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Quality of life of Maxillectomy patients restored with Obturator- Narrative Review.

Faculty of Health Sciences

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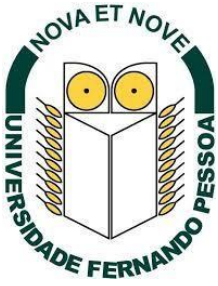

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Dissertation presented to the

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Master's degree in Dental Medicine

Alessia Vinci

ABSTRACT

The following review attempts to analyze through various studies, the QoL of patients undergoing the Maxillectomy procedure due to neoplasms and subsequently rehabilitated with an obturator. Concepts about maxillary defects, mainly acquired defects, will be explained, notions about the rehabilitation method by means of the obturator prosthesis will be given, and finally, the results will be evaluated and discussed in order to answer the question the work aims to answer, i.e. whether the obturator can indeed be an effective rehabilitation method for improving the patients' life QoL.

The methodology used for this study was a bibliographic search of scientific articles between May 2022 and September 2022 and the search engines used were Web of Science and PubMed.

Key-word: Maxillary Obturator Prosthesis, Palatal Obturator and Quality of Life

RESUMO

A revisão seguinte tenta analisar, através dos vários estudos, a QoL dos pacientes submetidos ao procedimento de Maxilectomia devido a neoplasias e subsequentemente reabilitados com um obturador. Serão explicados conceitos sobre defeitos maxilares, principalmente defeitos adquiridos, serão dadas noções sobre o método de reabilitação através da prótese obturadora e, finalmente, os resultados serão analisados e discutidos a fim de responder à pergunta que o trabalho pretende responder, ou seja, se o obturador pode de facto ser um método de reabilitação eficaz para melhorar a QoL dos pacientes.

A metodologia realizada para este estudo foi através de uma pesquisa bibliográfica em artigos científicos, entre Maio 2022 e Setembro 2022 e os motores de busca utilizados foram a Web of Science e PubMed.

Palavras-chave : Prótese obturadora maxilar, obturador palatino e qualidade de vida

DEDICATION

A te che non respiri più con me,

ma continui a vivere al mio fianco.

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ÍNDEX

Abbreviations

COP	Conventional obturator prosthesis
CPOP	Cast partial obturator prosthesis
HOP	Hollow bulb prosthesis
ISO	Implant- supported obturator
MOP	Magnet-retained obturator prosthesis
OFS	Obturator functioning scale
QoL	Quality of Life
SAIF	Submental artery island flap
UW- QOL	The university of Washington Quality of Life
WHO	World Health Organization

I. INTRODUCTION

The WHO estimates that 9.6 million people worldwide die of cancer annually. The mortality rate is not much different from 35 years ago, but the survival time rate over the years has improved. Cancer occurrence increases with age and it is probably the most sought-after disease in the world. With the growing prevalence of oral and maxillofacial cancers in recent years, a palatal defect is considered the most common maxillofacial defect. Palatal defects are usually caused by surgery, requires the use of appropriate reconstruction and /or rehabilitation in order to resolved or minimized problems associated with them (Singh et alii., 2020). Quality of life assessment of patients with neoplasia is used to better understand the impact of the disease and to establish appropriate rehabilitation treatment.(Filho et alii.,2013) . The following work aims to analyze the QoL of patients rehabilitated by means of an obturator prosthesis. QoL in these patients refers to some of the most important individual life functions such as chewing, swallowing, speech and aesthetics and in order to maintain these functions it is mandatory that the separation between oral and nasal cavities is preserved.

Consequently, the work aims to answer the following question :

-Is the obturator an effective rehabilitation method to improve patients' QoL in patients that underwent oral cancer surgery in the maxilla?

1.1 MATERIAL AND METHODOS

For this narrative review, a bibliographic search of scientific articles was conducted between May 2022 and September 2022. The scientific databases used were PubMed and Web of Science. Taking keywords defined previously, into account, 40 articles were considered after reading the respective abstracts, results and conclusion. After the application of the inclusion and exclusion criteria, 5 articles were selected.

The key words used were (Maxillary Obturator Prosthesis), (Palatal Obturator) and (Quality of Life) ,

Selection Criteria

Inclusion criteria: articles in which the sample consisted of patients with acquired defects , open access articles. Articles that examined QoL in patients with obturator prosthetics, and articles that evaluated: chewing, swallowing, language and aesthetic appearance. Only studies from the past 5 years (2017-2022) were considered.

Exclusion criteria: case report, articles which included single person or included "zygomatic implants", studies that did not include conventional obturators studies that did not specifically examine QoL and articles with not clear results. Articles not in 'English', 'Italian' and 'Portuguese' were excluded.

