fibers, blood vessels, and glands. A case report of scrotal FEP showed a high FDG uptake with  $SUV_{max}$  of 11.7 in the lesion, reflecting inflammatory cell infiltrate [4]. Similarly, the high FDG uptake in Case 1 is assumed to be caused by inflammatory cell infiltrate.

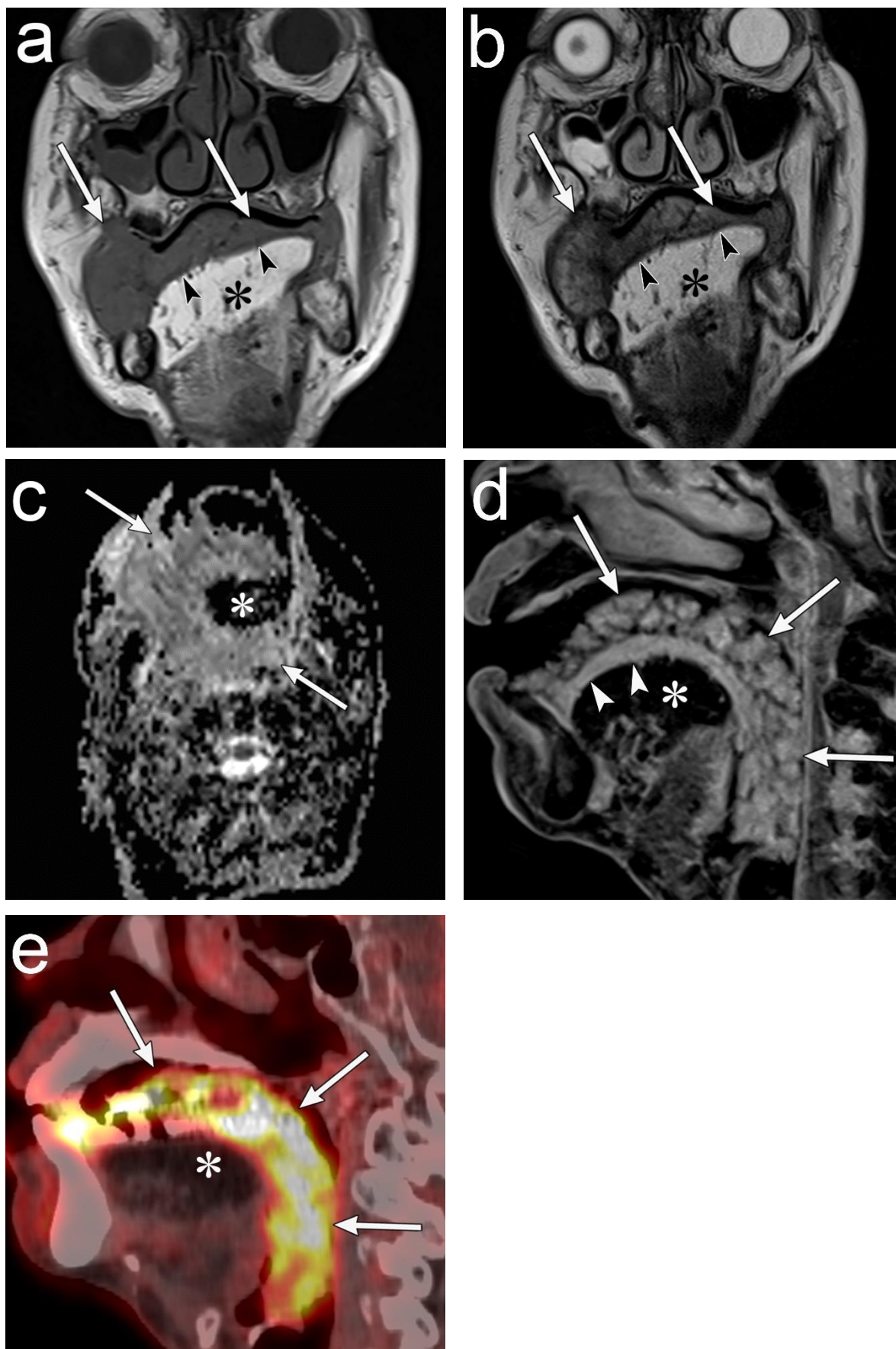
As in the present cases, FEPs may tend to grow in the surgical site and show high FDG uptake and must be differentiated from tumor recurrence or cancerization of myocutaneous flap. There are several diagnostic imaging differentiations. First, tumor recurrence occurs at the resection margins or operative bed [9, 10], unlike FEPs that occur on limited locations of the myocutaneous flap. Second, multiple papillary projections on an enhanced layered structure are considered a characteristic morphology of FEP. Finally, tumor recurrence shows decreased diffusivity on MRI, but FEPs did not show strongly decreased diffusivity and show patchy mild elevation of the ADC value, which may help in differential diagnosis [9, 10].

