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Bioethical reflections on advanced oral cavity cancer in oral and maxillofacial surgery. Systematic review

Reflexiones desde la bioética sobre el cáncer de cavidad oral avanzado en cirugía oral y maxilofacial. Revisión sistemática

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Abstract

Advanced oral cavity cancer is the most common oncological pathology among head and neck tumors for maxillofacial surgeons. That is

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why, as the disease progresses, a whole series of complex situations can arise, ranging from severe complications to a possible fatal outcome. This review sought to identify and analyze these situations, which are presented as dilemmas that must be addressed through informed and reasoned reflection. This poses a significant challenge for today's maxillofacial surgeons, who must understand bioethics as a scientific and humanistic discipline that is essential for reflecting on and responding appropriately to these situations.
The enormous scientific and technical development of the specialty cannot be ignored when it comes to the care that must be provided to cancer patients, especially in the face of the possibility of abandonment, futility, and therapeutic obstinacy. On the contrary, it must be a guarantee that the vulnerability of the patient will be cared for and protected at all times. This requires the acquisition of new skills that allow us to integrate all the useful elements that ensure respect for the dignity and quality of life of the person.

Keywords: bioethics, cancer, oral and maxillofacial surgery.

1. Introduction

Head and neck cancer is the seventh most common type of malignant tumor in the world. In Spain, approximately 13,000-15,000 new cases are diagnosed annually, among which oral cavity carcinoma stands out, accounting for approximately 95% of head and neck cancers, and more than 60% are diagnosed at advanced stages (1).

1.1. *Advanced oral cancer*

The definitive diagnosis and correct tumor staging are performed according to the Tumor Node Metastasis system, which is considered by the *American Joint Committee on Cancer* to be essential for choosing the most appropriate treatment, with the best possible prognosis and the least functional and aesthetic compromise (2). According to this system, advanced stages III and IV are considered to

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be those with tumors larger than 4 cm with local or regional spread, infiltration of adjacent structures to varying degrees, lymph node involvement, and even the presence of metastasis. It is essential to evaluate each of these aspects, as they limit the therapeutic options and clearly worsen the prognosis. In fact, the overall survival rate in these patients at 5 years can range from 0 to 23%, depending on the series (2,3). The reality is that treatment for advanced oral carcinoma is complex, as these patients have usually already undergone radical ablation with extensive reconstruction and complementary treatments. All these cases may be associated with tumor persistence, recurrence, and significant sequelae (4).

Given this scenario, surgeons must bear in mind the classic concepts of resectability and operability, which, although they have changed over time, remain essential for understanding the complexity of managing these tumors. For this purpose, the current methodology involves an individualized assessment of each case by the Head and Neck Tumor Committee, where the possible therapeutic options are analyzed and consensus decisions are made (1,5).

1.2. *Bioethics and advanced cancer in surgery*

A consideration that should not be overlooked in advanced diseases with few therapeutic options or near the end of life is that they present an added clinical difficulty, as they involve situations of great emotion and suffering. However, they also have a significant ethical and moral component, which can be understood as an opportunity for improvement and excellence in the care provided by professionals to patients. Surgeons must understand their work from the perspective of dignity, values, and therapeutic attitude, or in decision-making about what to do in moments of uncertainty (6,7).

One way to determine whether the proposed therapeutic action is proportionate is to reflect on what will be achieved with the proposed procedure. This must meet at least one of the following objectives: cure, increased survival with the least deterioration in

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quality of life, or symptomatic relief when curative treatment is not possible. If the proposed procedure does not meet any of these objectives, it may be considered a therapeutically futile measure and therefore ethically unacceptable (4,8).

