REVIEW ARTICLE

Oral cancer and bucco-maxillo-facial surgery: a systematic review of clinical findings

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Abstract

Introduction: In the context of oral cancer management, it is a multidisciplinary effort, as each patient presents physicians with a unique set of challenges whose management impacts both survival and quality of life. Oral and maxillofacial surgery remains the mainstay of treatment. Oral cancer (OC) has a high incidence and mortality and is among the 10 (ten) most common pathologies in the world, Brazil today represents alarming public health. OC awareness is low, especially in terms of knowledge of signs and symptoms. Also, self-examination is relatively fast, inexpensive, and simple to perform. The diagnostic accuracy of the oral self-examination needs to be established first before advocating it as a potential screening tool for early detection. **Objective:** the present study aimed to carry out a systematic review of the main clinical findings on the surgical treatment of oral cancer by dentists. **Methods:** The rules of the Systematic Review-PRISMA Platform. The research was carried out in December 2021 to February 2022 and developed based on Scopus, PubMed, Science Direct, Scielo, and Google Scholar. The quality of the studies was based on the GRADE instrument and the risk of bias was analyzed according to the Cochrane instrument. **Results:** A total of 243 articles were found. In total, 104 articles were fully evaluated and 25 were included and evaluated in this study. there was a positive impact of CAD/CAM mandibular reconstruction on mastication and swallowing function after surgery for locally advanced oral cancer for the first time. Therefore, neoadjuvant chemotherapy plays a potential role in mandibular preservation in oral cancers with acceptable toxicities and without compromise in survival. The low prevalence of oral self-examination was more common among the elderly, being more common to oral cancer. Thus, educational actions can influence people's self-perception of their oral condition. In this way, the studies showed that to achieve the success of the surgical treatment of oral cancer, it is necessary for the individuals themselves to expand the self-examination care, linked to the evaluation and early diagnosis of dental surgeons. **Conclusion:** The studies showed that to achieve the success of the surgical treatment of oral cancer, it is necessary that self-perception of oral health, one of the components of quality of life, refers to a subjective experience of the individual about their functional, social and psychological well-being.

Keywords: Oral cancer. Prevention. Surgery. Bucco-maxillo-facial surgery. Clinical trials.

Introduction

In the context of oral cancer management, it is a multidisciplinary effort, as each patient presents physicians with a unique set of challenges whose management impacts both survival and quality of life. Bucco-maxillo-facial surgery remains the mainstay of treatment. Radiation is used in an adjuvant context. Dental professionals play a critical role in many steps of management, from initial detection to optimizing pre-treatment oral health and managing short- and long-term treatment sequelae. Monitoring the recurrence and development of second primary tumors is a key role [1].

In this scenario, oral cancer has a high incidence and mortality and is among the 10 (ten) most common pathologies in the world, Brazil today represents alarming public health [2]. The areas that suffer most from the disease are the tongue, specifically the posterior lateral border, buccal floor, gum, mucosa,

tonsils, retromolar region, tongue dorsum, soft palate, and hard palate [2]. Early diagnosis in early stages survival rate ranges from 53% to 68% while the diagnosis of advanced cancer is approximately 41% and 27% and in the late stage, it is sadly pitifully 70 to 80% [3].

Also, the most common type, from 94% to 96% of cases, of oral cancer is squamous cell carcinoma (SCC) or squamous cell carcinoma that affects the most common sites of this pathology are the tongue (26%) and the lower lip (23%) [3.4]. Most tumors are diagnosed late reducing the patient's chance of survival due to the unpreparedness of the professional and the lack of information for the population, including carcinomas and oropharyngeal [4]. Oral cancer has been divided into categories such as salivary gland tumors, epithelial tumors, mesenchymal tumors, bone tumors, hematologic tumors, odontogenic tumors, and others [4-6].

Besides, the OC may appear as white, red, ulcerated, or proliferative lesions or swellings, and may also be preceded by potentially malignant disorders. The rate of malignant transformation may range from less than 1% to 36% higher [7]. These rates may be due to factors such as differences in follow-up times and risk habits inherent in each population. In this sense, the OC that is associated with 5-year survival is less than 50%, largely attributed to advanced stage diagnostics [8].

In this context, OC awareness is low, especially in terms of knowledge of signs and symptoms [5]. In addition, the pain associated with OC manifests only late, delayed detection usually occurs leading to advanced disease. The prognosis of patients may show significant improvement when detected early [9]. In addition, it has been analyzed that screening helps in detecting early-stage OC [10]. Screening of the oral cavity of asymptomatic and high-risk individuals may lead to OC identified at stages earlier than symptomatic patients [11]. In addition, screening can reduce OC mortality by 34% [12]. Still, oral self-examination is relatively fast, inexpensive, and simple to perform [13]. The diagnostic accuracy of the oral self-examination needs to be established first before advocating it as a potential screening tool for early detection [14,15].

Therefore, the present study aimed to carry out a systematic review of the main clinical findings on the surgical treatment of oral cancer by dentists.

Methods

Study Design

The rules of the Systematic Review-PRISMA Platform (Transparent reporting of systematic reviews and meta-analysis-HTTP://www.prisma-statement.org/) were followed [16].

