

Efficacy of Clinical Palpation to Detect Cervical Lymph Node Metastasis of Oropharyngeal Cancer

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Research

Keywords: oropharyngeal cancer, lymph node metastasis, neck dissection, squamous cell carcinoma

Posted Date: August 24th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-60129/v1>

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Abstract

Background: Before excision of the primary tumor in oropharyngeal cancer, a decision must be made to treat the cervical lymph nodes (LN) or not. The study aimed to assess the role of clinical palpation (CP) for preoperative detection of LN metastasis.

Methods: Twenty patients with oropharyngeal squamous cell carcinoma (OSCC), managed by excision of the primary tumor and neck dissection. The histopathological examination results compared to the preoperative assessment of the nodes by CP.

Results: There were 20 patients involved, 11 males and nine females. The mean age was 54.5 years. Twenty neck dissections performed; there was 14 LN metastasis as proved by histopathological examination. On CP, true positive was 12, false negative was two, true negative was two and false positive was four.

Conclusions: Clinical palpation performed preoperatively is highly advised as it has high diagnostic capabilities to reach a decision to do neck dissection or not.

Trial registration: not applicable

Introduction

The deformity results from the management of oropharyngeal cancer is the main concern facing the head and neck surgeon during the treatment plan. In addition to this esthetic concern, there are functional problems such as speech and mastication. These factors make oropharyngeal cancer management differs from other types of cancer, also differs from the management of the benign tumors [1–3].

The first correct step of the treatment plan to manage patients with oropharyngeal cancer is an early diagnosis, which eventually decreases morbidity and mortality [4].

Before the definite diagnosis of the excised primary tumor and its associated LN by histopathological examination, clinical examination by palpation and different imaging techniques provide a provisional or almost definite diagnosis especially if they handled by an expert surgeon [5–7].

More than 95% of oropharyngeal cancer is squamous cell carcinoma (SCC) [8]. The prognosis of the SCC depends on the size, site, thickness, and the histopathological staging of the primary tumor. However, the most significant prognostic factor is the metastasis to the cervical LN [9, 10]. Metastasis to cervical LN reduces the five years survival rate by 50% [1, 11]. The controversy of managing N₀ neck probably goes with elective neck dissection as the risk of occult metastasis is higher than 20% [12].

Although the clinical examination of the neck may be difficult especially after radiotherapy or patients with a short neck, it acts as a first screening tool to detect LN metastasis, this is why a well-trained and experienced surgeon who can differentiate between reactionary and metastatic LN must do the

examination. However, a decision to operate on the metastatic LN has to be made for all patients whether they are palpable clinically or not [1, 13].

The aim of the study was to assess the validity of the CP to reach a definite diagnosis by comparing the results with the histopathological examination of the excised nodes.

Patients And Methods

The study involved 20 patients; all of them were presented with OSCC. The data were collected along two years. Staging of the primary lesion and neck was according to the American Joint Committee on Cancer [14].

Inclusion criteria included patients with OSCC required both surgical excision of the primary tumor along with neck dissection. Exclusion criteria included patients required only excision of the primary tumor without neck dissection, patients previously treated by surgery, radiotherapy and/or chemotherapy, and patients presented with inoperable tumors (beyond surgery).

Clinical Examination of the Neck

All the levels of the neck were examined systematically on both sides. If there was palpable LN [Fig. 1], the assessment of its site, size, consistency and tenderness or any associated signs and symptoms were recorded. The criteria to consider the node as metastatic on CP were palpable, firm to hard and /or fixed node, while the criteria to consider the LN reactive were soft, tender or when there was a history of inflammation.

Radiographic Examination

As a protocol, patients were examined by CT (with contrast/2 mm sections) of the neck from the base of the skull to the clavicle.

Preparation For Pathological Examination

During surgery, the neck dissection specimens were divided into levels and sublevels; each level must be cautiously labeled and presented in a separate container to provide better information for the pathologist.

Statistical Analysis

Clinical palpation findings were compared with the histopathologic results. The outcomes were presented in terms of sensitivity, specificity, accuracy, positive and negative predictive values. IBM SPSS statistics for windows, version 24.0 was used for statistical analysis ($P < 0.05$ were considered statistically significant) [15].

Results

There were 20 patients involved, 11 males (55%) and nine females (45%). The age range was 25–79 years, the mean age was 54.5 years, the sixth decade (50–59) was the most commonly involved (35%),

the male to female ratio was 1.2-1. The most common site of the primary lesion was the tongue (45%) [Fig. 2]. The most frequent histopathological grade was well-differentiated SCC (60%). The most common size of the primary tumors was T4 (65%). Stage IV was the most common stage (Table 1).

All the patients underwent unilateral neck dissection. Supraomohyoid neck dissection was performed in nine patients, modified radical neck dissection was performed in eight patients and classical radical neck dissection in three patients only.

Out of 20 neck dissection, there was 14 LN metastasis as proved by histopathological examination. On CP, true positive was 12, false negative was 2, true negative was 2 and false positive was 4. The sensitivity, specificity, accuracy, positive and negative predictive values were summarized in Table 2.