According to the Medical Association, good clinical practice aims to achieve appropriate results based on promoting the dignity and quality of life of the patient, while other options, such as therapeutic obstinacy, consist of applying inappropriate, disproportionate, or extraordinary measures with the aim of unnecessarily prolonging life (9). The reality of healthcare can exceed these definitions in terms of complexity. It is recommended to seek arguments that improve decision-making, based on rational and ethical grounds in the deliberation between professionals and the patient. Personal values and expectations, the potential benefits of therapies, and shared decisions based on sequential, consensual objectives that avoid processes of abandonment, obstinacy, futility, or, ultimately, all dehumanizing situations, must be considered (10). For this purpose, we aim to identify and analyze the bioethical problems faced by professionals in relation to this disease and address those that link medical and surgical practice with the values, dignity, and quality of life of the individual (8). The traditional attitude of doing everything in our power requires careful reinterpretation, since there is a real possibility of harming the patient (7,11).

The relationship between bioethics, morality, and medicine has become highly influential since the publication of *Principles of Biomedical Ethics* (12) by Beauchamp, TL, and Childress, JF, in 1979. This work is the most influential text of the bioethical movement, from which the paradigm was constructed that allowed, and still allows today, a well-founded response to problems or dilemmas that arise between scientific and technical advances and the intrinsic value or dignity of the person. This work continues to be a practical and current guide for professionals. Two characteristics of this text are considered decisive: on the one hand, the description of bioethical principlism based on four principles: beneficence (doing good),

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non-maleficence (not harming and preventing harm), autonomy (the patient's capacity to decide), and justice (equity in burdens and benefits); and, on the other hand, the effort to present a theoretical-practical justification that helps to clarify and resolve specific problems in healthcare work (10-12).

The literature emphasizes that some disciplines, such as cancer surgery, have unique aspects that all surgeons must understand and accept (7). These include being ethically reliable in the face of the possibility of causing harm before curing, being able to make decisions in circumstances of great uncertainty, and finally, considering the possibility of errors, assuming risks, complications, or severe sequelae (8,12).

Therefore, this paper presents a systematic review of the literature with the aim of identifying the most current scientific evidence that will allow us to identify, analyze, and respond to the ethical problems or dilemmas associated with advanced oral cancer from the unique perspective of the surgeon. The aim is to contribute to the need to create debate on these dilemmas, to reflect on the fundamental issues of the healthcare relationship, with special emphasis on the arguments that must be given for decisions to be accepted and acceptable in a recent discipline such as oral and maxillofacial surgery.

2. Methodology

To prepare this paper, a systematic review was conducted in accordance with the guidelines of the PRISMA 2020 Statement (13). The search was conducted in two recognized medical databases, Scopus and PubMed, based on a research question structured according to the PICO format (14):

- Population: observational or empirical studies with patients diagnosed with advanced oral cancer.

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- Intervention: to evaluate, from an ethical perspective, the interventions proposed in each series.
- Comparison: not applicable.
- *Outcomes*: to describe and analyze objectively, the scientific evidence from the ethical perspective of the procedures performed.

The search was conducted between January 1, 2018, and December 1, 2024. The Health Sciences Descriptors (DeCS) were used to select keywords for Spanish terms, and MeSH (*Medical Subject Headings*) for English terms. The PubMed and ScienceDirect databases were used as they are the reference databases in this field.

The search equation used the terms "oral cancer" and "*mouth neoplasms and head and neck neoplasm,*" and "*oral surgical procedures*," which includes "oral and maxillofacial surgery procedures," "ethics or bioethics in oral cancer," "*ethics or bioethics," "mouth neoplasms*," and "*medical futility or therapeutic obstinacy*."

These words were combined with the AND operator to group different conditions and the OR operator for terms within the same condition. The inclusion criteria were observational studies (descriptive cross-sectional, cohort, and case-control) written in English or Spanish with full text available. The exclusion criteria were studies that were not validated by an ethics committee. The search equation can be seen in Table 1.