II. DEVELOPMENT

2.1 MAXILLARY DEFECT

One of the prominent structures of the oral cavity is the maxilla, which separates the oral and antral cavities and orbits, providing support for the eyeball, lower eyelids, cheeks, lips and nose. Other important functions are certainly the role it plays in chewing, swallowing and in phonation, the main vital functions as well as aesthetics. Among the intra-oral defects those located in the maxilla are more challenging and can be subdivided into congenital and acquired defects, the latter of which will be the protagonists of this work. Patients diagnosed with a malignant tumor of the maxilla commonly undergo maxillectomy of some degree, a surgical practice based on the ablation of the cancer that consequently results in a maxillary defect. (Ali et alii., 2018)

Patients with maxillary defects experience facial disfiguration and functional problems, leading to impaired normal daily activities, such as chewing, experiencing great difficulty in doing so, hypernasal voice and swallowing of solid and liquid food , that can be wrongly expelled from the nose. (Wang et alii., 2022)

This is caused, not only by the loss of maxillary bone from surgical resection but also loss of elasticity and reduced muscular mobility, reduced mouth opening, difficulty in forming the food bolus and swallowing leading to inability to chew and swallow as experience before. (Rolski et alii., 2016)

Maxillary defects are classified according to the "Brown classification" (Brown et alii.,2010) In accordance with vertical or horizontal dimension or palatal appearance of the maxillectomy. The horizontal classification sees: I maxillectomy without oronasal fistula, II does not involve the orbit, III affects the peri-orbital area or the orbit ., IV enucleation or exemption of the orbit ., V orbit-maxillary defect, VI nose-maxillary defect.

The vertical classification sees: "a" only palatal defects ., "b" less than half unilaterally "c" bilaterally or transversely ., "d" more than half of the palate involved. These defects must be reconstructed and/ or rehabilitated in order to keep life as similar as it was before maxillectomy (Brown et alli.,2010, Q.Sun et alii.,2020)

2.2 OBTURATOR PROSTHESIS

The restoration of maxillary defects, must have as its main objective the restoration of the main functions of the stomatognathic apparatus and the reduction of facial deformities, leading to the improvement of the well-being of the patient, who clearly suffers a not insignificant impact on his or her quality of life. (Ali et alii.,2018). Both the surgical and prosthetic rehabilitation branches offer various solutions for the restoration of maxillary defects. (D.M dos Santos et alii.,2018). Prosthetic rehabilitation makes use of the obturator, from the Latin word 'obturare' meaning 'to close up', refers to a plate, of different materials and designs, which aims to close defects in the maxilla (Ali et alii.,2018) .The obturator is used for temporary and permanent rehabilitations, with the use of a so-called 'surgical' obturator at the various stages of treatment, followed by a temporary obturator and finally a definitive obturator. The purpose of an obturator is to separate the oronasal regions, re-establish vital functions, making it possible for the patient to chew correctly, preventing liquids from spilling out of the cavity and restoring an unaltered aesthetic appearance.(Mittal et alii., 2017) . According to the study by (N.Vero et alli., 2015) the obturator is considered to be the most effective solution and brings more advantages, including immediate resolution of the defect, aids visualization of possible tumor recurrence, restores anatomy and function. On the other hand, there is the discomfort of having to wear it, requires skill in insertion and removal, the retention hasa high probability of failure when placed in very large defects, and it requires quite a few adjustments. According to the study by (Garden et-al., 2003), obturators are considered a gold standard, due to the immediate rehabilitation without the need for an additional siteand the careful supervision of the severed cavity. The branch of surgery offers various methods of reconstruction, such as the 'free flap', which will be compared to the obturatorin this paper. The disadvantage of being a complex procedure, that can be do in more thanone surgical time and leading to greater time of hospitalization, not to mention the fact that there are many variations that affect the outcome.

In this regard, it is important to note that the choice of the best treatment derives from the size of the defect, in the case of a small defect, the obturator will be sufficient to cover it to its full extent, whereas in the case of a large defect, the obturator will be used in addition to reconstruction. (Goiato et alii., 2013)

2.3 QUALITY OF LIFE

Quality of life, is defined by WHO as 'the individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns'. In summary, QoL is the way in which a persona lives the different aspects of his or her life, associating it with the degree of personal satisfaction in social life, family life and the existential whole. (Filho et alii.,2013) In the past years the concept of quality of life is being greatly used in medical. The term also includes mental health, social relationships, functional activities, social and economic influences. It has always been a relevant concept in many fields such as medicine, economics and politics and is used to inform about factors that influence the condition of an individual or society. It is customary to use the recurrence or survival rate to assess the outcome of a therapy while informing about patient satisfaction or quality of life is still little used or taken in to account for the outcome result . (P.Kumar et alii., 2019) .Only in recent years there has been a recognition of the great impact that a tumor located in the maxilla can cause in the life of a patient, and this has contributed to an increased interest, resulting in several studies analyzing QoL after prosthetic rehabilitation. (Depprich et alii., 2010). Various studies on the QoL of patients undergoing Maxillectomy and subsequently rehabilitated with obturators have shown a strong relationship between obturator function and patients' quality of life, demonstrating that QoL is influenced by countless factors, including tumor type, extent of defect, remaining structure, surgery and radiotherapy treatments. (Chigurupati et alii 2013) It is not uncommon for patients undergoing Maxillectomy to ask about their QoL, aiming to understand what should be expect after surgery. This denotes how crucial it is that the obturator is able to restore function, consequently, meaning to be able to return to a normal life, without impediments and psychological trauma. (Ali et alii., 2018) . But how is QoL analyzed is the specific patients? Recognizing the great impact that a tumor in the maxillary region can have on a patient's quality of life, several authors proposed adding QoL parameters to the clinical criteria, provided by special questionnaires. (Seignemartin.,et alii 2015).