Data sources and research strategy

The search strategies for this systematic review were based on the keywords (MeSH Terms): "Oral cancer. Prevention. Surgery. Bucco-maxillo-facial surgery. Clinical trials". The research was carried out in December 2021 to February 2022 and developed based on Scopus, PubMed, Science Direct, Scielo, and Google Scholar. Also, a combination of the keywords with the booleans "OR", "AND", and the operator "NOT" were used to target the scientific articles of interest.

Study Quality and Bias Risk

The quality of the studies was based on the GRADE instrument [17] and the risk of bias was analyzed according to the Cochrane instrument [18].

Results and Discussion

A total of 243 articles were found. Initially, duplication of articles was excluded. After this process, the abstracts were evaluated and a new exclusion was performed, removing the articles that did not address the theme of this article. In total, 104 articles were fully evaluated and 25 were included and evaluated in this study (**Figure 1**).

Figure 1. Flow Chart of Study Eligibility.
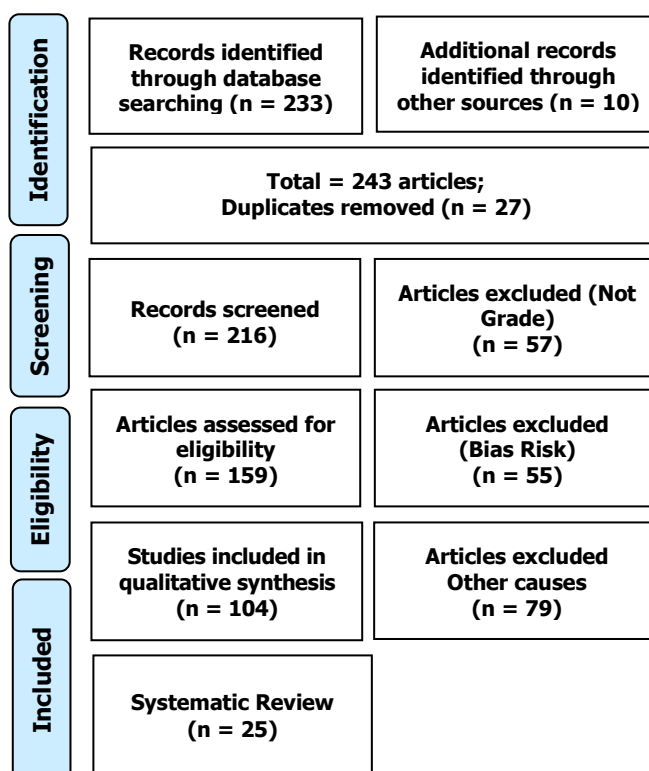
After analyzing the studies selected in the present systematic review, it was found that potentially malignant oral disorders (OPMDs) are associated with an increased risk of cancer of the lip or oral cavity. An updated report on the nomenclature and classification of OPMDs, based predominantly on their clinical features, was delivered at a workshop held by the World Health Organization (WHO) Collaborating Center for Oral Cancer in the United Kingdom. In the current update, there is sufficient evidence for an increased risk of oral cancer among patients diagnosed with "oral lichenoid lesions" and among those diagnosed with oral manifestations of "chronic graft-versus-host disease". However, to date, there is insufficient evidence on the malignant potential of chronic hyperplastic candidiasis and oral exophytic verrucous hyperplasia to consider these conditions as OPMDs. Also, due to the lack of clear evidence of an OPMD in epidermolysis bullosa, this was moved to the category with limited evidence. It is encouraged to increase multicenter longitudinal studies with uniform diagnostic criteria to improve identification and cancer risk stratification of patients with OPMDs [19].

Assisted design and manufacturing (CAD/CAM) techniques are increasingly applied to mandibular reconstruction. A retrospective study analyzed the impact of CAD/CAM mandibular reconstruction on chewing and swallowing function after surgery for locally advanced oral cancer. A total of 50 patients underwent segmental mandibulectomy with free flap reconstruction for locally advanced oral cancer. Multivariate logistic regression analysis showed that CAD/CAM mandibular reconstruction was independently associated with good oral intake, whereas anterior or extensive mandibular resection and glossectomy were also independently associated with poor oral intake after surgery. Therefore, there was a positive impact of CAD/CAM mandibular reconstruction on mastication and swallowing function after surgery for locally advanced oral cancer for the first time [20].

Furthermore, tracheostomy (TT) and delayed extubation (DE) are two approaches to postoperative airway management in patients after surgery for major oral cancer. Thus, a prospective observational study evaluated the safety of overnight intubation followed by morning-after (DE) extubation compared with elective TT to identify factors associated with a safe ND. Adult patients undergoing elective surgery for major oral cancer under general anesthesia with tracheal intubation were included. A total of 4477 patients were selected, 720 patients were included. DE was performed in 417 patients (58.4%) and TT in 303 patients (42.4%). In multivariate analysis, tumor staging T1-T2,

absence of extensive resection, primary closure or fasciocutaneous flap reconstruction, absence of preoperative radiation, absence of neck dissection or unilateral neck dissection, and shorter duration of anesthesia were independent predictors for a safe ND. . General complications (4.3% versus 22.5%, p = 0.00) and airway complications (1.7% versus 8.7%, p = 0.00) were lower in the ED compared to the TT group, respectively. ND was associated with shorter hospital stay (7.2 ± 3.7 versus 11.5 ± 7.2 days, p = 0.00), time for oral intake and speech compared to TT [21].