Discussion

There is a debate about the role of the CP before the definite diagnosis of LN metastasis is given by histopathology, those who goes with high sensitivity and specificity and those who conclude that there is a "not sufficient" sensitivity and specificity for the clinical and imaging examination to predict the LN metastasis [1, 11].

Oropharyngeal cancer is a disease of elderly; the peak incidence is usually during the sixth and seventh decades. The probable explanation is that the activity of the natural killer cells falls with increasing age. The incidence of cancer in the younger age group is uprising due to the diet that poor in antioxidant, genetic factor and exposure to different types of carcinogen [16]. In our study, the peak incidence was in the sixth decade (35%) and 25% for the younger age group 30–39.

Most of the patients (16 patients, 80%) were in stage IV this is mostly due to ignorance of patients to seek treatment of the primary tumors (delayed diagnosis). This will allow the tumor to increase in size and metastasize to the LN.

The cervical LN metastasis occurs in a successive pattern except in the tongue, floor of the mouth, and anterior area of the oral cavity [17]. When the nodal stage increases the prognosis decrease, overall the rate of cure is halved with the nodal spread [18].

The sensitivity of CP in our study was 85.7%, which is comparable to various studies [19, 20]. While the accuracy of CP in our study was 70%, which is in line with previous studies [19, 21].

Conclusions

It is hard to reach a conclusion whether a diagnosis of cervical LN metastasis based on CP can be compared with the histopathology because histopathological examination can show metastatic involvement as small as 1 mm, which cannot be detected by CP or by imaging techniques. However, the CP can provide a cornerstone role in taking a decision to do or not an elective neck dissection.

Declarations

Acknowledgments

None

Authors' contributions

All authors carried out information retrieval and wrote a draft of the paper, read and approved the final manuscript.

Funding

None

Availability of data and materials

The datasets used and/or analyzed are available from the corresponding authors on reasonable request.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

No conflicts of interest to disclose.