There are two specific questionnaires, developed to access QoL in patients to underwent maxillectomy. One in the OFS (Obturator Functioning Scale), which will be used in some of the studies included in this paper. The OFS is used as a self-referenced method of QoL operation, created by (Kornblith et alii.,1996) and developed at Memorial Sloan Kettering Cancer Center (NY). Targeting the evaluation of three principal aspects, eating ability (chewing and swallow) language expression (speech) and aesthetic satisfaction. The questionnaire has a set number of questions and a 'Likert' scale (quantitativevariable), which includes a range of scores established by the study, the total score will be the sum of the responses reflecting the mean score. (Ali et alii.,2018). The second questionnaire used is called 'UW- QOL' (The university of Washington quality of life).It is based on the assessment of a 12 questions and a score ranging from 'one' to ‘hundred'(‘worst’-‘best’) (Wang et alii., 2022)

2.4 RESULTS

After research and application of the inclusion and exclusion criteria, 5 articles were selected to analyse the quality of life of patients after being rehabilitated with an obturator. The results presented below are described and summarised in the table n.1.

2.4.1 Mittal et alli.,2017

This retrospective analysis, evaluate patients' QoL by using the OFS questionnaire in order to collect data from 4 different types of obturators COP, MOP, CPOP, HOP .
Was conducted on 30 patients, 18 males and 12 females, with a follow-up of 12 months. The age range was 32-78 years and Brown classification I-II-III. The patients had indications for maxillectomy, after oral biopsy with Pathology Diagnosis (7), Squamous Cell Carcinoma (12), Pleomorphic Adenoma (7), Adenoid Cystic Carcinoma (4), Mucoepidermoid Carcinoma (3), Others (4).
Different cancer treatment schemes were preformed , according to pathology report, that include Surgical therapy (8), Surgical therapy plus Radiotherapy (17), Surgical therapy plus Radiotherapy plus Chemicaltherapy (5). Among the 30 patients, 7 were rehabilitated with COP, 7 with MOP, 8 with CPOP, 8 with HOP.
The domains evaluated by OFS questionnaire were chewing, swallowing, speech and appearance, each of which could contain subgroups, as referred previously.

To conduct this analysis, patients were provided with a questionnaire containing 10 items, each had to correspond to a satisfaction score from 1 to 10.

A score of 1 would indicate maximum dissatisfaction and a score of 10 maximum satisfaction with minimum suffering. For the domains scrutinized in the study, the first question posed to the patients was precisely to assess how satisfied or dissatisfied they felt with their chewing it was reported an overall score of (6.33± 2.02 with P= 0.01), the same question was asked for the other 3 domains analyzed. The reported results for were (5.63± 1.86 with P= 0.03), for the domain of speech (5.96± 1.69 with P=0.02) and finally for the domain of appearance (5.33± 1.72 with P=0.05).
Statistical improvement was revealed in chewing, word pronunciation and swallowing (P< 0.005), but not all individuals were fully satisfied with their appearance.
The average overall OFS questionnaire score was 5.67.

2.4.2 Ali et alii., 2018

The aim of this cross-sectional study was to investigate the patients' QoL by means of the OFS questionnaire. Thirty patients with obturators , only 73.7% had malignant lesion, all had surgery (26.7% RT and 73.3% did not) and all rehabilitation with obturator.
To do this evaluation with the OFS questionnaire, a 'Likert' scale ranging from 1 to 5 ('not at all', 'a little difficult', 'somewhat difficult', 'very difficult', 'extremely difficult') is used. The total is the sum of the answers, reflecting the average score, specifying that the higher the latter, the more dissatisfied is the patient. The study was conducted on 30 patients, 15 male and 15 female, the average age was 40-59 years and the average time the obturator was worn was 24 months. The indication for maxillectomy was for malignant tumor, the treatments to which the patients underwent were the surgical procedure in all, 26.7% had radiotherapy in contrast 73.3% did not and finally all were rehabilitated with conventional obturator.

The OFS questionnaire, evaluated the following: Chewing, Swallowing, Speech and Appearance, each of which could contain subgroups. In the first domain, patients were asked to quantify in scales how much difficulty they had in chewing, the 50% of the patients reported "no or little difficulty" . Regarding the domain of speech 13% of

individuals report difficulty in public speaking, when the question asked was how difficult it was to speak in public. Regarding how nasal their voice was, 75% replied "no or little" nasal speech.

Difficulty in pronouncing the words, was not reported by 85% and 86.2% referred that their voice was "no or little" difficult to understand. For the swallowing domain, patients were asked to quantify on a scale the degree of loss when swallowing food 50% report "no or little" difficulty when swallowing food. Regarding aesthetics, the questionnaire asked to quantify the degree of dissatisfaction , the 13.3% consider themselves extremely dissatisfied and 75% "no or little" dissatisfied.

