A 46-year-old woman was referred to our hospital having suffered from persistent headache and hearing loss for 1 month. She had a previous history of nasopharyngeal carcinoma (NPC) after chemoradiotherapy. Magnetic resonance imaging revealed a soft tissue mass in the right parapharyngeal space (PPS) (Fig. 1a, b). Nasopharyngoscopy showed only scar-like changes in the nasopharynx (Fig. 1c, d). Transnasal endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) was performed with the patient under total intravenous anesthesia (Video 1). A flexible echoendoscope (BF-UC260FW; Olympus, Japan) was introduced into the nasopharynx via the right nasal cavity. EUS revealed an irregularly shaped mass in the right PPS. The mass was predominantly heterogeneous hypoechoic mixed with spotted hyperechoic (Fig. 2a). Guided by real-time ultrasonography, a 21-gauge needle (NA-201SX-4021; Olympus, Japan) was used to penetrate the PPS neoplasm (Fig. 2b). To sample tissue, a syringe was used to introduce suction pressure. A total of three passes were performed. After the puncture procedure, a nasopharyngoscope was reinserted into the nasopharynx to exclude the presence of active bleeding from the puncture sites (Fig. 2c). The acquired samples were sent for pathological examination (Fig. 2d). Histopathology identified nonkeratinizing squamous cell carcinoma, and this was subsequently validated by immunohistochemistry (Fig. 3). The patient was diagnosed with recurrent NPC with a PPS lesion. Although recurrence of NPC after chemoradiotherapy is common, extranasopharyngeal recurrence is rare. Clinical evidence indicates that tissue retrieval from the PPS is, in most cases, challenging due to its deep location. Some studies have explored the alternative use of computed tomography-guided FNA and nonreal-time image-guided endoscopic FNA [1–4]. However, these techniques are limited by a high risk of injury to surrounding structures and restricted to nonreal-time image-guided procedures. In contrast, EUS-FNA is a simple, safe, and minimally invasive approach to obtain tissue samples from the PPS of patients with suspected NPC recurrence.

Competing interests

The authors declare that they have no conflict of interest.
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Video 1 Endoscopic ultrasound-guided fine-needle aspiration to diagnose a recurrent nasopharyngeal carcinoma in the parapharyngeal space.

Fig. 2 Diagnosis of recurrent NPC located in the PPS based on endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA). a Endoscopic ultrasonography showed an irregular mass in the right PPS; the mass was predominantly heterogeneous hypoechoic mixed with spotted hyperechoic (arrows). b EUS-FNA was performed with a 21-gauge needle (arrow). c No active bleeding was found after the puncture procedure, and the puncture sites were small and minimally traumatic (arrows). d Aspirated tissue specimens obtained during EUS-FNA.
**Fig. 3** Pathologically verified nonkeratinizing squamous cell carcinoma. 

- a Histological examination showed clusters of atypical epithelial cells (magnification × 200).
- b–d Immunohistochemistry demonstrated positive staining for P40, P63, and EBER (magnification × 200).