

# A multidisciplinary team for the management of oral cancer: a project called MoMax

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## Summary

**Introduction:** Currently, the management of cancer, from the detection of clinical and radiographic characteristics to the final diagnosis and treatment, is becoming more complex. The Multidisciplinary Team Care (MDTC) approach has become the care model for cancer patients worldwide. The MDTC approach is a tool to improve the survival rate of cancer patients by providing them with the best treatment plan for the prevention and/or the treatment of adverse events.

**Materials and methods:** This paper describes the management algorithm of our MDTC called MoMax (Oral Medicine and Maxillofacial Surgery) at the Department of Oral and Maxillo-Facial Sciences, "Sapienza", University of Rome.

**Discussion and Conclusions:** The efficacy of MDTC on oral cancer (OC) management in the literature is still elusive due to the absence of a consistent definition for MDTC, the complexity of the management of OC, the non-effective construction and nature of the multidisciplinary team and the poor communication between different cancer centres nationally and internationally. To date, the MoMax project has yielded good results in shortening the time of managing patients with OC and increasing good patient therapeutic compliance. Further research is needed to achieve a

distinctive definition and principles of MDTC for OC patients and to analyse efficacy, costs and time delay.

**Key Words:** multidisciplinary team care, oral medicine and maxillofacial surgery, oral potentially malignant disorders, oro-pharyngeal cancer.

## Introduction

The management route of cancer frequently requires the contribution of many qualified health care providers (1), which results in pushing the patients to move among different specialists in order to be adequately treated. Thus, the achievement of efficient coordination between these specialists is the cornerstone of providing a high and uniform level of specialist care.

The Multidisciplinary Team Care (MDTC) approach has become the care model for cancer patients worldwide (2) and recently has been extended to oral cancer (OC) and oral potentially malignant disorders (OPMD). MDTC can be achieved in many formats in the present healthcare systems. These formats may include a comprehensive patient treatment, a development of wide multidisciplinary cancer programmes, a creation of multidisciplinary diagnosis and treatment protocols, and a formation of cancer collaborative services or multidisciplinary tumour conferences, which are known as tumour boards (1, 3).

The advantages of MDTC may include psychological benefits for patients, efficient treatment decisions by diverse specialists, improved clinical integration of care for medical centres and healthcare providers, education for practitioners, caregivers and partners and increased patient contribution in clinical trials (4). The MDTC approach is a tool to improve the survival rate of cancer patients through providing them with the best treatment plan together with the prevention or treatment of adverse events (5). The team composition varies according to the cancer site and institution (1, 3).

The literature agrees that the MDTC approach for OC should include a core team consisting of oral pathologists, general dentists, maxillofacial surgeons, oncologists, radiotherapists, radiologist and anatomypathologists. If necessary, the patient can be referred to other specialists, such as speech therapists, dieticians or psychologists. In fact, most of the patients affected by OPMD or OC undergo an oral pathologist and/or maxillo-facial surgeons at a late stage, when

their lesions become symptomatic, which may lead to an important negative influence on the diagnosis and the prognosis of the pathology. For OC, the delay in patient management is basically related to three main factors: patient delay, professional delay and treatment delay. The consequence of increased waiting time is tumour growth, clinical upstaging, deteriorated prognosis and worsening of the quality of remaining life. The MDT serves as a point of reference for the patients, accompanying them from diagnosis to treatment.

We are going to report the management algorithm (Fig. 1) for OC in a specialist multidisciplinary team called MoMax (Oral Medicine and Maxillo Facial Surgeon) to facilitate daily clinical decision-making of all health-care specialists involved, in order to reduce patient waiting time and to guarantee the most effective therapy and benefits from this type of approach.

## Materials and methods

### MoMax Clinical Pathway

MoMax was created and implemented at the Department of Oral and Maxillo Facial Sciences, at “Sapienza” University of Rome in June 2014. The MoMax core team is formed by oral pathologists, prosthodontists, dental hygienists and maxillofacial surgeons who meet once a week in the same surgery to treat patients. Furthermore, once a week, the core team meets with radiotherapists, oncologists, otorhinolaryngologists, an anatomy-pathologist and a radiologist to discuss the patients at Head-Neck Tumour Board (HNTB) in order to plan the best personalized treatment for each patient (Fig. 2).

