Epidemiology of Patients with Skin Lesions Treated in a Public Tertiary Hospital

Epidemiologia dos pacientes com lesões cutâneas tratados em um hospital público terciário

Ciro Paz Portinho[1,2] Gabriel Pereira Bernd[1,2] Rodrigo Vieira Pereira[1,2] Leonardo Priesnitz Friedrich[1,2] Alice Fischer-Morello[2] Daniele Walter Duarte[2] Antônio Carlos Pinto Oliveira[2] Marcus Vinicius Martins Collares[1,2]

[1] School of Medicine, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil
[2] Plastic Surgery and Craniomaxillofacial Surgery Service (SCPCCMF), Hospital de Clínicas de Porto Alegre (HCPA), Porto Alegre, RS, Brazil

Rev Bras Cir Plást 2025;40:s00451812472.

Address for correspondence Gabriel Pereira Bernd, Serviço de Cirurgia Plástica e Cirurgia Craniomaxilofacial, Hospital de Clínicas de Porto Alegre (HCPA), Rua Ramiro Barcelos 2.350, Bloco A, Santa Cecília, Porto Alegre, Rio Grande do Sul, 90035-903, Brasil (e-mail: gbernd@hcpa.edu.br).

Abstract

Introduction Skin neoplasms are the most frequent malignancies in Brazil, with basal cell and squamous cell carcinomas being the most prevalent. The epidemiological characterization of patients with skin lesions is essential to improve preventive and therapeutic strategies, as well as to optimize specialized care.

Materials and Methods This retrospective case series study included 287 patients who underwent surgery for skin lesions at Hospital de Clínicas de Porto Alegre between January 3, 2022 and July 3, 2023. Variables analyzed included age, sex, place of origin, diagnosis, number and location of lesions, tumor recurrence, oncological margins, and reconstructive techniques.

Results The mean age was 62.2 ± 18.9 years, with a slight female predominance (50.5%). Most patients (95.5%) had fair skin (Fitzpatrick I–III), and 93.9% were from the Metropolitan Mesoregion of Rio Grande do Sul. Malignant lesions accounted for 74.2% of cases, with basal cell (59.6%) and squamous cell (12.5%) carcinomas being the most common. The nasal region was the most frequently affected (39.0%), followed by the auricular one (13.2%). Margins were tumor-free in 89.2% of surgeries. Primary closure was the most frequent technique (51.6%), followed by flaps (25.4%) and grafts (17.8%).

Conclusions The epidemiological profile of patients treated in the service is mainly composed of elderly individuals from the Metropolitan Mesoregion, with predominantly malignant facial lesions. These findings highlight the importance of structured tertiary services for proper oncologic and reconstructive management of such conditions.

Keywords
- neoplasms
- occupational cancer
- skin abnormalities
- soft tissue injuries
- soft tissue neoplasms

received
February 16, 2025
accepted
July 14, 2025

DOI https://doi.org/10.1055/s-0045-1812472.
ISSN 2177-1235.

Thieme Revinter Publicações Ltda., Rua Rego Freitas, 175, loja 1, República, São Paulo, SP, CEP 01220-010, Brazil

Resumo

Introdução As neoplasias cutâneas são as mais frequentes no Brasil, destacando-se os carcinomas basocelular e espinocelular. A caracterização epidemiológica dos pacientes com lesões cutâneas é essencial para aprimorar estratégias preventivas e terapêuticas, assim como para otimizar o atendimento especializado.

Materiais e Métodos Conduzimos um estudo retrospectivo de série de casos, que incluiu 287 pacientes operados por lesões cutâneas no Hospital de Clínicas de Porto Alegre entre 3 de janeiro de 2022 e 3 de julho de 2023. Foram analisadas variáveis como idade, sexo, procedência, diagnóstico, número e localização das lesões, recidiva tumoral, margens oncológicas e técnicas reconstrutivas.

Resultados A média de idade foi de 62,2 ± 18,9 anos, com discreto predomínio feminino (50,5%). A maioria dos pacientes (95,5%) era de pele branca (Fitzpatrick I–III) e 93,9% eram provenientes da Mesorregião Metropolitana do Rio Grande do Sul. Lesões malignas corresponderam a 74,2% dos casos, sendo os carcinomas basocelular (59,6%) e espinocelular (12,5%) os mais prevalentes. A região nasal foi a mais acometida (39,0%), seguida da auricular (13,2%). Em 89,2% das cirurgias, as margens estavam livres. O fechamento primário foi a técnica mais utilizada (51,6%), seguido dos retalhos (25,4%) e enxertos (17,8%).

Conclusão O perfil epidemiológico dos pacientes atendidos no serviço é composto majoritariamente por idosos da Mesorregião Metropolitana com lesões faciais, predominantemente malignas. Os dados reforçam a importância de serviços terciários estruturados para o adequado manejo oncológico e reconstrutivo dessas lesões.

