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Analysis of Surgical Resection of Non-Melanoma Skin Cancer in The Head and Neck of Elderly Population in a Public Hospital of São Paulo

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Abstract

Introduction: Skin cancer is among the most frequent neoplasms worldwide. It is divided into two major groups: non-melanoma skin cancer (NMSC) and melanoma skin cancer (MSC), with NMSC still classified into several subtypes, with the most prevalent being basal cell carcinoma subtype (BCC), followed by squamous cell carcinoma (SCC). Although NMSC does not present high mortality rates, it can involve high morbidity on the functional, aesthetic, and emotional levels. There is a divergence in the literature regarding decision-making in the cases of elderly (patients above 65 years of age) and super elderly patients (starting at 80 years of age).

Objectives: This study aims to:
1.Identify the complications of surgical resection of the NMSC of the face and neck in the elderly population.
2.Demonstrate that surgical resection can be used as a therapeutic option in the elderly population without a significantly higher risk of morbidities.

Method: This is a transversal, retrospective single-center study of quantitative nature. After the approval of the Research Ethics Committees, analysis was performed on the electronic records of 34 patients who underwent surgery at the Carapicuíba General Hospital between August 2017 and November 2019. The descriptive analysis of the results was performed employing absolute and relative frequency of the qualitative variables; mean and standard deviation were used for the quantitative variables. Analysis of group differences was done through the Fisher's Exact, Student's, or Mann-Whitney T-tests, to evaluate the factors associated with the complications of the procedure.

Results: The results showed a mean age of 85.1 years; higher prevalence in females (61.8%); higher prevalence of BCC (76.5%); higher involvement in the nasal (23.5%), periauricular (23.5%), and malar regions (17.7%); hypertension (55.9%), and diabetes mellitus (35.3%) as the main comorbidities; 8 (23.5%) patients had post-surgical complications, and 0 patients had intraoperative complications.

Conclusion: It was concluded that surgical resection was a good therapeutic method for the patients approached in the study. It is suggested that the therapeutic choice should be individualized, with the evaluation of the patient as a whole and taking into account aspects other than age group and comorbidities. Moreover, it is necessary to develop new studies and clinical trials with a more significant sample.

Keywords: Skin cancer, non-melanoma skin cancer, complications, elderly population, head and neck cancer, surgical resection.

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Introduction

Skin cancer is a disease caused by the abnormal and uncontrolled growth of the cells that make up the skin and, according to the affected layer, the different types of cancer are defined [1]. According to the National Cancer Institute, it is the most frequent neoplasm in Brazil and worldwide, accounting for approximately 30% of cancer diagnoses in the country. It occurs mainly in people over 40 years of age and is considered rare in children and black people [2].

Cutaneous tumors can be classified as benign or malignant and according to Instituto Nacional De Cancer (INCA), for epidemiological purposes, malignant tumors are generically subdivided into non-melanoma malignant tumors and melanoma. The most frequent malignant non-melanoma skin cancers (NMSC) are basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), presenting high incidence, low lethality, and better prognosis [3]. Melanoma, on the other hand, is the most aggressive type of skin cancer, with a low incidence, but high lethality and, in particular, a worse prognosis [4,5].

According to the literature, there are several risk factors, intrinsic and extrinsic, associated with NMSC [6]. The main intrinsic factors include individuals with clear skin (individuals with Fitzpatrick phototypes I and II), clear eyes, albinism, immunosuppression, and personal or family history of skin cancer [1]. Advanced age is an important risk factor. With aging, there is a reduction in the density of melanocytes allowing greater penetration of radiation and providing more extensive and deeper damage. Moreover, mutations in the suppressor gene p53 facilitate the process of cell transformation over the years [7,8]. The most important genes involved in carcinogenesis are protooncogenes and suppressor genes [3]. Protooncogenes are related to cell growth and differentiation, predominantly acting on cell functioning by developing growth factors, receptors, proteins, and transcription factors. When they undergo some kind of mutation, they become tumorigenic. Two examples of oncogenes are MYC, which acts predominantly in the nucleus, and RAS, which has the highest cytoplasmic action [1]. Suppressive genes, on the other hand, are essential to the integrity of the genome, encoding the DNA repair enzymes. Their function is to modulate cell growth by acting on the mechanisms that regulate cell proliferation, differentiation, and stability, as well as apoptosis. When they mutate, they fail to detect, allowing there to be mutated DNA and cell hyperproliferation from it. The best-known suppressor gene is p53, located on the short arm of chromosome 17 [1,3].

