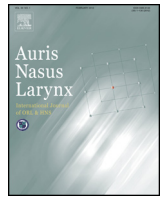




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Combined transcervical and orbitozygomatic approach for the removal of a nasopharyngeal adenocarcinoma

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ABSTRACT

Objective: In some cases, the exposure and safeguarding of the internal carotid artery (ICA) are not easy by the maxillary swing approach that is used as a mainstay for the removal of nasopharyngeal tumors. To address this issue, we have developed a new combined transcervical and orbitozygomatic approach.

Methods: A nasopharyngeal adenocarcinoma arose in a 52-year-old patient and occupied the right middle skull base extending to the ICA. We first identified and dissected the ICA from the posterolateral part of the tumor using a transcervical approach. Then, the tumor was approached and removed by an orbitozygomatic technique with hemifacial dismasking. The surgical defect was filled using a temporal muscle flap, which was divided into two parts according to the blood supply from either the anterior or the posterior deep temporal artery.

Results: The postoperative course was uneventful and favorable cosmetic results were obtained. The patient has been free of carcinoma for more than 40 months after the surgery.

Conclusion: Our new combined approach might be a good option for selected patients with nasopharyngeal tumors.

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1. Introduction

There is no standard surgical approach for the removal of nasopharyngeal carcinoma (NPC). Currently, the maxillary swing (MS) approach and its modified procedures appear to be the mainstay of surgical treatments because of the relatively good exposure of the deep facial region and the skull base [1–6]. However, this technique requires facial incisions, and the exposure and safeguarding of great vessels are not easy for tumors that extend into the deep parapharyngeal space (PPS) [1,3]. Lateral approaches, such as the infratemporal fossa approach or the orbitozygomatic (OZ) approach, might be superior to the MS approach with respect to the handling of great vessels and overall esthetic result [7,8]. However, they provide only limited exposure of the contralateral nasopharynx and require sacrificing of the mandibular nerve (V3) [7,8]. Thus, for the removal of NPC, it is essential to choose an appropriate approach that is suitable for the individual case depending on the location and size of the tumor and requirements of the particular patient.

The present report involves the case of nasopharyngeal mucoepidermoid carcinoma that occupied the right middle skull base adjacent to the internal carotid artery (ICA). Because the most critical factor in this case appeared to be the protection of the ICA, we first identified and dissected the ICA as high as possible beyond the level of the styloid process by using a transcervical (TC) approach employing a technique that we recently reported in a mandibular-preserving pull-through oropharyngectomy [9]. Then, the tumor was removed by the OZ approach combined with right-sided hemifacial dismasking [10]. This combined approach worked well and favorable cosmetic results were obtained in addition to the safe removal of the tumor. In this report, we describe the surgical techniques for this novel method.

2. Materials and methods

2.1. Patients

A 56-year-old female was referred to our department with persistent otitis media with effusion. The right nasopharyngeal wall was swollen but the mucosa was smooth (Fig. 1A). Magnetic resonance imaging (MRI) revealed a massive tumor with

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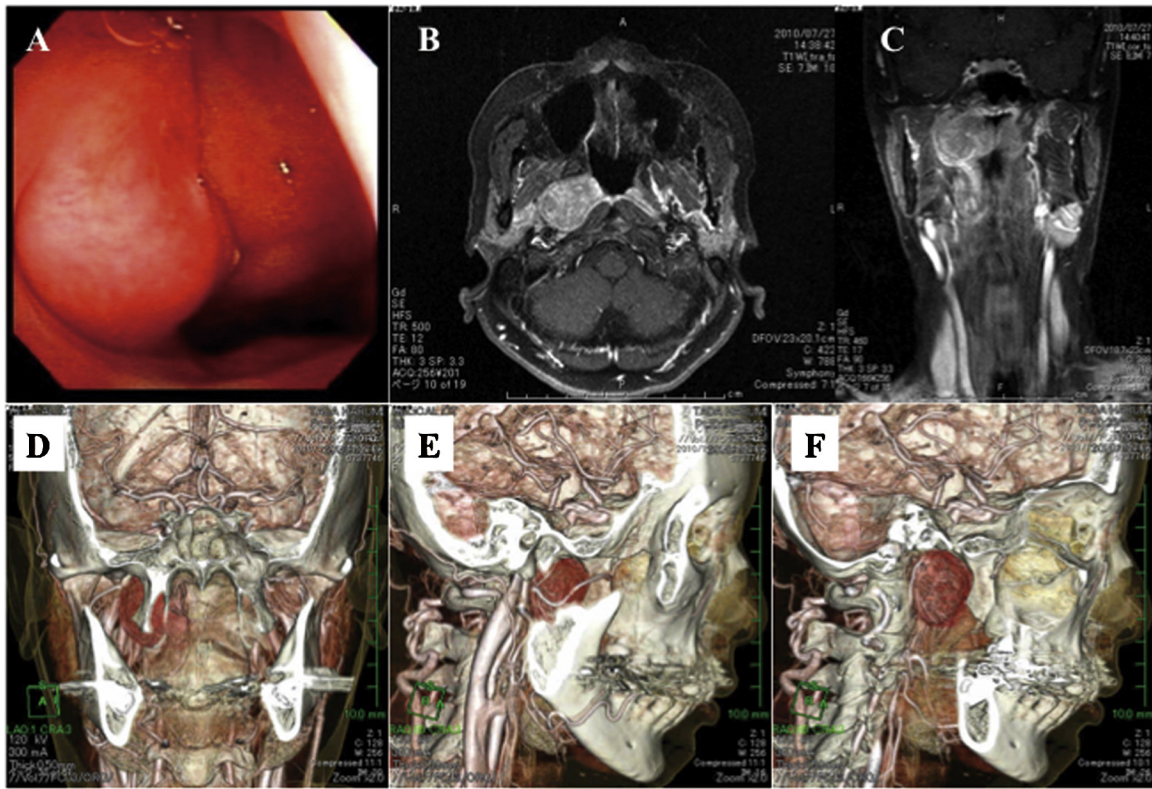