Besides, a randomized phase II study explored the potential role and safety of neoadjuvant chemotherapy (NACT) in tumor reduction and resulting mandibular preservation in oral cancers compared to conventional surgical treatment. This study was an oral cavity squamous cell carcinoma study with histological confirmation of oral cavity squamous cell carcinoma with cT2-T4 and N0/N+, stage M0 (American Joint Committee on Cancer, seventh edition), stage M0 (American Joint Committee on Cancer, seventh edition), requiring resection of the mandible for paramandibular disease in the absence of clinical-radiological evidence of bone erosion. Patients were randomly assigned (1:1) to either initial surgery (segmental resection) followed by adjuvant treatment (standard arm [SA]) or two cycles of NACT (docetaxel, cisplatin, and fluorouracil) at 3-week intervals (intervention arm [AI]), followed by surgery dictated by the extent of post-chemotherapy disease. Sixty-eight patients were enrolled over 3 years and randomly assigned to SA (34 patients) or AI (34 patients). The median follow-up was 3.6 years (interquartile range, 0.95-7.05 years). Mandibular preservation was achieved in 16 of 34 patients (47%) in the AI. Disease-free survival (p=0.715, hazard ratio 0.911) and overall survival (p=0.747, hazard ratio 0.899 were similar in both arms. Complications were similar in both arms, but chemotherapy-induced toxicity was observed in most patients (grade III: 14, 41.2%; grade IV: 11, 32.4%) in IA. Therefore, NACT plays a potential role in mandibular preservation in oral cancers with acceptable toxicities and without compromise in survival [22].

In this scenario, the literature shows that most patients with oral cancer had late-stage disease due to late diagnosis [23]. The literature shows that the average duration of onset of the first symptom was between 35 and 48 days. These findings justified the search for an effective self-screening tool for the early detection of lesions [24]. The low level of oral cancer awareness can be observed largely attributed to the very low educational level population, where almost half of them have never had any formal education.

Sociodemographic differences were observed in terms of the level of consciousness, which coincide with other studies in which age and educational levels were found associated with oral cancer awareness [25].

The low prevalence of oral self-examination was more common among the elderly, being more common to oral cancer. This prevalence was higher among the elderly assisted at SUS. A previous study identified the prevalence of oral self-examination of 7.2% among individuals with a mean age of 52.7 years [25]. In contrast, a higher prevalence was found among young adults. These differences in prevalence can be explained by age-related issues, which is called the cutoff effect. In addition, different sociodemographic characteristics among the observed populations may be responsible for the differences observed. A lower prevalence of oral self-examination was expected among the elderly than among young adults, due to the vulnerability of the elderly regarding their health literacy [26].

Thus, educational actions can influence people's self-perception of their oral condition, as well as support the identification of oral problems by patients and self-care in search of prevention and or cure of oral diseases still in the early stages. Most elderly Brazilians perceive their oral health as satisfactory, even with poor oral health conditions. Perhaps because of this positive perception of oral health, even under precarious conditions, the elderly do not consider it necessary to perform self-examination [27].

Other etiological factors of oral cancer also need to be considered in health promotion/health education actions, among them the possibility of cancerous oral lesions resulting from poorly adapted removable dentures. The use of removable dental prostheses remained associated with oral self-examination. The chance of oral self-examination was higher among the elderly who used these prostheses. The use of maladaptive removable prostheses may increase the prevalence of mucosal lesions [28].

A previous study identified that the most frequent mucosal lesions in the elderly over 60 years of both sexes were inflammatory fibrous hyperplasia and candidiasis, changes that are often induced by the use of poorly adapted prostheses. A previous case-control study, conducted at the University of São Paulo- Clinic Hospital, identified that oral lesions caused by poorly adapted dental prostheses were associated with the occurrence of oral cancer among smokers, noting that chronic physical irritation of the oral mucosa contributed to the carcinogenic effect of tobacco [7]. The fact that the patient uses a removable dental prosthesis may favor self-examination due to the greater habit of handling the oral cavity, or to the greater possibility of perceiving oral problems related to soft tissues, which may even hinder or impair the use of prostheses. In addition, there may be a greater concern on the part of the dentist to advise denture users on the importance of oral self-examination [7].

In this way, the studies showed that to achieve the success of the surgical treatment of oral cancer, it is necessary for the individuals themselves to expand the self-examination care, linked to the evaluation and early diagnosis of dental surgeons.

Conclusion

The studies showed that to achieve the success of the surgical treatment of oral cancer, it is necessary that self-perception of oral health, one of the components of quality of life, refers to a subjective experience of the individual about their functional, social and psychological well-being.

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Data sharing statement

No additional data are available.

Conflict of interest

The authors declare no conflict of interest.

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