Several environmental factors contribute to the pathogenesis of malignant epithelial tumors, including ultraviolet (UV) radiation, ionizing radiation (Grenz rays, X-rays), chemical agents (arsenic, tar, and their derivatives), and biological agents (viruses and hormones). Chronic sun exposure is mainly associated with squamous cell skin cancer, while exposures during childhood, with a history of sunburn, are associated with basal cell skin cancers and melanomas [2,4,5]. Isolated or simultaneously, these environmental factors act on the epidermis and/or dermis causing initial alterations (biochemical and structural) that can evolve into the proliferative or neoplastic phase itself. This promotes changes in cellular behavior, resulting in hyperproliferation and decreased apoptosis, thus initiating a continuous and disorganized cell multiplication, hence a neoplasm [1,3].

BCC arises in the cells of the basal layer of the epidermis. It is the most prevalent among all types of cancer, presenting low lethality and a good prognosis when diagnosed early. They are localized, slow-growing tumors with a low occurrence of metastasis, however, may present as local malignancy and invade adjacent tissues. BCC is more common in the elderly white population but can be found in young people, including patients aged about 20 to 30 years [3,4,7,8]. It is divided into nodular (most common

subtype), superficial (second most common subtype), sclerodermiform (most aggressive subtype), and pigmented [8].

SCC is a malignant tumor of slow-evolving epidermal keratinocytes. It is the second most common type of skin cancer behind BCC. In general, the incidence ratio between BCC and SCC is 4:1. It is characterized by being locally more aggressive than BCC and having greater potential for local or distant metastases [8]. It is more frequent in men and individuals over 55 years (60 years is the average age of onset), as well as in those with clear skin, clear eyes, red hair, albinos, and in individuals with chronic infectious or non-infectious inflammatory processes of the skin. Important factors in the genesis of SCC are recreational sun exposure, tanning, and immunosuppression [3,4,6]. SCC is divided into squamous cell carcinoma in situ, Bowen's disease, Erythroplasia of Queyrat, invasive SCC, keratoacanthoma, and verrucous carcinoma [8].

Non-melanoma skin cancer mainly affects areas exposed to solar radiation, such as the head and neck. Lesions usually arise as macules that can be itchy, desquamative, or associated with burning and bleeding. One characteristic is the evolution to a wound that does not heal for up to four weeks. They can often be confused with benign lesions at the beginning (such as nevi and eczema), making it necessary to use diagnostic tools for their differentiation. The progression of the lesion to ulceration can cause aesthetic and functional damage, reducing the patient's quality of life [2].

BCC affects the face, ears, neck, scalp, shoulders, and back, and the preferred location is the upper two-thirds of the face (above the line that passes through the earlobes and labial commissures), especially the nasal alars. Some factors related to lesions are indicators of greater therapeutic difficulty, poorer prognosis, and higher recurrence. Among them are: tumors larger than two centimeters, clinically poorly defined tumor margins, recurrent disease, and location in the central area of the face, nose, periocular areas, ear, and labial regions. For recurrences, we mention histopathological characteristics (micronodular and sclerodermiform tumors), perineural or vascular invasion, and for therapeutic difficulty, immunosuppression of any nature plays a great role [1,3,8].