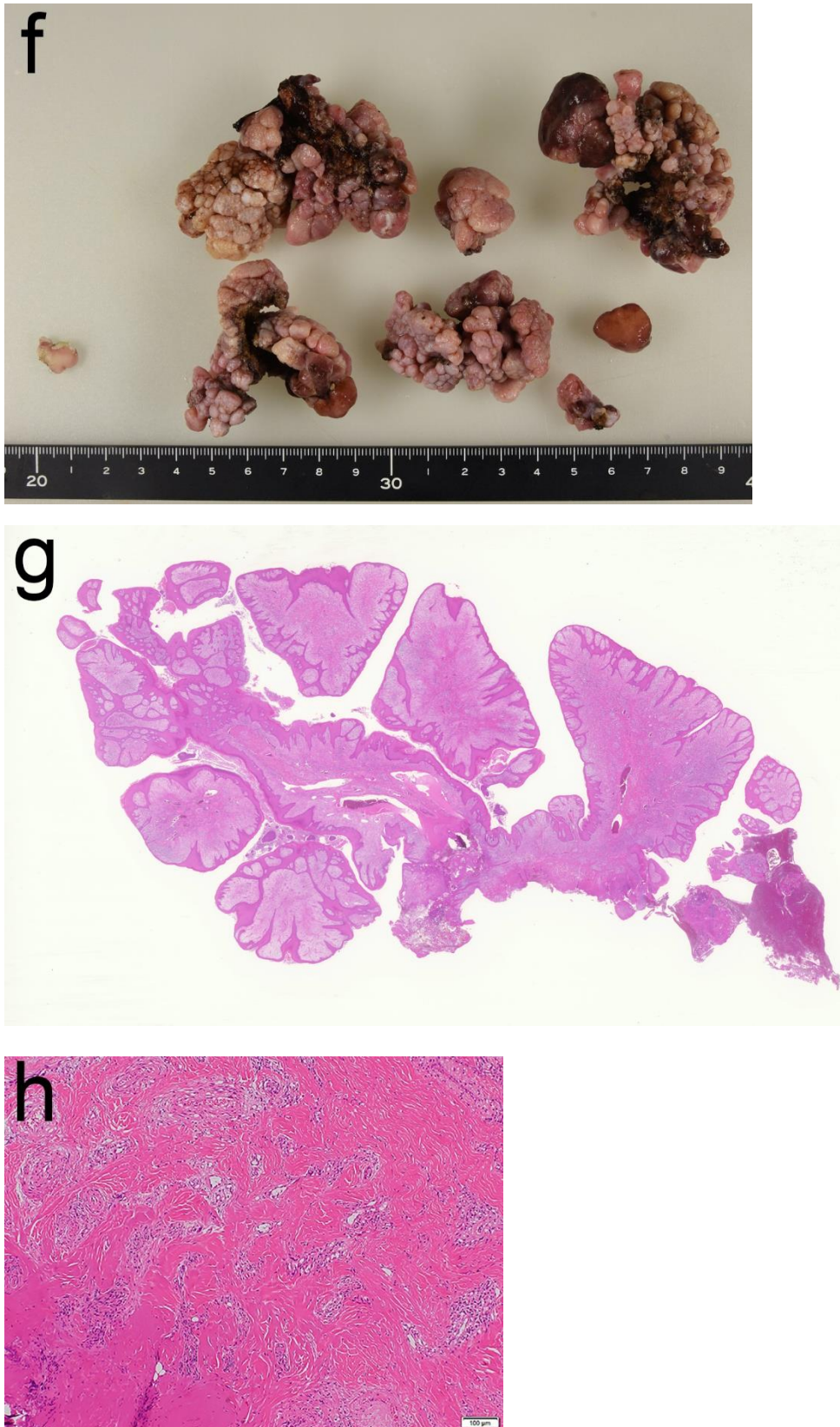
## Conclusion

FEP may grow diffusely on the myocutaneous flap and needs to be differentially diagnosed from

tumor recurrence or secondary carcinoma. The characteristic morphology of enhanced multiple papillary nodules on an enhanced layered structure, limited localization of the myocutaneous flap, and patchy mild elevation of the ADC value may help in differential diagnosis.