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Table 1. Bibliographic research conducted and results obtained

CONSULTATION (January 1, 2028 – December 1, 2024)	**OUTCOME**
PubMed (https://pubmed.ncbi.nlm.nih.gov/) **Search**: ((((((ethics) OR (bioethics)) AND (mouth neoplasms)) OR (head and neck neoplasms)) AND (surgery)) AND (futility)) OR (obstinacy) Filters: Case Reports, Clinical Study, Clinical Trial, Clinical Trial Protocol, Multicenter Study, Observational Study	35
ScienceDirect (https://www.sciencedirect.com/search) **Title, abstract, keywords**: ethics bioethics AND mouth neoplasms head and neck neoplasms AND surgical procedures operative AND futility OR obstinacy	62

Source: prepared by the author.

The results were transferred to a bibliographic manager, and duplicate articles or papers were eliminated. The records were then eligible and selected based on the title, abstract, and full text, discarding those papers that did not meet the inclusion criteria or were not related to the objectives of the study. Relevance was assessed based on the specificity of the study in relation to the research question (14). Figure 1 shows the flow chart.

This study did not require review by an ethics committee as it was a systematic review.

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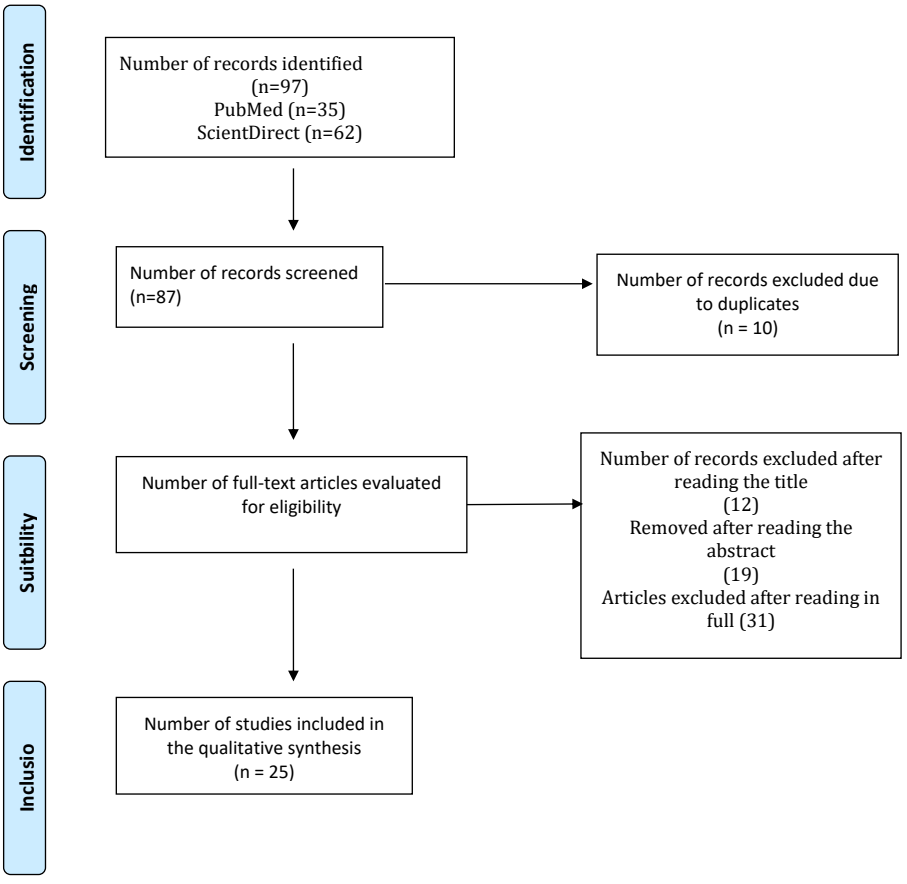
Figure 1. Flow chart



Source: prepared by the author.

The selected records are shown in Table 2.