The most common locations of SCC are the areas exposed to the sun, especially the face, but can also be affected the back of the hands, trunk (depending on habits and race), and mucous membranes. Unlike BCC, the preferred location is in the lower third of the face (below the line that passes through the earlobes and labial commissures) [1,3,8]. The suspicion of skin cancer begins with the appearance of characteristic lesions, associated with risk and epidemiological factors, and the diagnosis is confirmed by histopathology. The analysis will also allow the staging to be performed through the degree of differentiation and depth of the tumor [3,9,10]. To aid the clinical evaluation of lesions, the European Society for Medical Oncology developed a methodology based on the analysis of their characteristics. They are used as parameters suggestive of malignancy of the lesion: asymmetry, irregular borders, two tones or more, size above 5 mm, and change of size, color, or shape [1]. Once the diagnosis is established, the assessment of the risk of locoregional recurrence and regional or distant metastasis is, as well as for BCC, an important step in determining the therapeutic approach [11].

A wide variety of surgical and non-surgical therapies are available for the treatment of BCC and SCC; however, the standard treatment is surgical excision, representing the first-line choice and entailing a low risk of recurrence. The advantages of surgical excision are: controlled margin, procedure usually performed under local anesthesia, area of removed tissue can be controlled more precisely thus limiting unnecessary damage to critical structures, and the resulting scar can be both aesthetically and functionally optimized [3].

According to the guidelines of the National Comprehensive Cancer Network (NCCN), low-risk BCC is considered when it has the following characteristics: <10mm in diameter in the M areas (cheeks, forehead, scalp, neck, and pretibial region), diameter <20mm in the L area (trunk and extremities, except pretibial region, hands, feet, nail, and ankles), a pattern of nodular or superficial histopathological growth, absence of perineural invasion, primary lesion, well-defined clinical borders, absence of radiotherapy history at the site and immunocompetent patient [3].

Patient-specific factors also play an important role in determining treatment. Physical or functional limitations can affect patients' ability to tolerate surgery, manage wound treatment, apply topical or adhere to follow-up. In addition, the cosmetic effects of treatment options should be considered. In areas with aesthetic effect and in the case of large lesions in which primary closure is not possible, reconstruction of defects with local flaps is recommended [3,4,6,12].

Recurrence rates of BCC for standard excision with safety margin are less than 5% and consistently lower than those associated with non-surgical treatment modalities. Careful follow-up after treatment is required to detect local recurrences and new tumors. Generally, new lesions appear on average in the two years following the treatment, being more common in patients above 75 years old. About 50% of cases arise in this period, 65% arise in 3 years and 80% in 5 years. The reassessment is usually performed in the 2nd, 6th, and 12th months and, later, every 6 months [3,4,6].

In the case of locally advanced inoperable BCC, metastatic or recurrent disease, radiotherapy can be used, especially in the elderly [4]. According to the NCNC, low-risk SCC is characterized by: well-defined primary lesions <20 mm located in the trunk or extremities (excluding region pre-tibial, hands, feet, nails, and ankles); well-defined primary lesions <10 mm located on the cheeks, forehead, scalp, neck and pre-tibial region; primary tumor and well or moderately differentiated tumor, with <2 mm thickness, without perineural, lymphatic or vascular invasion. For high-risk SCC: lesions ⩾20 mm located in the trunk or extremities (excluding region pre-tibial, hands, feet, nails, and ankles); lesions ⩾10 mm localized on the cheeks, forehead, scalp, neck, and pre-tibial region; lesions of any size located in the "mask area", genitals, hands, and feet; recurrent tumor; poorly differentiated tumor, with thickness ⩾2 mm, with perineural, lymphatic or vascular invasion [11]. For low-risk SCC, surgical excision, Mohs micrographic surgery, curettage electric cautery, cryotherapy, photodynamic therapy, or radiotherapy (patients not candidates for surgery) can be used. However, first-line treatment continues to be surgical excision and can be performed in outpatient settings with local anesthesia [11]. Surgical excision is also the main modality of treatment of high-risk SCC. Still, among the therapeutic options are Mohs micrographic surgery, excision with complete peripheral evaluation, and deep margin standard excision with wide margins. According to the guidelines proposed by the NCCN, standard surgical excision, despite being the most used method, is not always the best therapeutic choice [11]. In the cases of postoperative recurrence, unresectable, infiltrative, poorly differentiated tumors, and those with perineural invasion, radiotherapy is indicated [6]. Tumors with a low degree of differentiation have a higher risk of metastasis with 70% of recurrences or metastases occurring two years after treatment and 95% occurring within 5 years. Therefore, follow-up should be done every 3 months for 5 years [6,8].