2.4.3 Buurman et alii., 2019

In this cross-sectional study, 19 patients were divided into two groups. In the group I (ISO) had 9 patients, ages ranging from 40-59 and with a follow-up of 45.38 months. In the group II (COP) had 10 patients, ages ranging from 40-59 years and a follow-up of 57.09 months. All patients in the study had Brown classification: Ia- IIa- IIb-IIc-IId. The indications for maxillectomy were: Gengival Squamous Cell I(5) II(6), Adenocarcinoma I(5) II(6), Adenoidcystic Carcinoma I(1) II(1), Mucoepidermoid Carcinoma I(0) II(1), Ameloblastoma I(1) II(0) and for trauma I(1) II(0). All patients in the two groups underwent surgery, 5 in the first group and 8 in the second group received adjuvant radiotherapy. Subsequently rehabilitated with COP and ISO. The OFS was applied with a score from 1 to 10 (“not at all” to “always a problem”). Concerning the ability to masticate the COP compared to the ISO, patients were asked to quantify in scales how difficulty was chewing, score was (1.67±0.87 vs 3.00±0.82 with P= 0.007), for the domain of 'swallowing', patients were asked to quantify on a scale the degree of loss when swallowing the score was (5. 55± 1.46 vs 5.7 ±1.59 with P = 497).

The sphere of language, when asked how much difficulty they had in pronouncing the words, the patients score of (1.89 ±1.27 vs 2.30± 1.25 with P =.367) and finally for the domain of aesthetics, the questionnaire asked for the degree of dissatisfaction, resulting in the results (2.11 ±1.54 vs 1.50 ±1.08 with P = 0.256). So, ISO had better results in the domains of chewing and language but when evaluating aesthetics, the COP group reported better results.

2.4.4 Aladashi et alii.,2020

In this RCT, QoL is evaluated by comparing Submental Flap Reconstruction (SF) and rehabilitation with a conventional obturator. The study included a total of 60 patients divided into 2 groups. Group I (SF) included 30 patients, 12 males and 18 females, the mean age was 59 years and a follow-up of 5.8 months. Group II (COP) included 30 patients, 15 males and 15 females, the mean age was 52.8 years and follow-up of 8.1 months. According to Brown's (2010) classification, the defects were II A and IIB.

Patients in both groups presented indications for Maxillectomy due to SCC (8-11), Mucoepidermoid Carcinoma (4-11), Adenoid Cystic Carcinoma(14-2) and only group II presented patients with Adenocarcinoma (4).

According to the study, all of the patients were treated surgical therapy as treatment, with one group receiving reconstruction (SF) and one group a prosthesis (COP). The questionnaire used was the UW-QoL version 4, it comprised 12 questions for 12 domains with a score scale from 1 (worst) to 100 (best).

The highest scores were found in the domains of mastication, speech and phonation, but the remarkably high score was reported in the aesthetics domain with a score of 94.1± 13.1 in the obturator group versus the SF score 74.25± 13.17 with $P<0.001$. Furthermore, the mastication domain reported a score of 38.15±19.17 before COP rehabilitation and after rehabilitation reported a score of 71.13± 18.31 with $P<0.001$. (SS:$P<0.05$). All evaluated domains improved after COP rehabilitation.

2.4.5 Wang et alii.,2022

A retrospective study, studied QoL of oral cancer patients with maxillary defect IIb was analyzed (Brown et alli.,2010) by comparing prosthetic rehabilitation with an obturator and reconstruction with a submental flap. The study included 116 patients, 44 males and 72 females, the average age was 58 years.

The patients had indications for maxillectomy due to Squamous Cell Carcinoma (68), Adenoid Cystic Carcinoma (28) and other (20). Among the patients in the study 72 underwent surgical therapy alone, 44 underwent both surgical and radiotherapy and finally all rehabilitated with COP (56) and SAIF (60).

Two questionnaires were used to assess QoL in these patients. The UW-QoL version 4 with a score from 1 to 100 with 12 questions and the OFS with a score from 1 to 5 and 15 questions.

No significantly different results were found between the two groups, except for the mastication domain where the SAIF reported a lower score than the OFS (74.9 ± 26.5 vs 84.8± 23.2), according to the UW-QoL version 4 questionnaire. The OFS questionnaire asked about the degree of difficulty in chewing food, the patients' score was (2.1±1.3 1.8±1.2), for the swallowing domain, patients were asked to assess the loss of solid and liquid food through the nose, score was (1.5 ± 1.2 vs 2.4 ± 1.3), for the speech domain, the OFS questionnaire asked to assess the difficulty in pronouncing the words, patients give a score of (1.7 ± 1.1 vs 1.6 ±1.1) and for the dominance of appearance, the questionnaire asked to assess the degree of dissatisfaction, patients gave a score of (1.6 ±0.9 vs 1.7 ±1.0) . According to the OFS there were no significantly different results except for the swallowing domain where it is denoted that it is much more difficult for the COP-rehabilitated patients to swallow compared to the SAIF group. The UW-QoL questionnaire asked them to rate their satisfaction with a score from 1 to 100 (worst-best). For the UW-QoL questionnaire they reported for the chewing domain a score of (74.9±26.5 vs 84.8 ± 23.2 with P = 0.038) , for the speech domain a score of (81. 8±22.5 vs 86.4±19.8 with P = ns), for the domain of swallowing (92.3 ± 18.7 vs 95.3 ±17.3 with P = ns) and finally for the domain of appearance (80.8±20.3 vs 80.4 ±19.5 with P = ns). Statistically significant results compared with SAIF.

