

## Case report

## Unusual cyst-like lesions in the parapharyngeal space associated with recurrence of tongue carcinoma

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**Abstract:** A 54-year-old male presented with the complaint of a painful sore on the left side of his tongue. Our examination found an ulcer 15 × 20 mm in size on the left edge of the tongue, with peripheral indurations. The lesion was diagnosed histopathologically as squamous cell carcinoma (T2N0M0). Consequently, the lesion was surgically removed and radical neck dissection was performed. Four months after the operation, two unusual cyst-like lesions were identified in the parapharyngeal space by CT and MRI. A biopsy specimen revealed recurrent carcinoma with a cyst-like structure. The route of the tumor metastasis into the parapharyngeal space was obscured, but it was speculated that the excessive lymph accumulation was due to a lymphatic occlusion caused by the surgical procedure, proliferation of the metastatic carcinoma, or stagnation and accumulation of tissue fluid caused by parapharyngeal invasion by the recurrent lesion. (*J. Oral Sci.* 47, 219-222, 2005)

**Keywords:** tongue carcinoma; cervical recurrence; cyst-like lesion; CT; MRI; SCC.

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### Introduction

Tongue carcinomas show a high incidence of regional lymph node metastases. They are known to have a poor prognosis, and lymph node metastasis is a key factor in determining prognosis. Regional neck dissection is the most widely used treatment to prevent the tumor from spreading (1). Local recurrence of oral carcinoma has been seen in tissues surrounding the neck dissection area. Many non-regional lymph nodes are also found in these cervical areas, such as the retropharyngeal lymph nodes of parapharyngeal space. A tongue carcinoma metastasis in the parapharyngeal space is not classified as a regional lymph node metastasis or a distant metastasis, and these metastases into the parapharyngeal are not categorized by the TNM classification. In addition, the route of tumor invasion or metastasis to the parapharyngeal space is unclear and detection of an early metastasis is anatomically difficult. Thus, oral carcinoma metastasis to the parapharyngeal space is a sign of poor prognosis. Since these metastases are not detected easily on clinical examination, computerized tomography (CT) is useful. In addition, CT analysis provides a view of the nature of the tumor mass (2).

Here, we report a rare case of tongue carcinoma recurring after surgical removal and presenting in the parapharyngeal area as two unusual cyst-like lesions, detected by CT examination. The mechanism of metastasis to this area and formation of the cyst-like lesions were not clear. We discuss the possible causes of parapharyngeal space invasion and such cyst-like lesions.

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## Case report

A 54-year-old Japanese male presented in the outpatient clinic of the Oral and Maxillofacial Surgery Department at Nihon University Dental Hospital in August 1996, complaining of a painful sore on the left edge of his tongue that had been present for approximately two months. Previously, the patient had visited a dermatologist for pain while swallowing and talking. An ointment had been prescribed, but the symptoms were not relieved.

The patient had a history of pneumonia and gastric ulcers 20 years prior to our examination, and was informed of arrhythmia at a health checkup three years earlier, though he had not sought treatment. On examination, bilateral bean-sized lymph nodes were palpable in the submandibular regions. They appeared red through the

mucosa, but were not tender to palpation. An oral examination found an ulcer  $15 \times 20$  mm in size and prone to hemorrhage extending from the left edge of the tongue to the floor of mouth. On palpation, the lesion had an indurated periphery extending  $30 \times 35$  mm (Fig. 1A). X-ray and CT examinations revealed no sign of cervical lymph node metastasis (Fig. 2A). Our clinical diagnosis was a tongue carcinoma (T2N0M0).

A biopsy was performed and the histopathological diagnosis was a well-differentiated squamous cell carcinoma (Fig. 1B). The patient received preoperative chemotherapy with 2 courses of VMP (vincristine, 4 mg, Shionogi, Tokyo, methotrexate, 20 mg, Takeda, Tokyo; peplomycin, 20 mg, Nihonkayaku, Tokyo). On October 22, an en-bloc resection of the tumor was performed with