As pointed out, surgical excision is still the method of choice, because it is a safe procedure, usually performed under local anesthesia, presenting low rates of perioperative morbidity and mortality in hospitalization and outpatient environments [4]. Although young patients tolerate excisional surgical treatment well, elderly and super-elderly patients are often

excluded from the surgical approach only due to age [4].

According to a study conducted by Inada (2015), which analyzed the efficacy of the surgical approach, the most common postoperative complications in patients over 60 years of age are due to the need to use grafts and flaps because of the size and location of the lesions. Therefore, postoperative complications are frequently cited as patch necrosis, hematomas, wound dehiscence, and seromas [13]. The rates of peri and postoperative complications in elderly patients have not yet been well established [4].

Objectives

1. Primary

Evaluate the complications of surgical resection of malignant nonmelanoma tumors of the head and neck in the super elderly population.

2. Secondary

Identify the group of patients who are at higher risk of complications.

Methods

This study was conducted in accordance with the guidelines of the Declaration of Helsinki, fulfilling all requirements for human retrospective studies, as established in Resolution 466/2012 of the National Health Council. To this end, it was submitted for consideration by the Research Ethics Committee of the São Camilo University Center and registered after approval under CAAE number: 26560719.2.0000.0062. The permission of the research study center was requested, with written authorization from the administration.

It is a transversal, retrospective single-center study of quantitative nature. Inclusion criteria include patients aged 80 years or older, diagnosed with localized head and neck non-melanoma skin cancer, submitted to surgical resection, and who underwent postoperative follow-up. Patients under 80 years of age, diagnosed with any other type of dermatological lesion, distinct location of the head and neck, or underwent conservative treatment, were excluded from the study. Data were obtained through a review of all inpatient and outpatient electronic medical records, of patients operated for resection of non-melanoma skin cancer in the head and neck who are above 80 years of age at the Carapicuíba General Hospital, from August 2017 to November 2019, totaling 34 patients.
The following independent variables were evaluated: gender, age, life habits, chronic diseases, histological type of cancer, location of the lesion, type of surgery and anesthesia performed, return time, and outpatient follow-up. The dependent variables considered were intraoperative complications and postoperative complications.

Descriptive analysis was performed employing absolute and relative frequency when analyzing qualitative variables. Mean and standard deviation were the selected means to describe quantitative variables.
Considering the objectives of the study, a group difference analysis was performed to verify which factors were associated with complications of surgical resection of malignant nonmelanoma tumors of the face and neck. Fisher's exact test (considered the restricted sample size) was used for categorical variables, and the student or Mann-Whitney t-test was for associations between qualitative and quantitative variables, based on a trend to normality test. A significance level of 5% was adopted, and attention was paid to results with a significance level of 10%. All analyses were performed using Stata software, version 17.

Results

As a whole, 34 elderlies aged 80 years or older were part of the study, most of them women (61.8%) with a mean age of 85.1 years. Skin phototype wasn't described in the medical records. None of the patients included in the study had an immunosuppressive condition or previous transplant history. Regarding life habits, only

three participants had a history of excessive alcohol consumption, and four claimed current or previous smoking habits (ex-smoker). However, half of the sample did not provide information on life habits. Moreover, a family history of skin and other cancers wasn't available in the medical records.