III. DISCUSSION

Five studies were included in the present work with the aim of evaluating QoL in patients using obturator prosthetics. Two articles, including an RCT, compared rehabilitation with an obturator and surgical reconstruction by means of "Submental Flap", another compared various types of obturators, the third compared obturator with conventional retention and implant-supported, and finally the last article, analysed the QoL of patients with exclusive treatment with the obturator.

The studies analysed various domains, but in this work, four domains will be analysed, concerning the main vital functions of a patient and also because they relate themself with direct on indirectly with Dentistry. They are "CHEWING" analysing the difficulty in performing this action, "SWALLOWING" analysing the ability to swallow solid food and liquids, "SPEECH" analysing mainly the pronunciation of words, whether the patient's voice is nasal and whether the patient's voice is intelligible, and finally "AESTHETICS" in this domain, the degree of patient satisfaction or dissatisfaction will be analysed. The articles considered for this work used two different questionnaires that have the objective to evaluate QoL in oral and oropharyngeal cancer patients: University of Washington – quality of life (UW-QoL version 4) and Obturator Functioning Scale (OFS).

Having established this, in the paper, to ensure greater organisation, the results will be discussed in domain and questionnaire order.

For the domain of mastication according to the study by (Alii et ali.,2018) the OFS assessed with a Likert scale score from 1-5 (Not at all - A little- Somewhat - Very much- Extremely) and the question posed to the patients was ' Difficulty chewing food' . More than 70 % of the patients gave a score of 1 to 3 and only less than 30 % responded by giving a score of 4 to 5. In comparison to the study by (Wang et alií.,2022) with the same evaluation questionnaire, with the same question and scale, patients answered with an overall score of 1.8± 1.2 . The results showed almost complete satisfaction and little difficulty chewing foods. Buurman et alli.,2019 on the other hand, reported a score of

3.00±0.82, demonstrating full difficulty in chewing. The discordance between the first two studies and the later, can be attributed to the fact that mainly the study types are different, the defect types are not the same between the studies, the follow-up is also different and in the case of the last study the sample, compared to previous studies, is too small. In the study by (Mittal et alii., 2017), the score ranged from 1 to 10, again assessed for OFS , but in contrast to the first three studies, patients were not asked to rate the difficulty, but rather their satisfaction. The average score for all the obturators examined was 6.33± 2.02, exceeding the halfway mark, although not entirely satisfactory. The downside of the study was having too small follow-up (12 months). According to the UW-QOL questionnaire, patients in the studies were asked on a scale from 1 to 100 (worst-best) to indicate their degree of satisfaction with chewing. In the study by Aladashi et alii., 2020 , the overall patients reported a score of 61.75±28.87, in comparison to the study by (Wang et alli., 2022), the reported score was 84.8± 23.2. The disadvantage of thefirst study is that it too had a shorter follow-up of eight months, whereas the second studyhad 43 months, which makes the result reported by the obturator very significant. The study by (Aladashi et alii.,2020) also focused very much on the masticatory function, the patients before the rehabilitation prosthesis gave a score of 38.15 ± 19.17, after the intervention they rated their mastication with a score of 71±18.31, considering themselves very satisfied.

Swallowing domain in the study by (Ali et alii.,2018) 'food loss' was assessed and more than 50% reported scores from 1 to 3 meaning little or no loss. In (Wang et alii.,2022)both food and fluid loss were assessed and patients rated their degree of satisfaction from 1 to 5, giving fluid loss 2.4 ± 1.3 and food loss 1.9 ± 1.2, meaning great dissatisfaction on their part and consequently great loss. According to what was studied, these points of contrast can be attributed to the fact that the studies did not examine the same types of defects, knowing that leakage is closely related to size and location of the defect and the where is the leakage occurring (mouth or nose), it is deduce that the discordance between the studies is quite understandable. When compared the results with the study of (Buurman et alii.,2019), from 1 to 5 patients gave 2.10±1.37 to the loss of food and 3.60± 1.08 to the loss of liquids, also in this case the loss was considerable, but we can point out that comparing the last two studies the loss of liquids was greater than the loss of food. Clearly, liquid escape is easier to happened than solid. A more accurate analysis would be needed to establish whether this result depends solely on texture or other factors

related to the shutter. In Mittal et al.,2017 the patients according to the OFS rated the loss, on a scale from 1 to 10, 5.63± 1.86 again a low satisfaction value. For the UW-QOLin the study of (Aladashi et alii., 2020) with a score from 1 to 100 (worst-best) the patients reported a score of 70.00 ± 13.02 meaning quite a high degree of satisfaction, comparing the study of (Wang et alii., 2022), patients again with the same scoring scale even reported 95.3± 17.3. But it should be pointed out that probably the high score in the two studies was due to the fact that there was no division between food and liquid, so it can be deduced that the result obtained was an average of both.