The MoMax group takes care of patients from the diagnosis to the treatment through cytological exams (brush and oropharyngeal swabs), histological exams

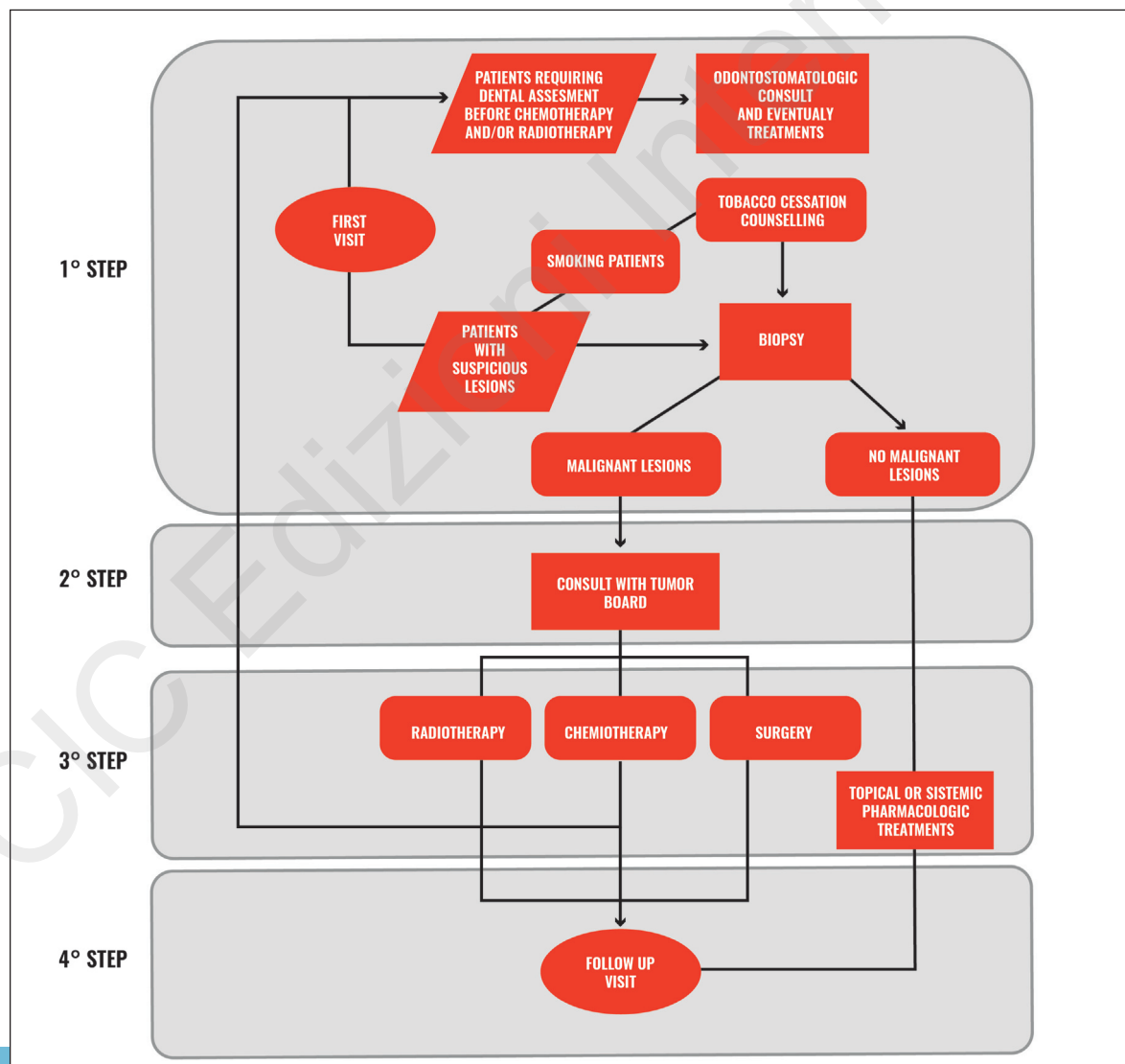


Figure 1. Clinical pathways algorithm of MoMax project.



Figure 2. Head and Neck Tumour Board organization.

(scalpel and laser biopsy), pharmacological therapies, maxillofacial surgery and prosthetic rehabilitations.