Fig. 1. (A) Endoscopic view of the primary tumor. (B, C) Horizontal and coronal magnetic resonance images with enhancement. (D–F) Three-dimensional computed tomography images.

enhancement mainly located at the right middle skull base adjacent to the ICA and the pterygoid muscles (Fig. 1B and C). The histological evaluation of a biopsy specimen demonstrated squamous cell carcinoma. Therefore, a 50 Gy of concurrent chemoradiotherapy (S-1, 120 mg/day/p.o. and 2 Gy of irradiation/day) was administered [11,12]. However, the tumor response was quite poor and a second biopsy was undertaken. The histological evaluation of the second biopsy specimen demonstrated adenocarcinoma; therefore, the surgical removal of the tumor was planned.

2.2. Preoperative planning

To precisely evaluate the anatomical location of the tumor, we used three-dimensional computed tomography (3D-CT) imagings (Fig. 1D–F). The tumor occupied a tight compartment

composed of the middle skull base superiorly, the ICA posteriorly, and the middle and lateral plates of the pterygoid process that sandwiched the tumor anteriorly (Fig. 1D–F). The challenging parts of the surgery appeared to be the protection of the ICA and dissection of the tumor from the skull base and the pterygoid process; we determined to identify and dissect the ICA as high as possible utilizing the TC technique [9] and then conduct an OZ approach. This is because the comparison of a 3D-CT image of the present case (Fig. 2A) and an intra-operative picture of the patient who underwent our TC (Fig. 2B) approach indicated that the lower part of the tumor could be dissected from the ICA safely and the OZ approach was expected to provide sufficient views of the skull base on the basis of the 3D-CT imaging (Fig. 1E). The right facial dismasking was also combined with the OZ approach to give a better esthetic result.

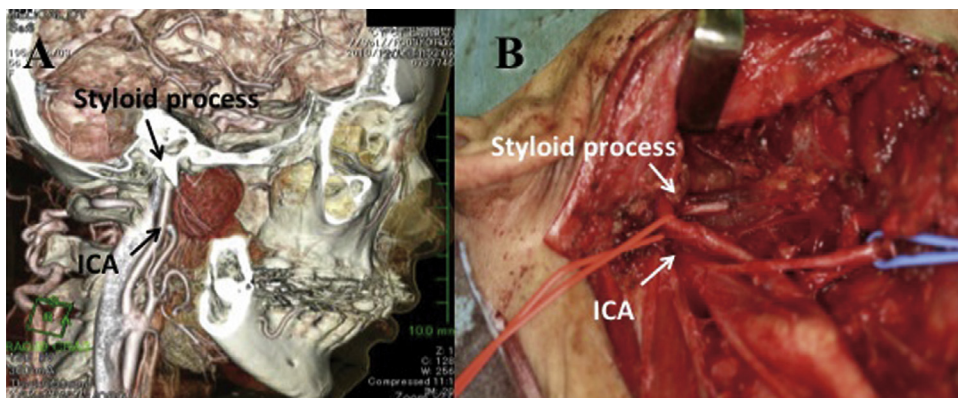


Fig. 2. (A) Three-dimensional computed tomography images. (B) Intraoperative photo of the mandibular preserving oropharyngectomy. ICA: internal carotid artery.

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