When focusing the speaking and language according to (Ali et alii.,2018) 80 % of the patients reported a score of 1 to 3 little or no difficulty in pronouncing words, 75 % always reported a value of 1 to 3 with regard to the presence of a nasal voice. Eighty-six per cent reported little or no problem in being comprehensible. In the study by Wang et al., 2022, again using the same assessment method, the patients gave a score of 1.6 ± 1.1 for the pronunciation of words, for the presence of a nasal voice 1.6 ± 0.9 and when asked whether their voice was difficult to understand, they gave a score of 1.6 ± 1.0. In contrast in the study by (Buurman et alii., 2019), patients stated a score of 2.30 ± 1.25 at pronunciation, for nasal voice 2.60 ± 1.35 and for comprehensibility they gave 1.80± 0.79. Here too, the discordance is attributed to the results to the different defect types between the studies and the follow-up. (Mittal et alii., 2017) only reported the degree of difficulty in the pronunciation of words was scrutinized, patients 1 to 10 reported a score of 5.96 ± 1.69, a score that was not very significant. But the follow-up of the study was too short. For the UW-QOL, by (Aladashi et alii., 2020), patients had a score from 1 to 100 (worst-best) and stated 60.00± 18.51 and in the study of (Wang et alii., 2022) also according to the UW-QOL 86.4±19.8, a discrepancy again due to the short follow-up of the first study and the diversity of the defect. One might think that more time is needed for the patient to adapt to the prosthesis and consequently be able to pronounce words more clearly and with less effort.

The last point to be looked at was aesthetics. In the study by (Ali et alii., 2018), patients were asked to rate their degree of dissatisfaction from 1 to 5, with more than 75 % of them reporting that they were not at all or only slightly dissatisfied. (Wang et alii.,2022) and in (Buurman et alii.,2019) the results were among the lowest, 1.7± 1.0 and 1.50 ± 1.08 respectively, proving that the patients felt minimally dissatisfied. For the UW- QOL in the study by (Aladashi et alii., 2020)the domain was evaluated by asking them to give a

score to their appearance with the obturator, the patients reported from 1 to 100 (worst-best) 94.1± 13.1 which was even higher than the SB compared in the study. In agreement, the study by Wang et al., 2022 also reported a score of 80.4± 19.5, both reported very good scores but to the disadvantage of this is always the diversity of defect types and follow-up. It is worth mentioning that in the study 3 articles compared the obturator with other rehabilitation techniques, SF and the implant-supported obturator, one among them compared various types of obturators and another only the obturator rehabilitation.

The three studies concluded by crediting the effectiveness of the obturator as a rehabilitation method, although reconstruction was the method of choice. The study comparing various obturators concluded that obturators of various designs play a significant role in the rehabilitation of maxillary defects, increasing the QoL of patient. The last one concluded that a well-designed obturator is a good rehabilitation method, effective, non-invasive, cheap and with absolute improvement in QoL. Four of the studies, (Mittal et alii.,2017), (Ali et alii., 2018), (Buurman et alii., 2019) and (Wang et alii.,2022), had patients that underwent post operative radiotherapy, all suggesting that QoL was strongly affected independently of the type of maxillectomy or obturator used.

Clearly, the unfavorable points of the work focus mainly on the small number of studies on the subject, the small differences in the studies, very different follow-up durations, with the latter being too short. Furthermore, the shortcomings examined differ between the studies, although some of them are similar, and most of the studies do not show results in a clear manner and tend to give relevance to the reason of the maxillectomy and type of therapy done other than surgery, but important to emphasize that patients were allocated to a group not taking into account their Brown classification, it would be important to have larger groups that could be subdivided according to the size and location of the maxillectomy has it can influence immensely rehabilitation and consequently their QOL.

IV. CONCLUSION

An Obturator prosthetic is a removavel medical devise that can be retained simply using anatomic sites at disposal (teeth, vestibule or tuberosity) or in special cases can be implant supported also. Can be used alone in some situations (small defects or if the retention is good) but also in conjunction with reconstruction, in a second moment after reconstructive surgery of the maxilla.

The subjective evaluations using obturator function scale and University of Washington-Quality of Life questionnaires are importan t tools to forecast patients' response to the use of this devices. The obturator has some great aspects, as it is an effective, inexpensive, non-invasive method and another great aspect of these type of devices is related to that fact that can be removed, for the inspection of the surgical sites in allowing a better ability so check for possible recurrences. In addition to its great advantages, given the remarkable results it improves patients' QoL, promising the restoration of affected vital functions.

One the other hand it is still necessary more research on the topic, given the lack of studies about it, with longer follow-ups, larger numbers of patients, grouped by defect type, age, and type of therapy after tumor ablation, permitting to approach the rehabilitation and reconstruction of these patients with more certainty of the result. We also suggest more studies with the same evaluation questionnaire in order to ensure greater clarity in the results.

V. BIBLIOGRAPHY

Aladashi, O.Q.S. *et alii* (2020). Effect ofsubmental flap reconstruction versus obturator rehabilitation after maxillectomy on quality of life: a randomized clinical trial. *International Journal Oral Maxillofacial Surgery 2021*. 50(9), 1156-1160.

Ali, M. M., Khalifa, N. e Alhajj, M, N. (2018). Quality of life and problems associated with obturators of patiens with maxillectomies. *Head & Face Medicine.* 14 (2), 2-9.