The MoMax project consists of 3 pathways: prevention, diagnosis and treatment. These pathways run through 4 steps. The first step is established through carrying out a full clinical examination in conjunction with the recommended investigations (brush biopsy, oropharyngeal swabs, excisional and incisional biopsies and X-rays) after recording the medical and den-

tal history in an unified clinical chart of all the referred patients (Fig. 3).

Specifically, the choice of the second level X-ray examination depends on the anatomical localisation of the tumour: in the case of lesions close to the bone, such as the alveolar bone or gingivobuccal bone, it is preferable to perform a contrast-enhanced and non-enhanced computed tomography (CT) scan of the maxillo-facial area, jaw and neck. For areas not directly connected to the bone (i.e., the tongue and the

**SISTEMA SANITARIO REGIONALE  
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U.O.C. DI ODONTOIATRIA PEDIATRICA E ODONTOIATRICA  
DIRETTORE: Prof.ssa Antonella Polimeni  
AMBULATORIO DI ODONTOIATRICA  
CARTELLA CLINICA

Cartella di reparto n° \_\_\_\_\_ Data della prima visita \_\_\_\_\_

Cognome \_\_\_\_\_ Nome \_\_\_\_\_

Luogo e data di nascita \_\_\_\_\_

Via/Piazza \_\_\_\_\_ N° \_\_\_\_\_

Città \_\_\_\_\_ C.A.P. \_\_\_\_\_ Prov. \_\_\_\_\_

Tel. abt. \_\_\_\_\_ Cell. \_\_\_\_\_

E-mail \_\_\_\_\_ Codice Fiscale \_\_\_\_\_

**ANAMNESI SISTEMICA**

Allergie agli anestetici  Allergie agli antibiotici  Allergie ai FANS

HIV positivo  HCV positivo  HbsAg positivo

Ipertensione arteriosa  Cardiopatia  Diabete

Osteoporosi  Coagulopatie  Patologie della tiroide

Neoplasia Quale? \_\_\_\_\_

Assume farmaci?  No  Sì Quali? \_\_\_\_\_

Ha mai assunto farmaci correlati a ONJ (osteonecrosi dei mascellari)?  No  Sì \_\_\_\_\_

Ha subito interventi chirurgici?  No  Sì In quale anno? \_\_\_\_\_

Ha praticato altre anestesi?  No  Sì ( Locali  Generali)

E' mai stato sottoposto a radio terapia?  No  Sì, nell'anno \_\_\_\_\_ numero di sedute \_\_\_\_\_ al (diverso) corporeo \_\_\_\_\_

E' mai stato sottoposto a chemioterapia?  No  Sì, nell'anno \_\_\_\_\_ numero di sedute \_\_\_\_\_

Farmaci somministrati (durante la chemioterapia)

Fuma?  No  Sì ( \_\_\_\_\_ sigarette al giorno per \_\_\_\_\_ anni)

Ex fumatore ( \_\_\_\_\_ sigarette al giorno, dal (anno) \_\_\_\_\_ al \_\_\_\_\_)

Assume alcolici?  No  Sì ( \_\_\_\_\_ al giorno, per \_\_\_\_\_ anni)

Ex etilista

Note anamnestiche \_\_\_\_\_

**ESAME OBIETTIVO ENDORALE**

NOTE: \_\_\_\_\_

**DICHIARAZIONE DI CONSENSO AL TRATTAMENTO DEI DATI IN AMBITO SANITARIO**  
(ART. 75 e 76 del D.Lgs. 196/07/5)

Nome e cognome del Paziente \_\_\_\_\_

Data e luogo di nascita \_\_\_\_\_

Indirizzo \_\_\_\_\_

Nell'ambito delle finalità e modalità di cui sopra descritte e nei casi previsti dalla Legge e dopo essere stato informato sui diritti e sui limiti del Decreto Legislativo 196/03, esprimo il mio consenso ed autorizzo:

- Il trattamento dei miei dati personali e sensibili, esclusivamente ai fini di diagnosi, terapia, prevenzione e ricerca - in quest'ultimo caso resi assolutamente anonimi;
- L'utilizzo di eventuali immagini o filmati riguardanti il mio caso clinico a scopo didattico-scientifico, purché non sia possibile risalire alla mia identità.

