



## Review

# A meta-analysis on selective versus comprehensive neck dissection in oral squamous cell carcinoma patients with clinically node-positive neck



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## SUMMARY

**Objective:** Properly management of cervical lymph node metastases is a critical treatment for patients with oral squamous cell carcinoma (OSCC). However there is no consensus on the optimal treatment for oral cancer patients with clinically node-positive (cN+) neck. This study aims to access the feasibility of selective neck dissection in oral cancer patients with cN+ neck. **Method:** We searched PubMed and EMBASE up to April 2015 to identify the studies which compared selective neck dissection (SND) with comprehensive neck dissection (CND) in OSCC patients with cN+ neck. Data were extracted by two authors. The meta-analysis was conducted with regional recurrence and disease specific death as primary endpoints. **Result:** Five studies with a total of 443 patients met our inclusion criteria. No significant difference was found regarding regional recurrence, disease specific death or overall death between the SND and CND group. **Conclusion:** These findings suggest that cN+ OSCC patients treated with SND in conjunction with adjuvant therapy got comparable clinical outcome to CND.

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## Introduction

Cervical lymph node metastases has been well recognized as one of the most important prognostic factors for patients with oral squamous cell carcinoma (OSCC) [1,2]. Pathologically positive lymph node metastasis has occurred in about half of the OSCC patients at the time of diagnosis [3]. Studies have found that positive nodes in the neck means survival rates decrease by 50% [4]. Moreover, recent studies showed that high lymph node density strongly indicated disease recurrence and poor survival rate [5,6]. Eliminating the neck node metastasis is a critical treatment procedure for OSCC patients especially with clinically positive nodes.

Comprehensive neck dissection (CND) including radical and modified radical neck dissection, has been the standard surgical treatment for clinically node-positive (cN+) necks for the past century [7,8]. The cosmetic and functional defects such as shoulder dysfunction and chronic neck and shoulder pain caused by comprehensive neck dissection prompted the search for a less invasive

way to deal with neck metastases without impairing the oncological result.

Selective neck dissections (SNDs), preserving one or more lymph node echelons, were established as elective treatment for the node-negative (N0) neck [9–11]. SND essentially removed the lymph nodes at risk based on patterns of lymphatic spread [3]. Recent studies showed that SND was used in selected group of patients with cervical nodal metastases resulting in excellent regional control [12–14]. However, whether SND is appropriate for the clinically node-positive (cN+) neck remains controversial [15–17]. Most published studies include only a small amount of patients, with limited follow-up, few authors have compared SND and CND outcomes within the same study. No prospective study is available yet. This study aimed to review the literature and perform a meta-analysis on the existing retrospective studies which compared SND with CND in OSCC patients with cN+ neck.

## Methods

## Search strategy

The electronic search (Fig. 1) was performed prior to April 2015 in The Cochrane Library, MEDLINE via PubMed, EMBASE and Google scholar using the key terms “selective neck dissection”,

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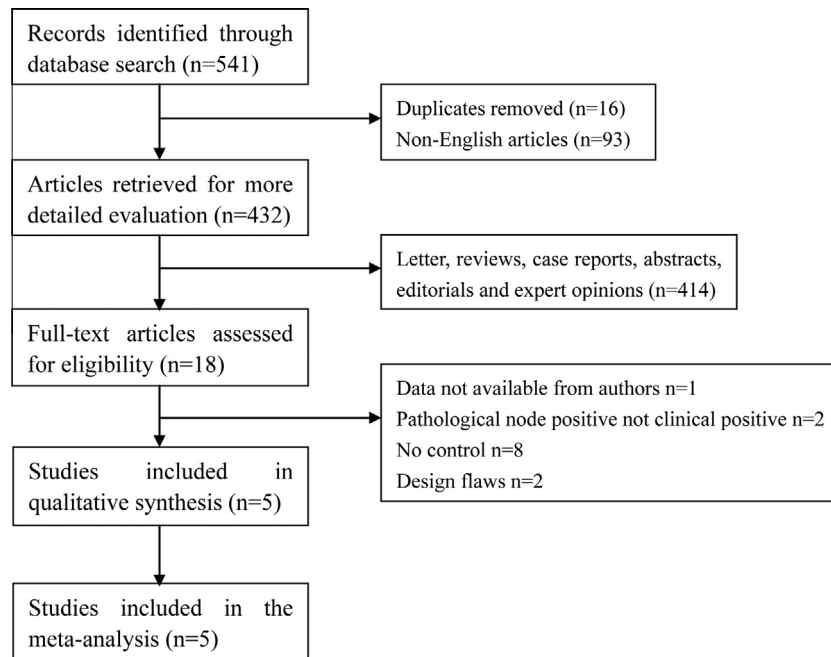