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Figures

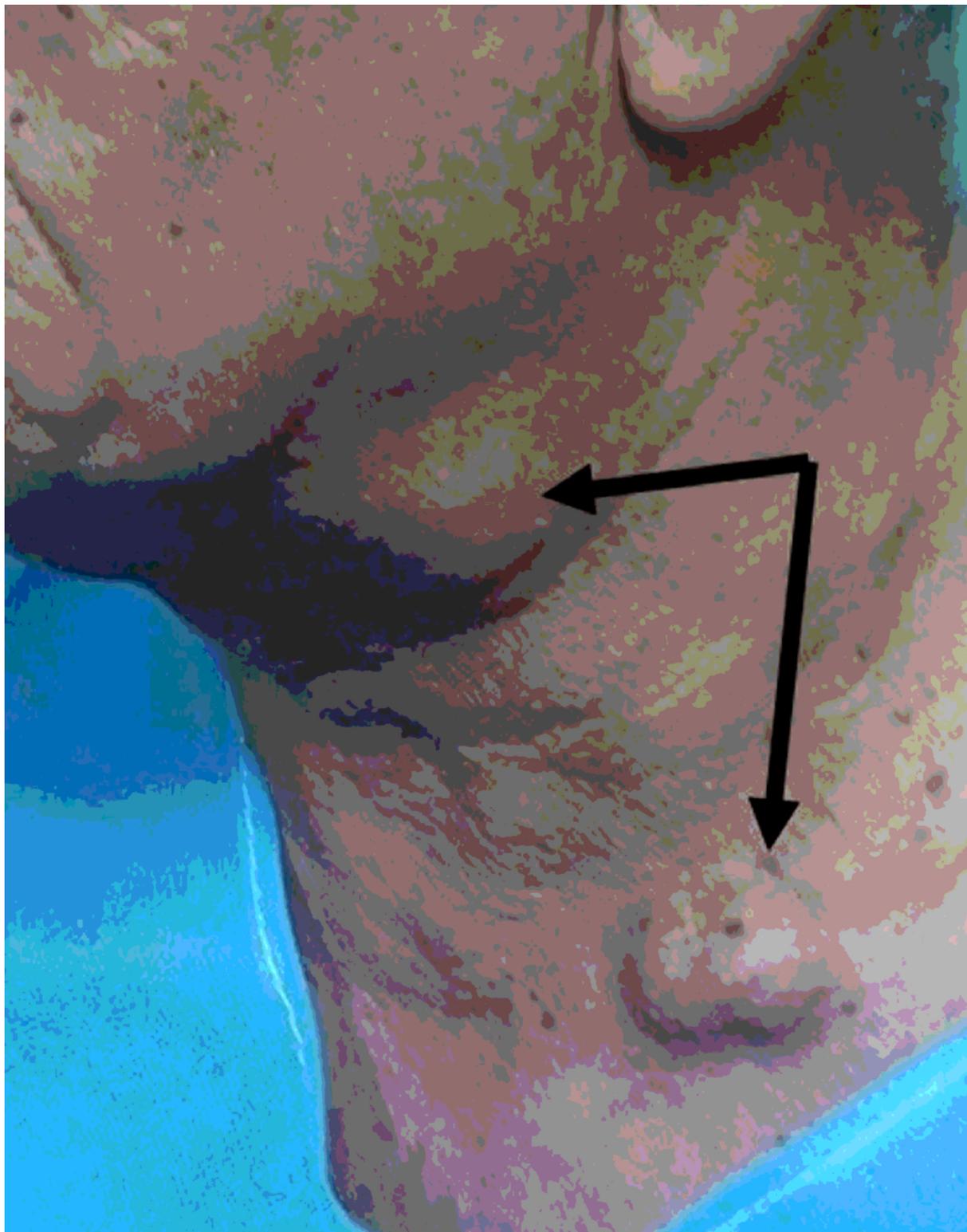


Figure 1

Enlarged (palpable) left submandibular and supraclavicular lymph nodes (black arrows).

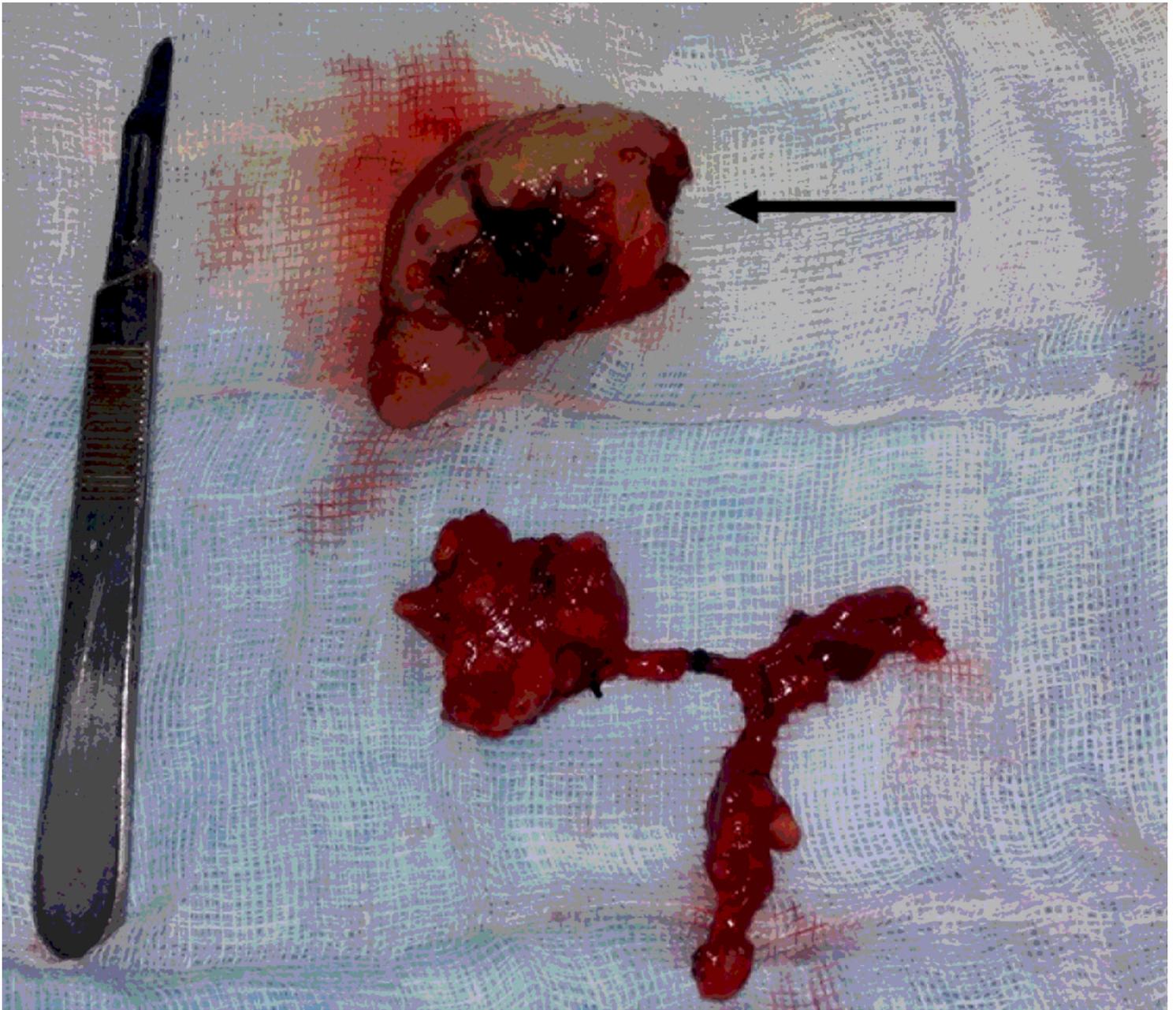


Figure 2

The excised primary tumor (black arrow) and the associated lymph nodes.