Table 2: Articles included in the review

Author	Título	Year
Almadori G. *et al.* (15)	*Impact of microvascular free flap reconstruction in oral cavity cancer: our experience in 130 cases*	2015
Barata PC. *et al.* (16)	*Symptom clusters and survival in Portuguese patients with advanced cancer*	2016
Belloni E. *et al.* (17)	*Radiological exams on end-stage oncologic patients before hospice admission*	2017
Boceta J. *et al.* (18)	*Consensus and controversies in the definition, assessment, treatment and monitoring of BTcP: results of a Delphi study*	2016
Bossi P. *et al.* (19)	*Prevalence of Fatigue in Head and Neck Cancer Survivors*	2019
Carta F. *et al.* (20)	*Compartmental Surgery With Microvascular Free Flap Reconstruction in Patients With T1-T4 Squamous Cell Carcinoma of the Tongue: Analysis of Risk Factors, and Prognostic Value of the 8th Edition AJCC TNM Staging System*	2020
Chen YW. *et al.* (21)	*Preoperative Computed Tomography Angiography for Evaluation of Feasibility of Free Flaps in Difficult Reconstruction of Head and Neck*	2016
Gallegos Hdez, J.F *et al.* (5)	*Tratamiento del cáncer avanzado de cabeza y cuello. ¿Neoadyuvancia, concomitancia o cirugía?*	2021
Gangopadhyay A. *et al.* (3)	*Survival Impact of Surgical Resection in Locally Advanced T4b Oral Squamous Cell Carcinoma*	2012
Hasegawa T. *et al.* (22)	*The prospective evaluation and risk factors of dysphagia after surgery in patients with oral cancer*	2021

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Hsiang CC. *et al.* (23)	*Early Postoperative Oral Exercise Improves Swallowing Function Among Patients With Oral Cavity Cancer: A Randomized Controlled Trial*	2019
Kannan B. *et al.* (24)	*Immunotherapy for oral cancer treatment through targeting of IDO1 and its pathway*	2023
Machiels JP. *et al.* (25)	*KEYNOTE-412 Investigators. Pembrolizumab plus concurrent chemoradiotherapy versus placebo plus concurrent chemoradiotherapy in patients with locally advanced squamous cell carcinoma of the head and neck (KEYNOTE-412): a randomized, double-blind, phase 3 trial*	2024
Nakayama Y. *et al.* (26)	*Examination of Suprahyoid Muscle Resection and Other Factors Affecting Swallowing Function in Patients With Advanced Oral Cancer After Surgical Resection and Reconstruction*	2022
Nocon CC. *et al.* (27)	*Association of Facility Volume With Positive Margin Rate in the Surgical Treatment of Head and Neck Cancer*	2018
Nuchit S. *et al.* (28)	*Alleviation of dry mouth by saliva substitutes improved swallowing ability and clinical nutritional status of post-radiotherapy head and neck cancer patients: a randomized controlled trial*	2020
Okano W. *et al.* (29)	*Extent of salvage neck dissection following chemoradiation for locally advanced head and neck cancer*	2021
Patil VM. *et al.* (30)	*Low-Dose Immunotherapy in Head and Neck Cancer: A Randomized Study*	2023
Pedrini Cruz R. (31)	*Death with dignity: Are we providing adequate palliative care to cancer patients?*	2022
Pyszora A. *et al.* (32)	*Physiotherapy programme reduces fatigue in patients with advanced cancer receiving palliative care: randomized controlled trial*	2017

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Roberts MK. *et al.* (33)	*Ethical and Regulatory Concerns in Pragmatic Clinical Trial Monitoring and Oversight*	2020
Rosenberg AR. *et al.* (34)	*Promoting resilience in adolescents and young adults with cancer: Results from the PRISM randomized controlled trial*	2018
Tirelli G. *et al.* (2)	*Prognosis of oral cancer: a comparison of the staging systems given in the 7th and 8th editions of the American Joint Committee on Cancer Staging Manua*	2018
Vanbutsele G. *et al.* (35)	*Effect of early and systematic integration of palliative care in patients with advanced cancer: a randomised controlled trial*	2018
Wang L. *et al.* (36)	*Effect of Different Repair and Reconstruction Methods Combined with Psychological Intervention on Quality of Life and Negative Emotion in Patients with Oral Cancer*	2022

Source: prepared by the author

Each study was carefully reviewed to extract as much information as possible regarding the potential ethical dilemmas associated with patients with advanced oral cancer, their description, interpretation, and possible solutions.