Data \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ Firma \_\_\_\_\_

In caso di minore o incapace, chi ne fa le veci nome e cogn. \_\_\_\_\_

Figure 3. Chart of MoMax project.

floor of the mouth) it is preferable to perform a magnetic resonance imaging (MRI) of the maxillo-facial area, jaw and neck with and without contrast. A high-definition chest X-ray is always required to evaluate the presence of distant metastases.

In the case of early oral cancer (T1, according to UICC TNM staging system) with a thickness less than 8 mm, both the CT and MRI lack of specificity and sensitivity, and in case of the presence of dental amalgam reconstructions that can cause artefacts, an intraoral ultrasound (US) with a very small transducer, such as a toothbrush, is performed. This examination allows identifying the size and the vascularity of the cancer, the tumour depth and the tumour thickness in order to eventually plan, pre-operatively, the requirement of neck-dissection. Furthermore, in this first step, trained dental hygienists assist smoking patients to quit tobacco use by providing information and supporting them with questionnaires and with the "5A" intervention model (6).

The second step is the selection and the submission of the cases to the Head-Neck Tumour Board in order to achieve the most effective and suitable treatment plan. This submission is performed through the oral presentation of the cases with the use of photos, CT, MRI and US imaging.

The third step is the application of the Tumour Board-recommended treatment plan: surgery, radiation therapy (RT) or chemotherapy (ChT). Patients scheduled to receive radio and or chemotherapy that involves the mandible, maxilla or salivary glands are referred to MoMax for a comprehensive dental consultation, assessment and clearance before therapy begins in order to treat, eventually, dental infections. Patients are also informed of the adverse events of these treatments such as mucositis and osteoradionecrosis and are motivated to establish a good standard of oral hygiene (7). One of the means of prevention of the adverse events of radiotherapy are the delivery of fluoro-prophylaxis masks to patients, to limit the development of decay due to xerostomia.

The fourth step includes the controls, follow-up and modification of treatment plan by the multidisciplinary team if needed. For the following year, at the end of radiotherapy, patients undergo professional oral hygiene sessions and controls every three months in order to maintain a good level of oral hygiene and to avoid the onset of periodontitis or caries. Furthermore, during this stage, patients can be rehabilitated with traditional prosthesis or implants to maintain function and aesthetics.

Regarding patient management time, in the case of clinically suspicious lesions, many times we proceed to biopsy immediately or maximum in a week. In the case of pre-radio and/or pre-chemotherapy dental consultation, we proceed with the necessary treatments such as teeth extractions in a maximum of 10 days, excluding the biological tissue healing time after the surgery.

## Discussion and conclusions

OC represents the sixth most common cancer in the world (8). In Italy, cancer registries reveal that OC represents approximately 3% of all cancers in males and 1% in females (9). OC represents approximately 85% of all head and neck cancers and is traditionally defined as a Squamous Cell Carcinoma, because 90% of these cancers are histologically originated from the squamous cells of the oral cavity (8).

OC is a preventable disease. The multifactorial nature of OC results in a complex interaction between genetics, the environment and behavioural factors (i.e. tobacco and alcohol) (8). Less common risk factors include human papilloma virus and chronic mucosal trauma (Fig. 4).

OPMDs have been introduced in the literature and describe the precancerous lesions of the oral mucosa in recent years (10). These lesions include oral leucoplakia, oral erythroplakia, palatal lesions in reverse smokers, oral submucous fibrosis, actinic keratosis, oral lichen planus and discoid lupus erythematous (11). Oral leucoplakia, oral submucous fibrosis and oral erythroplakia have the highest malignant transformation rates. Atrophic and erosive subtypes of oral lichen planus also have the greater malignant transformation rate compared to other subtypes. The aetiology is not fully understood for most OPMDs (10). OPMDs can be considered as risk indicators of likely future malignancies in the oral mucosa (11) (Fig. 5).

Therefore, one of the prevention methods for OC that can be effective is the early diagnosis and management of these disorders.

Only half of newly diagnosed OC patients has more than 5-year survival rate (12). The low survival rate and poor prognosis of OC were commonly a result of late diagnosis rather than being hard to diagnose. Thus, early diagnosis and treatment remains the key of improving the survival rate (8).