Brown, J.S e Shaw, R. (2010). Reconstruction of the maxilla and midface: introducing a new classification. *Lancet Oncology 2010.* 11 (1), 1001-1007.

Buurman, D.J.M. *et alii (2019).* Masticatory performance and oral health-related quality of life in edentulous maxillectomy patients: A cross-sectional study to compare implant-supported obturators and conventional obturators. *Clinical Oral Implants Research 2020.* 31(5), 405-416.

Depprich, R. *et alii.* Evaluation of the quality of life of patients with maxillofacial defects after prosthodontic therapy with obturator prostheses. *International Journal Oral Maxillofacial Surgery 2011*.40(1), 71-79

Dos Santos, D.M., et alii (2017). Oral rehabilitation of patients after maxillectomy. A systematic review. *British Journal of Oral and Maxillofacial Surgery* 2018. 56 (4) , 1-11.

Goiato, M. C, DDS., MSc., PhD., Dos Santos, D.M., DDS., MSc., Magri, F.M., DDS., Rahal, Vanessa, DDS., Andreotti, A.M., DDS., Moreno e A., DDS., Filho, A.J.V, DDS. (2013). . *The journal of Craniofacial Surgery 2018*. 24(5). e517- e521.

Kumar,P. *et alii (2013).*Assessment of the quality of life in maxillectomy patients: A longitudinal study. *Journalof Advanced Prosthodontics 2013*. 5(1), 29-35.

Melo Filho, M.R. *et alii (2013).*Quality of life of patients with head and neck cancer.(2013). *Brazil Journal Otorhinolaryngol. 2013.* 79(1), 82-88.

Mittal, M. *et alii* (2017). Form, Fuction, and Esthetics in Prosthetically Rehabilitated Maxillary Defects. *The journal of Craniofacial Surgery 2018*. 29(1), 1-4.

Mojica, J.S., Buchbinder, D e Urken, M.L . (2003). Comparison of functional and quality-of-life outcomes in patients with and without palatomaxillary reconstruction: a preliminary report. *Archives of Otolaryngology Head Neck Surgy 2003.* 129(7), 775-80.

Rolski, D. *et alii.* The Management of Patients after Surgical Treatment of Maxillofacial Tumors. *Biomedicine Research Internationa*l . 4045329.

Seignemartin, C.P. *et alii (2014)* Understandability of speech presicts quality of life among maxillectomy patients restored with obturador prosthesis. *Journal Oral Maxillofacial Surgery 2015*. (1),1-9.

Singh, M. *et alii (*2020). Definitive Obturator Fabrication for Partial Maxillectomy Patient. *Case Report in Dentistry 2020*. 6513210.

Sun,Q. *et alii*(2020). Does the Brown classification of maxillectomy defect have prognostic prediction for patient with oral cavity squamous cell carcinoma involving the maxilla?. *International Journal of Oral Maxillofacial Surgery 2020*. 49 (1), 1137- 1141.

Vero, N. *et alii* (2015) .Assessment of swallowing and masticatory performance in obturator wearers: a clinical study. *Journal Advanced Prosthodontincs 2015*. 7(1),8-14.

Wang, L. *et alii (* 2022). Quality of life in patients with cancer-related Brown IIb maxillary defect: A comparison between conventional obturation rehabilitation and submental flap reconstruction. *Oral Oncology.* 132 (1), 1-7.

WHOQOL. What quality of life? The WHOQOL Group, Vol. 17. World Health Organization Quality of Life Assessment. World Health Forum 1996: 354–356.

WHOQOL. The World Health Organiza- tion Quality of Life assessment (WHO- QOL): position paper from the World Health Organization. Soc Sci Med 1995: 41: 1403–1409.

VI. ANEX

Author\ Type study	Follow up	Sample characterization	Indication for Maxillectomy	Treatment/ Type of obturator	Questionnaire /Scale	Results
-Mittal *et al.*, 2017 - Retrospective analysis	-1 years	- 30 patients - Sex M\F: 18\12 -Age range: 32-78 -Brown Classification: (I-II-III)	-Pathology Diagnosis: 7 - Squamus Cell Carcinoma: 12 -Pleomorphic Adenoma: 7 -Adenoid Cystic Carcinoma: 4 -Mucoepidermoid Carcinoma:3 - Others: 4	-Surgical therapy:8 -Surgical theraphy + Radiotherapy:17 -Surgical theraphy+ Radiotherapy+ Chemicaltherapy:5 - COP (n=7) - MOP (n=7) - CPOP (n= 8) - HOP (n= 8)	-OFS (Mean score:5.67) -Score 1-10	Mean of all results -Chewing : (6.33 ± 2.02 with P= 0.01) - Swallowing : (5.63 ± 1.86 with P= 0.03) -Speech : (5.96 ± 1.69 with P = 0.02) - Apparence : (5.33 ± 1.72 with P= 0.05)

Quality of life of Maxillectomy patients restored with Obturator- Narrative Review.