3. Results and discussion

Throughout the text, ideas or problems that the author merely cites are compiled, discussed, and reflected upon, as well as those that the author develops in his work. All of this is done from the perspective of the principles of bioethics—not only from the principle-based approach—that may be of clinical and practical interest for the decision-making of today's surgeons.

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3.1. *Scientific and technical advances and their ethical implications*

Part of the work consists of a series of patients diagnosed with advanced oral carcinomas who underwent ablative salvage surgery and subsequent microsurgical reconstruction (5,13,15,20,27,36).

These surgical procedures are understood to be standard medical practice, as they result in increased survival. It is understood that the surgeon must have sufficient knowledge and skills to effectively guide these actions (13,14,26).

Most texts repeatedly refer to the importance of scientific and technical advances, which have exceeded the classic limits of resectability and operability, allowing increasingly complex interventions to be performed, supported by new high-precision reconstruction techniques (15,16,22,26) and advances in perioperative and postoperative care (20,32).

From an ethical perspective, it is necessary to reevaluate these issues and reflect on the limits that should guide this field of research. Correct ethical behavior in clinical practice must be governed by the *principle of therapeutic proportionality*, and the question, *"Is every procedure that can be performed ethical?",* must be answered from an ethical conscience, critical reasoning, and shared decision-making between the patient, the family, and the surgeon (8,11,37,38).

These questions, which commonly arise in the course of the disease, must be resolved. To this end, it is accepted that not all technically possible procedures are aligned with the principles that should guide our actions, which should be fair, responsible, and respectful of the rights and well-being of the patient (37). Jonas, H., points out in his 1995 book *Principle of Responsibility* (38) that current scientific and technological advances have unimaginable implications, which is why a complete understanding/ethical reflection must be required. Under this parameter of responsibility, according to Jonas, the patient is the most vulnerable party, and the surgeon is responsible for ensuring the preservation of dignity and acting with the utmost caution in situations that may be irreversible (37,38).

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There is no doubt that scientific and technical advances are relevant in improving specific and overall survival and are considered a major achievement of modern maxillofacial surgery (15,29). This improvement in survival has also been achieved through the use of new adjuvant therapies such as chemotherapy, radiotherapy, and more recently immunotherapy (24,25,30).

However, literature adds another important aspect, which is that as survival increases, there is also a considerable increase in complications and sequelae (19,22,23). These include an increased risk of recurrence, dysphagia or inability to swallow or speak, chronic fatigue, central pain, and visible changes in facial anatomy, all of which have a negative emotional and physical impact on the patient's quality of life (16,34,37).

Some authors propose minimizing these sequelae through early intervention, using stress resilience techniques (34,36), or through a multidisciplinary approach using early rehabilitation techniques (23,32). We must remember that the patient always asks the doctor for a change or improvement, or even restoration to a previous state (10).

That is why the need to act must be linked to the principle of proportionality, without forgetting that the *body part* that the patient makes available to the surgeon is not an element that can be separated from the *whole person*, which includes the dignity of the sick person (37,38).

More than two centuries ago, Kant, I (1724-1804), stated that human beings are characterized by dignity and not price (40). Dignity is probably the essential concept on which bioethics and all human life are based (12,39-41). The dignity of the person gives them the capacity to plan their life's actions and the responsibility for them, since those who have this condition are an end in themselves. These premises have always been valid and must guide the clinical relationship between the professional and the patient (39,40).

When referring to the dignity of the patient, we tend to think of autonomous individuals capable of deciding or discerning for them-

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selves (41). However, the reality of the situations described in this review is quite different, as advanced oral cancer is a reality marked by the progressive physical and psychological deterioration of the person, which isolates them and makes them vulnerable, expressing itself in situations contrary to the dignity that had been considered (39-42).

In this sense, the authors propose some ethical reflections such as: there are no single solutions, only alternatives; all clinical cases involve some challenging aspect; and in the event of any conflict, there may be a clash of values, so that responses must be based on well-justified reasoning (10-12,41).