Only six elderly did not present chronic underlying disease. Among those with chronic disease records, 35.3% (n=12) reported only one comorbidity and 47% (n=16) reported two or more comorbidities (Table 1). The most prevalent diseases in the sample were hypertension (n=19, 55.9%) and diabetes mellitus (n=12, 35.3%). Three elderlies had dementia (8.8%) (data not reported in the table).

Table 1: Demographic characteristics, life habits and health conditions of the elderly submitted to surgical resection of head and neck malignant non-melanoma tumors. Carapicuíba, 2020.

	n	%
Sex		
Female	21	61.8
Male	13	38.2
Age (average - SD)	85.1	(4.8)
Age group		
80 - 89 years old	29	85.3
90 years or older	5	14.7
Alcohol consumption		
Non-alcoholic	14	41.2
Ex-alcoholic	2	5.9
Alcoholic	1	2.9
No information	17	50
Smoking		
Non-smoker	13	38.3
Ex-smoker	1	2.9
Smoker	3	8.8
No information	17	50.0
Sun Exposure		
Recreational Sun Exposure	3	8.8
No Recreational Sun Exposure	31	91.2
Comorbidities		
None	6	17.7
One	12	35.3
Two or more	16	47.0

The sites with the highest occurrence of treated tumors were nasal, periauricular, and malar regions, with the possible tumor classification as more than one type, either by extension or by the existence of more than one tumor focus (Figure 1).

The most recurrent type of tumor was basal cell carcinoma (76.5%), and all surgical interventions used a margin resection technique plus a reconstructive technique such as flap (70.6%) and graft (26.5%).

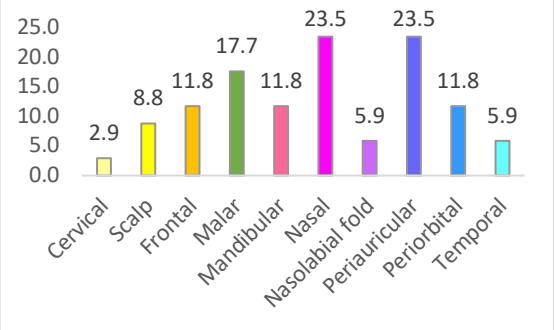

Figure 1: Location of the tumor.

Local anesthesia was used in all cases (100%), and twelve elderly required complementary sedation. Among the complications (except death) related to the procedure, secondary infection (8.8%) and tissue necrosis (5.9%) were the most encountered. There was no record of any complications during the operation, and seven (20.6%) subjects died during the follow-up after surgical intervention, but without correlation to the procedure (Table 2).

Among the possible factors associated with non-fatal complications, it was observed that gender and age were not associated with pain, tissue necrosis, bleeding, infection, or other injuries. Elderly aged 90 years or older had the same probability of complications as elderly under 90 years of age. Presenting two or more comorbidities was apparently not a decisive factor for non-fatal complications.

Regarding aspects related to surgery, the hospital stay is a point that deserves attention, and elderly who remain hospitalized for more than one day were more likely to have complications. Although the result was not significant, it is simply a

reflection of the restricted sample power (p-value 0.058). However, it is important to note the fact that patients who needed more time in postoperative observation may be those who already had alarming signs of complications (like wound/flap ischemia, dehiscence, or infection). This said, it is difficult to affirm that solely the duration of hospital stay is associated with a higher risk of complications.

Table 2: Description of tumor type, surgical information and observed complications among elderly submitted to surgical resection of head and neck malignant non-melanoma tumors. Carapicuíba, 2020.

	n	%
Tumor Type		
Superficial malignant fibrohistiocytoma	1	2.9
Squamous Cell Carcninoma	7	20.6
Basal Cell Carcinoma	26	76.5
Type of Surgical Technique		
Margin resection	34	100
Flap	24	70.6
Graft	9	26.5
Type of anesthesia		
General	1	2.9
Local	34	100
Local + Sedation	12	35.3
Complications		
Pain	1	2.9
Necrosis	2	5.9
Infection	3	8.8
Bleeding	1	2.9
Dehiscence	1	2.9
Granuloma	1	2.9
Death	7	20.6
Time to first follow-up visit*	7	(1 - 30)

* Median time (minimum and maximum values) between surgery and return.