Fig. 1. Flow chart showing the process of study selection for the meta-analysis.

“comprehensive neck dissection”, “radical neck dissection”, “supraomohyoid neck dissection”, “positive node”, “cN+ neck” and “node-positive neck”, “head and neck”, “squamous cell carcinoma”, and “oral cancer”. Some of these terms were searched in combination. The references of each article obtained were checked for additional relevant studies. Only articles published in English were included in this study.

#### Data extract

Data from the studies were first extracted independently by two principal investigators (LL and TZ) using standardized data forms, and then data was confirmed by another co-author (QK). In addition to basic information of the study design including the first author’s name, publication year, the country where the study was performed, study duration and sample size were extracted. Follow-up time, neck dissection types, numbers of disease-specific and overall deaths in each group and the number of neck recurrences were extracted. Disease-specific death and regional recurrence were defined as the primary endpoints.

#### Assessment of study quality

For assessing the risk of bias in individual study, we used a scoring scale based on the Hayden’s criteria with some modifications by Yuan et al. [18]. It is based on six domains of potential study biases which should be included in a review of prognostic studies: study participation, study attrition, analysis methods, measurement of prognostic factors, confounding variables, and outcomes. Studies scoring 10–12 were identified as high quality defined by Maan et al. [19].

Two reviewers (LL and TZ) assessed the quality of each selected study using the Newcastle–Ottawa scale. This scale assesses the quality of nonrandomized studies in terms of selection (4 points), comparability (2 points), and outcome (3 points). Studies scoring 6–9 points were defined as high quality.

#### Inclusion and exclusion criteria

Only studies which compared SND with CND in patients with squamous cell carcinoma of the oral cavity who had clinical or radiological evidence of neck node metastasis (clinical N+ neck), were collected for this meta-analysis. All the patients included in the studies should be newly diagnosed. The following types of studies: randomized controlled trials (RCTs) and cohort study were included in the present study. When more than one publication reported on the same trial, the one of higher quality according to modified Newcastle–Ottawa Scale was included. Exclusion criteria were as follow: (1) The required data was not available. (2) Abstracts, letters, comments, editorials, expert opinions, reviews, and case reports. (3) Studies without a control group. (4) Studies included recurrent patients.

#### Statistical analysis

Meta-analysis was undertaken using Review Manager 5.2. Heterogeneity was assessed using  $I^2$  statistic and Cochran Q test. The value of  $I^2$  was 0% and  $p > 0.10$  suggesting that heterogeneity was negligible. Then we used the fixed effect model for the analysis. Forest plots and funnel plots were employed to test the overall effect and the publication bias, respectively. We also conducted subgroup analysis stratified by length of follow-up. All tests were two sided with a significance level of  $p < 0.05$ .

## Results

#### Study selection and characteristics

After review the 525 publications yielded in our comprehensive literature search, no randomized controlled trial was found. Only 5 retrospective cohort studies [20–24] comparing selective neck dissection with comprehensive neck dissection in OSCC patients with clinically node-positive neck were included in this study. A total of 443 previous untreated participants were recruited in this meta-analysis, including 210 patients in the SND group and 233 patients

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