One of the recurring hopes of the Tumor Committees is to highlight the role of new adjuvant therapies, which can improve prognosis with lower morbidity. These data are limited to very specific studies and refer mainly to the use of immunotherapy (3,16, 25,27).

From a bioethical perspective, the positive impact of research on advancing knowledge for patients is understood, but the potential conflict with industry, which prioritizes only certain lines of research, leaving aside *orphan tumors*, is also recognized (42-44).

3.2. *Therapeutic obstinacy and surgical ethics*

According to the articles included in the review, different types of therapeutic obstinacy are described: purely surgical, diagnostic, and even promoted by the surgeon, the patient, or their family, who insist on performing invasive procedures despite their known futility (15,17,20,21,26).

It has been observed that, given the increasing complexity of clinical cases, there are underlying situations that are conducive to therapeutic obstinacy, futility, or relentless pursuit of futile treatment, which can also be expressed in the form of decisions or actions endorsed by the medical team, making these situations more difficult to identify (35,37,45,46).

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These events are often related to moments of great demand in a short period of time, in which the lack of solid confidence and clarity on the part of the surgeon or medical team in reasoned deliberation becomes evident, as well as poor ethical training, which can make it difficult to preserve the patient's dignity in the face of any approach (41,43).

Underlying these forms of obstinacy is the idea of a difficult and distressing death, which is sought to be delayed by all possible means, even if there is no hope of cure (47). Situations are described in which the surgeon is determined to use all means at his disposal to save the dying patient and does not recognize that the end of his life cycle has come (41-43). The reasons can be varied, ranging from passion or selfish pride, an excessive interest in training or research activities, or even encouraged by the patient themselves, who persists in demanding surgical treatment because they do not understand the futility of the procedures (41, 46-48).

Little JM. (48,49) describes in his work that the surgical performance required of the surgeon cannot be a single objective but must be encompassed within a *surgical ethic* based on judgment or practical wisdom. The author develops this idea based on the principles of beneficence, non-maleficence, technical and therapeutic proportionality, and responsibility (12,38,48,49), and affirms that the decisions made must show a reasonable relationship between the means available and the foreseeable end, and that they must be applicable to all cases (48-50).

In this regard, the authors recall some reflections that should be present in the actions of health professionals, since there are no right or wrong answers, but rather better or worse solutions, which should always be based on well-justified reasoning (41,46,50).

It is up to the surgeon to make the most appropriate decision on whether to continue treatment, which may also be subject to criticism: if treatment is suspended, the surgeon may be accused of neglect, and if it is continued without reason, of therapeutic obstinacy (7,37,39,46). This dilemma must be resolved through deliberation,

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shared decision-making, and trust in the doctor-patient relationship, i.e., in the fact that the person will not be abandoned but will begin a new treatment—palliative care—focused on caring for all of the person's needs (44,45,46,51). The surgeon's ethical commitment is an integral part of disease management from onset to end (7).

3.3. *Limitations of life support techniques and care from the surgeon's perspective*

Medicine has achieved very high levels of benefit, but there is an objective risk of forgetting that the patient is first and foremost a human being, not a body in need of repair. When surgical technique seeks only performance and benefit, without establishing a connection with the person, the human dimension disappears (42,43).

This review is ongoing, once the decision has been made to suspend the application of any measure considered extraordinary or disproportionate in a patient with a poor prognosis (9,16,31,33,35). Currently, the term "*limitation of life-sustaining techniques*" is used instead of "limitation of therapeutic effort," as it has been described that this limitation of effort should not be understood literally, as it could imply abandonment of the patient (51-53). Rather than limiting therapeutic effort, it should be transformed into an effort to maintain life with the least suffering, without abandoning the patient and without applying extraordinary procedures that provide little or no benefit (53).