Table 3: Association between complications (except death) and personal and tumor-related characteristics among elderly submitted to surgical resection of head and neck malignant non-melanoma tumors. Carapicuíba, 2020.

	Complications		
	No	Yes	p value
Sex			
Female	13(81.3)	3(18.7)	0.231
Male	7(58.3)	5(41.7)	
Age group			
80 - 89 years old	19(76.0)	6(24.0)	0.188
90 years or older	1(33.3)	2(66.7)	
Comorbidities			
None or one	11(55.0)	5(62.5)	1.00
Two or more	9(45.0)	3(37.5)	
Type of technique used			
Flap			
Yes	7(87.5)	1(12.5)	0.371
No	13(65.0)	7(35.0)	
Graft			
Yes	15(75.0)	5(25.0)	0.651
No	5(62.5)	3(37.5)	
Hospital Stay			
One day	19(79.2)	5(20.8)	0.058
Two days or more	1(25.0)	3(75.0)	

Regarding the possible factors associated with death during follow-up (not intra or post-operative death, it was not possible to observe in the present study any factor that justified this type of complication besides the advanced age of the patients (Table 4). Since the study was restricted to the elderly population, we cannot say whether a different result would have been observed in a study comparing the evolution of cases of young, elderly, and super-elderly adults, which is a pertinent suggestion for future studies. A control sample of young patients would have better contrasted these results with a possibly low rate of death during the follow-up period.

Table 4: Association between Complications and personal and tumor-related characteristics among the elderly submitted to surgical resection of head and neck malignant non-melanoma tumors. Carapicuíba, 2020.

	Complications		
	No	Yes	p value
Sex			
Female	18(85.7)	3(14.3)	0.387
Male	9(69.2)	4(30.8)	
Age group			
80 - 89 years old	24(82.8)	5(17.2)	0.268
90 years or older	3(60.0)	2(40.0)	
Comorbidities			
None or one	15(83.3)	3(16.7)	0.68
Two or more	12(75.0)	4(25.0)	
Type of technique used			
Flap			
Yes	7(70.0)	3(30.0)	0.394
No	20(83.3)	4(16.7)	
Graft			
Yes	20(80.0)	5(20.0)	1.00
No	7(77.8)	2(22.2)	
Hospital stay			
One day	22(81.5)	5(18.5)	0.615
Two or more days	5(71.4)	2(28.6)	

Discussion

According to the Brazilian Society of Dermatology (2018), there is a predominance of BCC in relation to SCC with a 4 to 1 ratio [3], corresponding to what was found in the research, 26 (76.5%) cases and 7 (20.6%) cases, respectively (3.7:1 ratio).

Regarding the location of the appearance of lesions, there are differences between the two neoplasms (BCC and SCC), with the main sites of involvement for BCC being the upper two-thirds of the face, limited by the auricular lobes, and the lower third for SCC [1]. In general, the most affected regions in the patients studied were: nasal (23.5%), periauricular (23.5%), and malar (17.7%). The study results are similar to that described in the literature, with the predominance of BCC in the upper face, however, the distribution of SCC was more diffuse and heterogeneous with no predominant location.

The increase in life expectancy of the global population has made diseases associated with aging increasingly prevalent. Skin cancer has shown a constant increase in incidence, morbidity, and medical costs, presenting itself as an emerging disease worldwide [4].

The increased incidence, together with the high prevalence, causes the scarcity of public health services. The quantifiable expenditure consists of direct costs, resulting from medical care, and indirect costs, associated with the loss of potential years of life and productivity of patients affected by NMSC [7]. Thus, the choice of the age group used in the present study is justified, with the mean corresponding to 81.5 years.