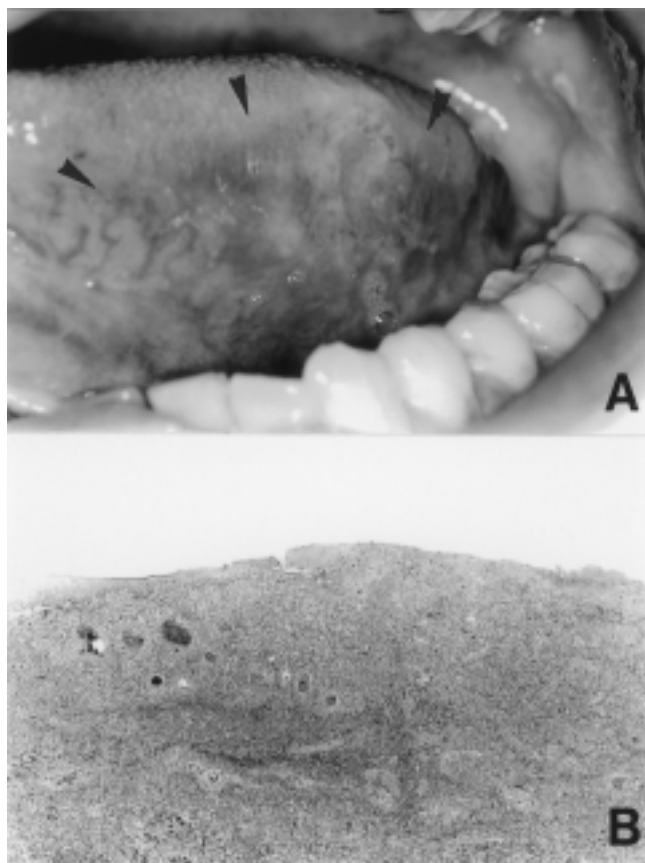


Fig. 1 The oral cavity on initial clinical examination (A) and the pathology of biopsied specimen (B). A: An ulcer ( $15 \times 20$  mm), prone to hemorrhage and with an indurated periphery ( $30 \times 35$  mm), was noted in the region extending from the left edge of the tongue to the mouth floor (arrowhead). B: Atypical tumor cells resembling squamous cells formed an infiltrative and proliferating cancerous region continuous with the parakeratotic stratified squamous epithelium. The pathological diagnosis was highly differentiated squamous cell carcinoma (H-E stain,  $\times 4$ ).

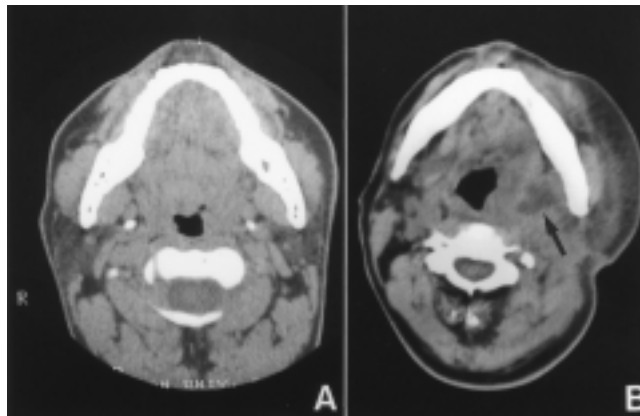


Fig. 2 Preoperative (A) and recurrent (B) CT radiograms. A: No sign of lymphogenous metastases. B: A low-density area was detected inside the medial pterygoid muscle (arrow).

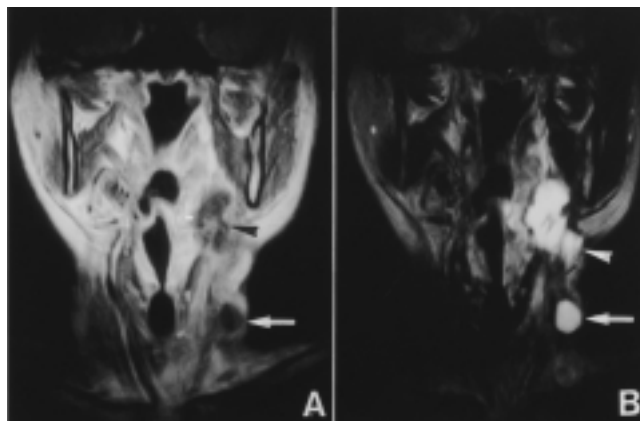


Fig. 3 MRI pictures at recurrence. A: T1-weighted. B: T2-weighted, with gadolinium as medium. A high-signal area extends from the left parapharyngeal to the submandibular region (arrowhead), suggesting fluid retention. Another area of high signals exists in the mid-cervical region (arrow).

