A Case of Deep Venous Thrombosis Occurring After Tongue Cancer Surgery

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Abstract
A 74-year-old woman underwent hemilateral resection of the mobile tongue and right modified radical neck dissection after preoperative chemotherapy following a diagnosis of tongue cancer, T2N1M0. Fever and swelling of the left lower limb occurred 34 days after surgery. Computed tomography (CT) and ultrasonography (US) examinations suggested left femoral venous thrombosis. Immediately, anticoagulant fibrinogenolysis therapy for thrombosis was administered. Thereafter, fever and swelling of the left lower limb gradually subsided without complications such as pulmonary embolism. The presence of cancer, the patient’s advanced age, major surgery for 5 hours, and preoperative chemotherapy were considered to be the main factors for thrombus formation. To date, the patient’s recovery has been good without recurrent thrombosis.

Introduction
Deep venous thrombosis (DVT) may often induce pulmonary embolism, leading to a fatal outcome. It has been reported that the most common occlusion sites are the left femoral/iliac veins (1). DVT has frequently been reported in other fields and aggressive prophylactic treatment has been performed (2). However, DVT is rare in the oral regions; therefore, oral surgeons do not recognize DVT. In this study, to improve the understanding of DVT in the oral regions, we report the case of a patient in whom left femoral venous thrombosis developed after tongue cancer surgery.

Case Report
On September 14, 2002, a 74-year-old woman consulted the Dental and Oral Medical Center, Kurume University Hospital, for phyma formation at the right lingual margin and haphalgesia. Neither family history nor medical history was contributory. Palpation of the neck revealed right cervical lymphadenopathy. Furthermore, intraoral examination revealed a 2.5×2 cm ulcerated lesion on the right border of the tongue, with a raised and indurated margin, which was tender and painful on palpation (Fig. 1). On October 2, 2002, a biopsy was performed. The histopathological diagnosis was squamous cell carcinoma. Following a diagnosis of tongue cancer (T2N1M0), cytostarobine ocfosfate (TS-1®) was orally administered at a total dosage of 1,000 mg for preoperative chemotherapy. On October 7, 2002, hemilateral resection of the mobile tongue and right modified radical neck dissection were performed.

Fig. 1. Intraoral findings showing ulcer formation with induration in the right border of the tongue.
under general anesthesia. The duration of surgery was 5 hours and the total volume of blood loss was 165 g. The total volume of intraoperative transfusion was 4,260 ml with a total urine volume of 2,400 ml. The day after surgery, tube feeding was started at an initial energy volume of 750 kcal/day. Two days after surgery, the patient could sit up in bed. Five days after surgery, oral ingestion was initiated. The histopathological examination of the resected specimen revealed well differentiated squamous cell carcinoma and suggested malignant tumor cells at the surgical margin; therefore, additional resection was performed under local anesthesia 21 days after surgery. The duration of surgery was 30 minutes and intraoperative bleeding was negligible. The day after additional surgery, oral ingestion was favorable and the course was good without persistent severe deglutition disorder or dyslalia related to tongue resection. However, fever (38 °C or higher) occurred on the 34th day postoperatively. Under a tentative diagnosis of mild aspiration pneumonia, an antibiotic was administered intravenously; however, pyretolysis was not achieved. On the 36th postoperative day, edematous swelling of the left lower limb was observed, suggesting venous thrombosis. Ultrasound and CT scans confirmed a thrombus involving the left femoral veins (Figs. 2 and 3). On a blood coagulation/fibrinogenolysis system test, the protein C level was decreased to 52%, whereas the D dimer level was increased to 5.16 µg/dl, suggesting thrombosis. Immediately, anticoagulant fibrinogenolysis therapy [10,000 units of heparin sodium, 240,000 units of urokinase, 2 mg of warfarin, 300 mg of sarpogrelate hydrochloride (Anprag®)] and the use of elastic stockings were initiated. Pulmonary scintigraphy did not reveal any pulmonary embolism. Thereafter, fever and edema gradually subsided, and heparin and urokinase were discontinued 1 week after the start of administration. On December 5, 2002, the patient was discharged with a good course; however, oral administration of 1 mg of warfarin and 3 mg of sarpogrelate hydrochloride (Anprag®) as well as the use of elastic stockings were still employed. To date, the patient’s recovery has been good without recurrent thrombosis.

**Discussion**

Etiological factors for thrombosis include advanced age, obesity, dehydration, surgery, long-term recumbency, infection, malignant tumors, heart disease, diabetes, abnormalities in the blood coagulation capacity, delivery, and oral contraceptive agents (3–8). Considering these factors in our patient, the body mass index (BMI) was 24.7, suggesting the absence of obesity, and there were no concomitant diseases such as diabetes or heart disease. In addition, despite thorough nutrition/transfusion manage-
ment, dehydration may have occurred for the following reasons: advanced age, tongue cancer surgery for a long duration, preoperative chemotherapy, and difficulty in postoperative oral ingestion, although the patient could sit up in bed 2 days or more after surgery. Considering this possibility, factors inducing thrombosis may have been present. In this case, the onset of thrombosis was confirmed 34 days after surgery, that is, after a relatively long interval; however, the etiology was unclear. It has generally been reported that blood coagulation may be enhanced in patients with cancer; however, in our patient, a preoperative blood coagulation test did not reveal any abnormalities.

With respect to femoral venous thrombosis, many patients have been reported in the orthopedic field; therefore, aggressive prophylactic strategies have been established (2). However, this condition is rare in the oral region; therefore, our understanding of thrombosis was insufficient. Not only DVT but also pulmonary embolism leads to a high probability of a fatal outcome. Moser et al. indicated that in 95% of the patients with pulmonary embolism, the etiological factor was DVT involving the lower limbs (3), as demonstrated in our patient. For prevention, preoperative screening of a high-risk group according to the guidelines for thrombosis treatment may be extremely important (9). In patients assigned to the high-risk group on screening, the use of elastic stockings, the intermittent pulsating air-type compression (IPC) automated method, or administration of low-dose heparin should be performed after surgery, if necessary. A recent study reported the efficacy of perioperative aspirin treatment (10). In our patient, edema of the lower limb developed as a precursory symptom, facilitating early diagnosis/treatment; however, asymptomatic thrombosis causes idiopathic pulmonary embolism in some patients. Furthermore, US was useful for early diagnosis.

In some patients with oral cancer, postoperative changes in oral function and environment make it impossible to take meals and drink enough water. Especially in elderly patients, volition is reduced, causing malnutrition, dehydration, or long-term recumbency when it is continued for a long period. Briefly, if DVT readily develops after oral cancer surgery, sufficient rehabilitation for improving oral function and nutritional control may be important to prevent DVT. DVT may often recur; close follow-up is necessary. Oral surgeons must always consider the risk of postoperative DVT for prevention as well as early detection and treatment.

References