

Does Different Mandibulectomy (Marginal vs Segmental) Affect the Prognosis in Patients With Oral Squamous Cell Carcinoma?

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Purpose: It is unclear whether different mandibular surgical methods affect the prognosis of patients with oral squamous cell carcinoma (OSCC). Accordingly, the authors retrospectively compared the prognosis of patients who underwent marginal mandibulectomy (MG) or segmental mandibulectomy (SG) for OSCC and aimed to determine the factors influencing prognosis.

Materials and Methods: The authors conducted a retrospective cohort study of 82 patients with OSCC who underwent mandibulectomy at their hospital from January 2001 through January 2015. All patients had a biopsy-confirmed diagnosis of OSCC adjacent to the lower mandible. The local recurrence rate and survival rate after these 2 treatment modalities were analyzed using Kaplan-Meier survival analysis. At univariate and multivariate analyses, the Cox regression model was used to screen risk factors for recurrence, including pathologic grade, pT stage, mandibular involvement, lymph node metastasis, and method of mandibulectomy. Statistical significance was considered when *P* values were less than .05.

Results: Of the 82 patients, 39 underwent MG and 43 underwent SG. According to statistical analysis, age, gender, pathologic grade, tumor stage, mandibular involvement, and lymph node metastasis were similar between the 2 groups. The 3- and 5-year local recurrence rates were not significantly different between the 2 groups (*P* > .05). The 3- and 5-year survival rates were not significantly different between the 2 groups (*P* > .05). Poorly differentiated pathologic type was the only prognostic factor for OSCC at multivariate Cox regression analysis (*P* = .001).

Conclusion: The results of this study suggest that MG is safe for some evaluated patients with OSCC. Of the prognostic factors studied, MG was not associated with worse prognosis; however, poorly differentiated OSCC affected the prognosis for oral carcinoma.

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The anatomic structure of the oral cavity is quite narrow; accordingly, oral squamous cell carcinoma (OSCC) adjacent to the lower mandible could invade and damage the neighboring bone tissue. Therefore, mandibulectomy should be conducted for OSCC close to or invading the lower mandible. Previously, researchers believed that the tumor invaded the lower mandible through diffusion in the lingual periosteum lymphatic channels; therefore, in their opinion, segmental or hemimandibulectomy should be performed for such OSCC cases to achieve radical treatment.¹ However, other researchers subsequently proposed that invasion of the lower mandible by OSCC or oropharyngeal SCC involved an outside-in progressive process.²⁻⁴ With advances in medical technology, the development of in-depth anatomic, pathologic, and clinical research, and the increasingly enhanced functional and esthetic outcomes in patients, marginal mandibulectomy (MG) was performed for patients with suspected tumor invasion or tumor invasion of the superficial lower mandible with sufficient height, and curative effects were achieved.⁵⁻¹¹ However, there has been little relevant research about whether different mandibular surgical methods would affect the prognosis of patients with OSCC.¹²

Therefore, the purpose of this study was to evaluate whether good functional and cosmetic results in patients undergoing MG can be achieved with no loss of disease control. The specific aims of the study were to 1) retrospectively analyze recent cases of OSCC that were treated with mandibulectomy in the authors' hospital, 2) compare the differences between MG and segmental mandibulectomy (SG) in relation to local recurrence rates and survival rates of patients with OSCC, and 3) analyze the relevant factors that influence local recurrence of such tumors.

Materials and Methods

STUDY DESIGN AND ELIGIBILITY CRITERIA

To address the research question, the authors designed and implemented a study to compare the prognosis of 82 patients with OSCC who underwent MG or SG and analyze the relevant factors that influence local recurrence of such tumors. The study population was composed of 82 patients with OSCC who were treated at the Department of Oral and Maxillofacial Surgery of the First Affiliated Hospital of Fujian Medical University (Fuzhou, China) from January 2001 through January 2015. This study was approved by the ethics committee of the First Affiliated Hospital of Fujian Medical University (approval number [2013]12), and informed consent was exempted by the institutional review board because of the retrospective nature of the study. To be included in the study sample, the

inclusion criteria of the research were lesions closely associated with the mandible and pathologically diagnosed as squamous carcinoma; no distant metastasis at admission or during the course of therapy; no other preoperative therapy; postoperative follow-up of not less than 6 months; and complete clinical and pathologic information, including gender, age, staging, treatment, curative effect, and recurrence. Patients were excluded as study subjects if they had other serious systemic diseases. All surgeries involved mandibulectomy and were performed by the same group of experienced surgeons.

THERAPEUTIC METHOD

According to the clinical and radiologic extent of bone invasion and the vertical height of the remaining mandible, the surgical methods included MG or SG combined with neck lymphadenectomy. MG included partial resection of the height of the mandible that would not disrupt its continuity. SG included en bloc resection of the entire height of the mandibular body. The decision to use MG or SG was based on the preoperative examination and judgment of the operating surgeon at the time of surgery. The choice of the operating surgeon was based on an evaluation of the clinical and radiologic extent of the bone, invasion margins of at least 1.5 cm beyond all clinically evident tumor using intraoperative frozen section, and the vertical height of the remaining mandible. There should be sufficient height in the mandible to leave a functional lower border. For patients with lower alveolar nerve invasion, the authors preferred mandibular hemiresection as part of SG. Because intraoperative frozen sections were used, the adequacy of tissue margins, including bone tissues, was confirmed. If the margins were positive, then the range of surgery was expanded until negative margins were achieved. In addition to surgery, other comprehensive therapies, including postoperative radiotherapy and chemotherapy, were adopted after integrated evaluation of the findings at clinical and imaging examinations and intraoperative exploration. All patients received postoperative chemotherapy with oxaliplatin 200 mg/day and floxuridine 500 mg/day for 5 days and radiotherapy at a dose of 50 to 70 Gy. For correcting local tissue defects, repair methods included transfer and repair of the free fibula myocutaneous flap, pectoralis major myocutaneous flap, free forearm flap, anterolateral thigh flap, and local tissue flap.

DURATION AND METHOD OF FOLLOW-UP

Patients were postoperatively followed once every 1 to 3 months in the first year, once every 3 to 6 months in the second to fifth year, and once every year thereafter. They were followed by a regular specialist using

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