a left radical neck dissection, hemiglossectomy, and partial mandibulectomy, along with an immediate reconstruction of the defect using a free skin flap obtained from the forearm. A histopathological examination of the surgically resected tissues showed lymph node metastasis in the left mid-internal deep lymph nodes with no evidence of tumor cell penetration into the extra-capsular area. The patient received postoperative chemotherapy with one course of CF (Cisplatin, 500 mg, Nihonkayaku, Tokyo; Fluorouracil, 2000 mg, Kyowa, Tokyo) and three months of OK-432 (5KE/week, Chugai, Tokyo) and UFTE (600 mg/day, Taiho, Tokyo). The patient subsequently received postoperative follow up.

In February 1997, four months after the operation, the patient complained of pain in the area of the left ear, throat, neck, and head, associated with slight trismus. CT

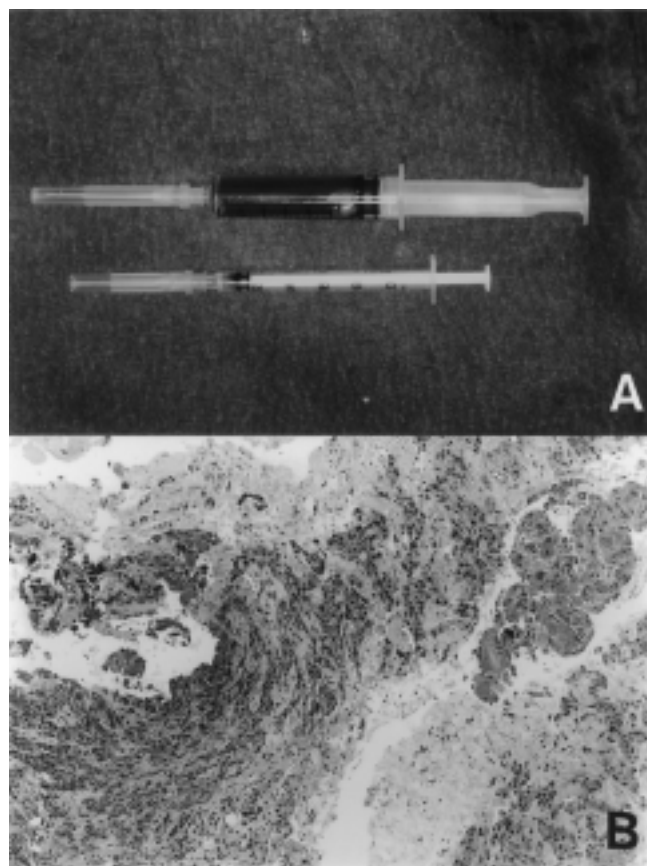


Fig. 4 The fluid aspirated (A) and the pathology of the recurrent lesion (B). A: In the course of biopsy, a transparent, pale yellow fluid was aspirated: 18 ml from the submandibular area (above) and 2 ml from the mid-cervical region (below). B: Pathologically, it was a cancerous lesion consisting of atypical tumor cells resembling squamous cells, which was embedded in the fibrous connective tissue. The stroma showed cellular infiltrations in part, mainly by lymphocytes (H-E stain,  $\times 10$ ).

(Fig. 2B) and MRI (Fig. 3A, B) examinations showed two cyst-like lesions, one that extended from the left parapharyngeal space to the submandibular area and the other in the mid-cervical region. An exploratory puncture of the cyst-like lesions obtained 18 ml of yellow-colored, serous-like fluid from the parapharyngeal space and 2 ml from the mid-cervical lesions (Fig. 4A). Analysis of the fluid from the parapharyngeal space showed the following protein composition: 12.9%  $\alpha_2$  globulin, 9.8% globulin, and 3.7 g/dl total protein (Fig. 5). In addition, the serum level of the SCC tumor marker was increased (410 ng/ml). The lesions were considered to be a recurrence of the tumor and a subsequent incision biopsy was performed. Histological examination revealed a recurrent squamous cell carcinoma with a cystic wall structure (Fig. 4B).