Author\ Type study	Follow up	Sample characterization	Indication for Maxillectomy	Treatment/ Type of obturator	Questionnaire /Scale	Results
-Ali *et al.,* 2018 -Cross-sectional study	- 24 mouths	-30 Pacient -Sex M\F: 15\15 -Age range: 40-59 -Partial maxillectomy:73.7% -Hemi-maxillectomy : 20% -Subtotal maxillectomy: 6.7%	- Malignant tumor	-Surgical Therapy -Radioterapy: 26.7 % yes 73.3 % no -COP	- OFS - Score 1-5 “not at all”, “a little difficult”, “somewhat difficult”, “very difficult”, “extremely difficult”	-Chewing: 50% no or little difficulty -Speech: 75% no or little nasal speech -85% no difficulty to pronunciation of word -86.2% their speech not or little difficulty to understand Swallowing: 50% no or little leakage difficulty Apparence: 13.3% extremely dissatisfied 75% no or little dissatisfied

Author\Type study	Follow up	Sample characterization	Indication for Maxillectomy	Treatment/ Type of obturator	Questionnaire /Scale	Results
-Buurman *et al.*, (2019) - Cross-sectional study	-45.38 mouths -57.09 mounths	-19 Patients -Group I (ISO) -Sex M\F: 7\2 -Age: 40-59 -Group II(COP) -Sex M\F: 4\6 Age: 40-59 -Brown Classification (Ia-IIa-IIb-IIc-IId)	-Gengival Squamous Cell: I(5) II (6) - Adenocarcinoma : I(5) II(6) -Adenoidcystic Carcinoma: I(1) II(1) -Mucoepidermoid Carcinoma: I (0) II(1) -Ameloblastoma: I(1) II (0) -Trauma: I (1) II (0)	- Surgical theraphy - Radiotherapy: I(5) II (8) -COP - ISO	-OFS - Score: 1 (“not at all a problem”) to 10 (“always a problem”)	ISO vs COP -Chewing : OFS (1.67±0.87 vs 3.00±0.82 with P= 0.007) -Swallowing: OFS(5.55± 1.46 vs 5.7 ±1.59 with P = 497) - Speech : OFS (1.89 ±1.27 vs 2.30± 1.25 with P =.367) -Appearance: OFS (2.11 ±1.54 vs 1.50 ±1.08 with P = 0.256)

Author\Type study	Follow up	Sample characterization	Indication for Maxillectomy	Treatment/ Type of obturator	Questionnaire /Scale	Results
-Aladashi *et al.*, 2020 -RCT	-5.8 moths - 8.1 mouths	-60 Patients -Group I (Submental Flap) -Sex M\F: 12\18 -Age:59 -Group II (Obturator) -Sex M\F: 15\15 -Age:52.8 -Brown classification: IIA-IIB	Malignant tumor -Group I (Submental Flap) -SCC:8 -Mucoepidermoid carcinoma:4 -Adenoid cystic carcinoma: 14 -Adenocarcinoma:4 -Group II (Obturator) SCC:11 -Mucoepidermoid carcinoma:11 - Adenoid cystic carcinoma: 8	-Surgical Therapy (30 patients) - Submental flap (30 patients) -COP	-UW-QOL version4 - Score (from 0 to 100) 0= worst 100= best	- SUBMENTAL FLAP vs COP SS: P<0.05 - Chewing : (82.22 ± 26.35 vs 61.75 ±28.877 with P= 0.034) -Mastigatory fuction: (before 38.15 ±19.17 after 71.13± 18.31 with P<0.001) -Swallowing: (93.33±13.22 vs 70.00 ±13.02 with P <0.001) - Speech : (88.88±13.68 vs 60.00±18.516 with P =0.009) -Appearence: (74.25±13.17 vs 94.1±13.1 with P <0.001)

Author\ Type study	Follow up	Sample characterization	Indication for Maxillectomy	Treatment/ Type of obturator	Questionnaire /Scale	Results
-Wang *et al.*, 2022 -Retrospective study	- 40.6 mouths	-116 patients - Sex M\F: 44\72 -Age: 58.9 -Brown Classification: IIb	- Pathological diagnosis - Squamous cell carcinoma: A(34) B (34) All: 68 -Adenoid cystic carcinoma: A(14) B(14) All:28 -Others cancers: 20 All: 20	-Surgical therapy : A(36) B(36) All: 72 -Surgical therapy +radiotherapy: A(24) B(20) All:44 A-COP (56) B-SAIF (60)	-UW-QOL: 1-100 -OFS : 1-5 Likert	SAIF vs COP P<0.05 -Chewing: UW-QOL (74.9±26.5 vs 84.8 ± 23.2 with P = 0.038) OFS (2.1±1.3 vs 1.8±1.2 with P =ns) -Swallowing: UW-QOL (92.3 ± 18.7 vs 95.3 ±17.3 with P = ns) OFS (1.5 ± 1.2 vs 2.4 ± 1.3 with P< 0.001) (1.4 ± 1.1 vs 1.9 ± 1.2 with P < 0.001) -Speech: UW-QOL (81.8±22.5 vs 86.4±19.8 with P = ns) OFS (1.7 ± 1.1 vs 1.6 ±1.1 with P = ns) -Appearance: UW-QOL (80.8±20.3 vs 80.4 ±19.5 with P =ns) -OFS (1.6 ±0.9 vs 1.7 ±1.0 with P = ns)