The late diagnosis of OC is due to three factors: patient delay, professional delay and treatment delay. Patient delay can largely be attributed to the unawareness of the signs and symptoms of disease and oral symptoms being rarely attributed to cancer and frequently interpreted as minor oral conditions. A lack of understanding of the clinical presentation of these diseases and confidence on the part of health professionals has been suggested as a barrier for suspecting cancer and dealing promptly with an appropriate referral or arranging a follow-up visit (13). The diagnosis of oral and pharyngeal cancers at their early stage can be easily achieved through clinical examination (9).

Villa et al. conducted a study to investigate patients' knowledge regarding OC risk factors and to explore communication between clinicians and patients attending dental departments within Italian university hospitals by sending out 2200 questionnaires (14).

The results revealed the majority (approximately 94%) of individuals had knowledge of the clinical signs associated with OC; this knowledge was more



Figure 4. Intraoral aspect of verrucous carcinoma of the buccal mucosa.

improved in individuals who had a family history of OC compared to individuals with no family history (11). Furthermore, the Authors noticed that the patients' knowledge did not appear to be provided by clinicians, as less than 15% of participants reported

receiving counselling about OC from their physicians or dentists (14). In this study, most smokers knew that smoking was a risk factor for OC (87%) and yet continued to smoke (14).

Colella G et al. (9) performed an epidemiological in-



Figure 5. Intraoral aspect of lichen planus of the buccal mucosa.

investigation in Italy to examine the dental health care providers' knowledge of OC prevention and detection. The results were greatly surprising that only one-third can correctly recognize the most common form of OC and early OC lesions. The Authors stated that these values were considerably lower than those observed in recent surveys in other countries (6). Different studies (9) reported that a lower risk of death in cancer patients has been achieved by treating them in hospitals or by physicians serving high numbers of patients, as both provide multidisciplinary knowledge and management to the patients, which are needed to solve the complexity of OC diagnosis and management. Given that a goal of MDTs is to improve patient care, it would be important to demonstrate that providing care within the MDT structure does not negatively affect waiting times.

Patil, et al. demonstrated retrospectively that the implementation of MDTC at University of Cincinnati Veteran's Administration Hospital (Cincinnati, Ohio, United States) reduced the time from initial consultation to being seen in the otolaryngology clinic from 27.5 to 16.5 days ( $P < 0.0001$ ), and the time from the positive biopsy to the beginning of the treatment decreased from 35 to 27 days ( $P = 0.04$ ) (15).

Our time management, compared to the literature, is good. It is relevant to shorten the period between the first visit and the biopsy in OC cases, to about one week, leading to an appropriate evaluation in the HNTB in a very short time. Interesting results were also registered in the preparation of patients for radio/chemotherapy with the resolution of all the problems in less than 3 weeks.

The relation between cancer patient survival rates and MDTC is still controversial. However, there is international support of this approach (3). This controversy may be due to two causes; the first is there is no single consistent definition of MDTC (1); the second is the complex care pathway of diagnosis, staging, case discussion, patient consultation, treatment, and follow-up of cancer patients (3).

Few studies stated that MDTC was expensive, and its benefits in improving the outcome of the management of OC have not been widely studied. Therefore, some doctors believe that the early-staging of head and Neck cancer can be successfully managed outside the MDTC. They refer patients with only advanced malignancy (13). In contrast, an Australian study stated that the principle-based approach to MDTC may have the potential to reduce the mortality and healthcare costs and to improve the quality of life in women with early-stage breast cancer. The Authors recommended their approach to all types of malignancy (14).

Additionally, studies from Taiwan, the United States, Germany, and United Kingdom have demonstrated that the MDTC has the ability to improve the quality of life for cancer patients, lower healthcare costs and to increase the survival rate (9). The management of OC remains a complex challenge for health care providers. The disease process, comorbidities, and a

myriad of psychosocial factors necessitate the optimization of patient care with a systematic approach based on MDTC (16, 17). Nutritional and swallowing evaluation, dental evaluations and treatments, and pain management are mandatory before, during, and after concomitant treatment.

Finding evidence of the relation between the MDTC and patient outcomes, even with this controversy, is the key for exerting more time and finances to support this approach (1). Our MoMax project, to this day, has been giving good results with the short managing time of patients and good patient therapeutic adherence. Further research with larger cohorts of patients is needed to assess whether our MDTC may positively influence the general patients' survival rate and their quality of life.

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