In April 1997, conservative management was started at the request of the patient. The patient received a total of 48 Gy of external radiation from the parapharyngeal space to the lower neck. However, the therapy was suspended due to severe pain in the head and neck area, as well as the patient's general physical weakness. Thereafter, the patient became totally debilitated, and died in July 1997.

## Discussion

We treated an unusual case of tongue carcinoma that metastasized into the parapharyngeal space lymph nodes after a radical neck dissection procedure. Tongue carcinomas have a high propensity for cervical lymph node metastasis, especially into the upper internal jugular lymph nodes (3). However, detection of such lymph node metastasis is difficult to achieve, either by palpation or diagnostic image analysis, until the lesion reaches a substantial size. Our standard procedure for a tongue

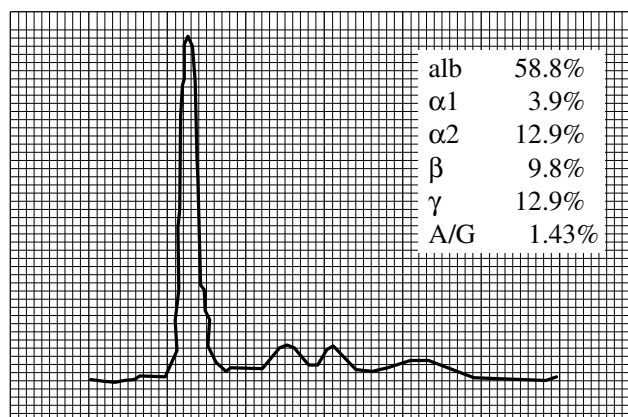


Fig. 5 Protein composition of the fluid in the metastatic lesion. The protein fractions included:  $\alpha_2$  globulin 12.9%;  $\beta$  globulin 9.8%; total proteins 3.7 g/dl. Of the tumor markers, SCC proved to be particularly high, 410 ng/ml.

carcinoma classified as T2 and above is, thus, aggressive treatment such as prophylactic radical neck dissection. Nevertheless, such a radical procedure does not always prevent recurrence, and unsatisfactory control of cervical recurrence is the leading reason for poor prognosis for tongue carcinoma. Lymph node metastasis often occurs in the upper cervical lymph nodes, though less often in the parapharyngeal space lymph nodes.

It is generally believed that cervical lymph node recurrence following a radical neck dissection tends to occur in the periphery of the radically dissected field (3,4), though Kimura et al. (5) stated that postoperative cancer recurrence in the parapharyngeal space was relatively infrequent. The mechanism of metastasis can be explained by changes to the lymphatic drainage route caused by surgical incision in the neck, which facilitates ascending metastasis. Once the parapharyngeal space is affected by recurrence or metastasis, early detection is quite difficult and the tumor has a poor prognosis (1,3,5). Haneda et al. (6) reported that when a tumor invaded the parapharyngeal space, trismus developed in a high percentage of their patients, followed by swelling of the mesopharyngeal wall, otalgia, parotic and submandibular tumefaction, and facial and hypoglossal neuroparalysis. The present patient developed headaches, otalgia, pharyngalgia, and trismus four months after the operation. Administration of antibiotics relieved the pharyngalgia, but the headaches and otalgia persisted. Further, trismus aggravated the accompanying dysphasia, though no apparent swelling of the lateral walls of the mesopharynx was present.

Deterioration of a recurrent cervical lesion sometimes induces fluid retention due to necrosis of the tumor nests, and such fluid is usually turbid from necrotic substances (7). The abundant yellowish fluid extracted from our patient was serous and clear, and this appears unusual based on previous reports. The protein composition of the aspirated fluid was comparable with that of serum from the patient, with total proteins reduced by approximately half, whereas  $\alpha_2$  globulin was 2.6 times and  $\beta$  globulin 3.4 times higher than those in the serum. In comparison with the generally assumed lymph composition

(8), the total protein levels had risen nearly three-fold.

Our pathological exploration was limited to the biopsy materials obtained from the cyst-like wall of the recurrent lesion, which precluded a clear understanding of the overall picture of the pathological structure or inference of the fluid retention mechanism. We speculate that the fluid retention did not result from degeneration or necrosis, but rather from excessive lymph accumulation due to a lymphatic occlusion caused by the surgical procedures, proliferation of the metastatic carcinoma, or stagnation and accumulation of tissue fluid due to parapharyngeal invasion by the recurrent lesion.

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