Fig. 1

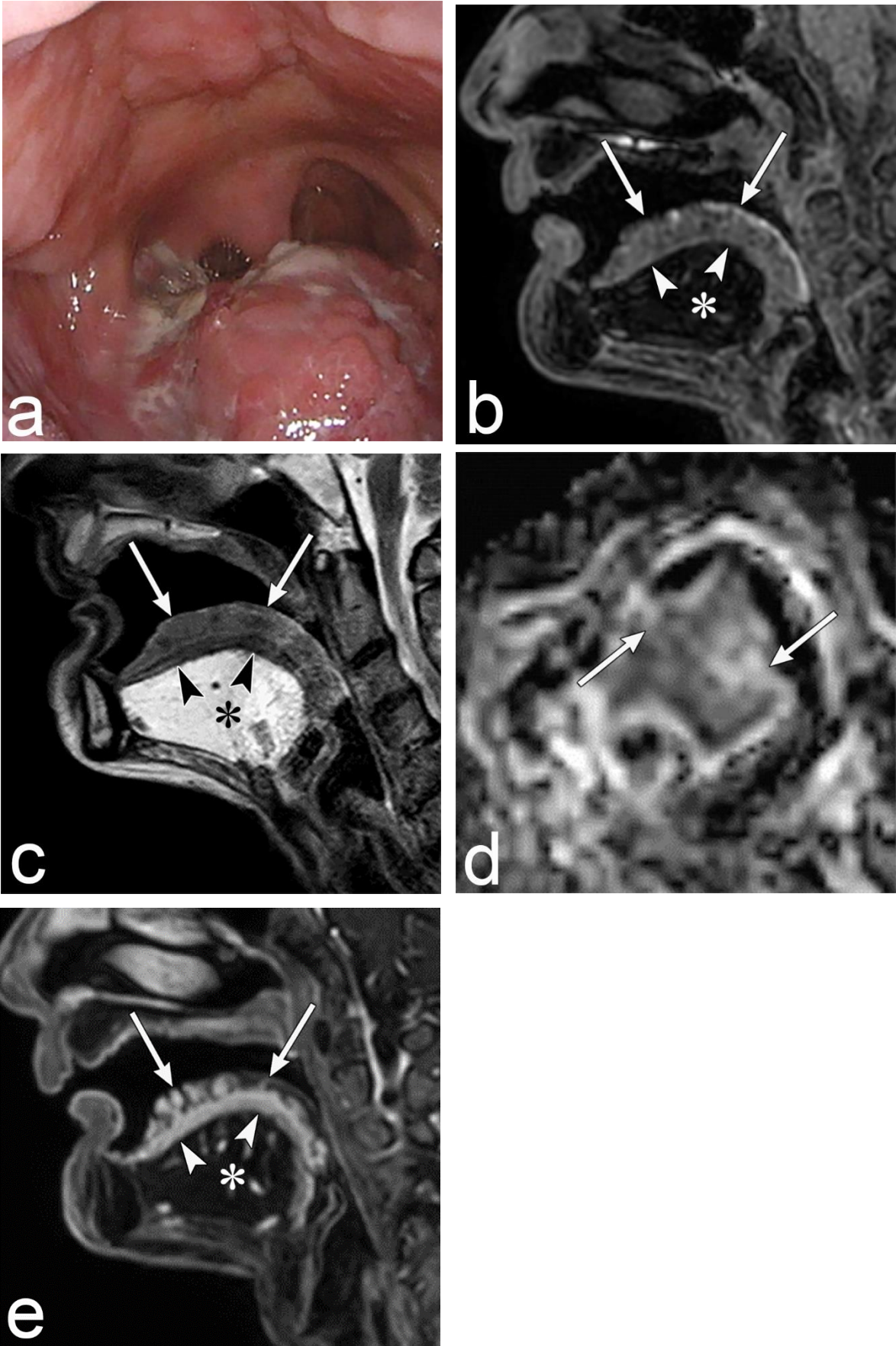




**Fig. 1** MRI, PET-CT, and pathological examination of the lesion in case 1. MRI shows a papillary mass covering the myocutaneous flap (asterisk, in a-e), narrowing the airway. Coronal T1-weighted image (T1WI)

shows low signal intensity in papillary nodules (arrows) and in a thick layer (arrowheads) (a). Coronal T2-weighted image shows heterogeneous intermediate signal intensity in the papillary nodules (arrows) and low signal intensity in the thick layer (arrowheads) (b). On the axial apparent diffusion coefficient (ADC) map, ADC value of the mass (arrows) is patchy mildly elevated (c). Contrast-enhanced sagittal T1WI with fat suppression shows multiple enhanced papillary nodules (arrows) overlying an enhanced thick layer (arrowheads) (d). Fluorine 18 fluorodeoxyglucose PET/CT scan shows high uptake with the maximum standardized uptake value of 15.2 in the mass (arrows) (e). Macroscopic findings of the resected specimen show multiple papillary masses (f). Hematoxylin and eosin (H&E) staining show multiple polypoid lesions covered by squamous epithelium with irregular thickening and elongation of epithelial legs with lymphoplasmacytic inflammation (g). H&E staining ( $\times 100$ ) near the resection margins corresponds to the thick layer on MRI (arrowheads in a, b, d) show a majority of fibrous tissue, mainly collagen fibers and fibroblastic cells, as well as blood vessels and glands (h).

Fig. 2



**Fig. 2** Photograph of the oral cavity, MRI of the lesion in case 2. An intraoral photograph shows multiple nodules on the myocutaneous flap (a). MRI shows a papillary mass covering the myocutaneous flap (asterisk, in b, c, e). Sagittal T1-weighted image (T1WI) with fat suppression shows low signal intensity in the papillary nodules (arrows) and in the thick layer (arrowheads) (b). Sagittal T2-weighted image shows heterogeneous intermediate signal intensity in the papillary nodules (arrows) and low signal intensity in the thick layer (arrowheads) (c). On the axial apparent diffusion coefficient (ADC) map, ADC value of the mass (arrows) is patchy and mildly elevated (d). Contrast-enhanced sagittal T1WI with fat suppression shows multiple enhanced papillary nodules (arrows) overlying an enhanced thick layer (arrowheads) (e).

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