This decision poses a challenge for many professionals, given the multiple scenarios that arise as the disease progresses (47). According to the principles of effectiveness and efficiency of each medical action, when there is no adequate indication for an intervention, other procedures or treatments should be performed whose expectation is not cure or prolongation of life, but rather the provision of quality of life without prolonging or shortening survival (50,51,54). These interventions address all aspects of the person: physical, psychological, social, and spiritual (50,52).

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Numerous authors demonstrate that an early and systematic model of integration of care in multidisciplinary oncology significantly improves the quality of life of patients with advanced cancer at the end of their lives (23,28,31-33,55-57).

Following this idea, comprehensive end-of-life care promotes the autonomy and dignity of the person (10,11) and should be adopted early, as preventive measures for possible complications that may occur in the course of the disease are the only proven way to provide quality of life to patients (31,33,56,57). In fact, it is possible to improve symptoms such as fatigue, depression, insomnia, breakthrough cancer pain, and even local symptoms such as xerostomia (25,50-52).

The idea of *care* is the ethical virtue essential for moral life, that is, care and neglect of human beings throughout history are not presented as a neutral value, but as a positive one, since the aspiration to a better life, to a dignified life, is indispensable to a personal structure full of virtues (47,51). This *care* enables human beings to undergo an inner transformation that allows them to bear fruit, which will be: care for oneself, care for others, and even care for the world (51).

López-Azpitarte E. (47) mentions the progressive dehumanization of modern medicine. The author considers this point to be an endemic evil of our time, in which today's civilization is designed to kill pain, eliminate disease, and fight against death, but at the cost of sacrificing the human content of existence itself. If death has not been conquered, it has at least been expropriated, since modern man has lost the right to preside over his own act of dying (47).

A medical community that accepts death as part of life and understands the relevance of interventions that do not seek to cure but to provide quality and convenience will probably achieve better acceptance of disease in its advanced stages and, in the same way, spare the patient and family the suffering inherent in prolonging life when there is no reasonable chance of cure or recovery (8,41,47,51).

In the surgical setting, it is common for the initial clinical relationship established with the patient to tend to be very technical

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(6-8), although in the course of the disease, a relationship of trust and dialogue based on the deliberative model described by Emanuel E. (58) develops. This model, combined with the principle of autonomy, facilitates the patient's needs and requirements in an understandable and appropriate manner to help them make autonomous decisions, with the caveat that in complex dilemmas these decisions must be shared (10,12,58). Shared decision-making adds substantial value to the principles of autonomy and beneficence and strengthens the relationship of trust between the physician and the patient (12,58).

3.4. *Maxillofacial surgery and bioethics*

Bioethics is a discipline intrinsically linked to the individual, and even more so among healthcare professionals. It must be recognized that if professional activity is far removed from ethical and moral principles, it has an impact on the deepest sphere of the individual. For this reason, it is said that conflicts and dilemmas in professional activity are experienced with emotional stress and spiritual suffering (59,60).

The authors point out the importance of including specific and targeted training in ethics among the skills of all healthcare professionals (48,54,58). They emphasize the need for professionals to have the necessary tools to deal with conflicts and improve patient care in complex situations (58).

In this work, the most important ethical issue for maxillofacial surgeons may be recognizing that, throughout the course of the disease, the person is endowed with reason, moral judgment, and conscience, and is therefore capable of recognizing what is right and good. This maxim also applies to surgeons, who must understand the importance of scientific progress, the risk of falling into therapeutic obstinacy, understand their responsible role in caring for the person, and limit futile procedures.

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4. Conclusions

Each of the conflicts raised requires an appropriate response based on the principles of bioethics. To this end, surgeons must adopt the necessary skills to understand and remember their responsibility throughout the entire process of the disease.

The basis of each dilemma reminds us that surgery is an ethical and moral practice that recognizes the fragility of human beings and that, like all life sciences, it cannot be deprived of the values intrinsic to human beings but, on the contrary, must protect and guarantee them.

Finally, it is necessary to emphasize the importance of the principles and foundations that define bioethics, so that they are useful for creating debate and discussion in the field of oral and maxillofacial surgery today.

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6. Conflict of interest

None to declare.

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