Although several risk factors are described as associated with the appearance of malignant skin lesions (exposure to tar, arsenic, human papillomavirus, exposure to artificial tanning chambers, and, as the most well-recognized factor, ultraviolet radiation - mainly type B) [6]. In the sample surveyed, only three patients reported recreational sun exposure, while for the rest, there is no such report.

Ideally, all cases of skin cancer should be diagnosed and treated early [1,8]. The treatment aims at the complete removal of the primary tumor minimizing the risk of local dissemination and preserving as much as possible adjacent tissues for better functional and aesthetic results [4].

The therapeutic choice is based on the type of lesion, the extent of the disease, and the specific factors of the patient. Most SCC or BCC can be treated with simple procedures [1,4]. Currently, the standard treatment is surgical excision. However, the elderly and the super elderly, composing the age group with the highest prevalence of NMSC, are still approached, often conservatively based

on age criterion alone [3]. There is no consensus in the literature to contraindicate the performance of the surgical procedure in such patients, but it is suggested that the evaluation of the patient should be individualized [1,4].

For all patients in the present study and due to the limited resources of the hospital (unavailability of Mohs procedure), surgical resection with safety margin was chosen, since it is a well-established procedure in the literature [1,3,4]. In some cases, we also opted for reconstruction with the flap (70.6%) and grafting (26.5%) technique. It is recommended to use such techniques in cases of very large lesions, without the possibility of primary closure or in cases of aesthetic and/or functional impairment [3,4,6].

The surgical procedures were done with local anesthesia, sometimes associated with sedation. This preference was due to the patient's profile, as the risk of complications would be relatively significant in the elderly population with multiple comorbidities [3,4].

There are specific factors that can predict perioperative complications. Healing complications are related to diabetes mellitus, vitamin deficiencies, hypothyroidism, hereditary diseases, coagulation problems, malnutrition, age, use of corticosteroids, etc. Some of these factors are also intraoperative risk factors, contributing to physiological wear and affecting the functional reserve of the patient [14]. As observed, most of the sample presented at least one comorbidity, with systemic arterial hypertension and diabetes mellitus being the most prevalent.

According to the study by Inada (2015), the main postoperative complications associated with the use of techniques with grafts and flaps are necrosis, hematoma formation, seromas, and suture dehiscence. The rates of perioperative complications in elderly patients vary significantly in the published studies and were associated with male gender, histological type (SCC), inadequate resection of the primary tumor, and longer duration of surgery [4,13].

After the procedure, the complications were analyzed, being found in eight patients. Unlike the bibliographic findings, the majority were linked to BCC and the distribution between the sexes was equal as opposed to the literature suggesting the male gender as a predisposing factor. As observed in the results, in addition to gender, the patient's age was also not determinant for reporting pain, tissue necrosis, bleeding, infection, or other complications. Therefore, in this study, the presence and number of comorbidities was not relevant factor for non-fatal complications. In addition, none of the patients presented intraoperative complications or clinical decompensation of underlying disease.

Limitations

One limitation was that half of the sample did not provide information on life habits. This didn't allow the analysis of important risk factors for skin cancer such as smoking and alcohol consumption. Another limitation to be cited is the small sample leading to non-statistically significant results that would have turned significant in case of a greater sample size.

Conclusion

Many conclusions can be drawn from our study. There was a predominance of NMSC in females. Regarding the anatomopathological characteristics, there was a predominance of BCC, and the most affected regions were the nasal and periauricular areas. Among the most prevalent comorbidities are hypertension and diabetes mellitus.

Surgical resection with safety margins under local anesthesia was a good therapeutic choice for the elderly in this study. It did not progress with clinical decompensation of the underlying disease. Moreover, age and comorbidities were not relevant points for perioperative complications.

However, it is suggested that patients be evaluated individually and as a whole so that the therapeutic choice is the most appropriate.

As a result of the small sample, we couldn't observe statistically significant associations. Therefore, in order to better understand and clarify the subject, it is necessary to conduct new studies and randomized clinical trials with a larger number of patients

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