Palavras-chave

- anormalidades da pele
- câncer ocupacional
- lesões de tecidos moles
- neoplasias
- neoplasias de tecidos moles

Introduction

Skin cancer is the most common neoplasm in Brazil[1] and worldwide, representing approximately 30% of all malignant tumors diagnosed in the country, with emphasis on basal cell and squamous cell carcinomas.[2]

Although non-melanoma skin cancers have a low mortality rate, they can cause significant morbidity, including disfigurement and functional impairment, especially when located in exposed areas, such as the face and ears. Therefore, they require monitoring and treatment by several health specialties.[3] The epidemiological characterization of patients affected by these neoplasms is essential for the development of preventive, therapeutic, and rehabilitation strategies, both in public and private healthcare.[4]

Surgical treatment is the gold standard for most non-melanoma skin cancer cases. Establishing adequate surgical margins is crucial to ensure complete tumor removal and to reduce recurrence rates. International guidelines recommend margins of 4 to 6 mm for low-risk lesions and larger ones for high-risk lesions.[5]

In this context, plastic surgeons play a fundamental role not only in tumor excision but also in the aesthetic and functional reconstruction of the affected areas, aiming to restore the patients' quality of life.

Moreover, identifying subpopulations and rare cases enables the formulation of specific protocols, including the need for specialized services, the definition of adequate surgical margins, and the selection of the most effective procedures.

Given this scenario, the present study aims to analyze the epidemiological profile of patients undergoing surgical treatment for skin lesions in a tertiary public hospital, contributing to the improvement of oncological and reconstructive management strategies.

Objective

The objective of the current study was to to analyze the epidemiological profile of patients with skin lesions referred to a plastic surgery service at a tertiary hospital.

Materials and Methods

This retrospective case series study aimed to establish the epidemiological profile of patients operated on for skin lesions at the Plastic Surgery Service of Hospital de Clínicas de Porto Alegre (HCPA), a public tertiary teaching hospital.

The study sequentially included a total of 287 patients who underwent surgical treatment from January 3, 2022, to July 3, 2023. Resident physicians performed the data collection under the supervision of attending plastic surgeons, by reviewing electronic medical and surgical records.

We analyzed the following variables: age, gender, geographic origin (grouped according to the seven mesoregions of the state of Rio Grande do Sul: Metropolitan, Northwest, Northeast, Midwest, Mideast, Southeast, and Southwest), histopathological diagnosis, total number of lesions, anatomical location of the main lesion, tumor recurrence or persistence, reconstructive technique, and oncological

margins of the first excision (free or compromised, and need for surgical reapproach).

Statistical analysis was performed manually, without the use of specific software. We expressed quantitative variables as means and standard deviations (SDs), and categorical variables as absolute and relative frequencies.

The Research Ethics Committee of HCPA approved this study under opinion number 08-058.

Results

Of the 287 cases, 50.5% were female. The mean age of the sample was 62.2 ± 18.9 years. Most patients (95.5%) had skin phototypes I to III at the Fitzpatrick classification, corresponding to white skin subjects. ►**Table 1** shows the distribution of patients per mesoregion in the state of Rio Grande do Sul. Most patients were from the Metropolitan area, accounting for 93.9% of all visits. It is noteworthy that this region encompasses several municipalities and has a high population density, which may explain the greater demand for specialized care.

Of the 287 lesions referred to the service, 213 (74.2%) were malignant. The most common diagnosis was basal cell carcinoma (59.6%), followed by spinocellular carcinoma (also called *squamous cell carcinoma*; 12.5%). ►**Table 2** presents the complete distribution of diagnoses identified in the sample. All cases were confirmed by histopathological examination.

Among the basal cell carcinomas, the distribution of histological subtypes was as follows: nodular (49.7%), infiltrative (38.6%), superficial (11.1%), and metatypical (0.6%). In 10.1% of cases, patients were referred for secondary surgical interventions. Excisions and reconstructions in the anatomical regions of the head and neck accounted for 92.3% of referrals. The nasal subregion was the most affected (39.0%), followed by the auricular subregion (13.2%). ►**Table 3** presents the distribution of lesions by anatomical subregion.

In 89.2% of surgeries, histopathological examination revealed clear margins after the first excision. The procedures adopted varied according to the extent of the lesion, anatomical location, and possibility of immediate reconstruction. They were classified as follows: 1) lack of immediate reconstruction, waiting for the histopathological report, provided there was no significant functional risk, such as ocular exposure; 2) primary closure of the surgical wound; 3) reconstruction with a skin graft; 4) reconstruction with a local or distant flap. ►**Table 4** presents the distribution of tissue synthesis techniques employed.

Intraoperative frozen section examination was used whenever possible. However, the technique was not available in all cases, particularly outside office hours (8–21h) or due to the unavailability of a pathologist. Whenever available, this examination assessed the presence of compromised margins, especially in tumors with infiltrative behavior. However, in some cases, the team decided against immediate reconstruction before a definitive histopathological examination report.

We adopted this approach especially in cases of residual or recurrent tumors, referred from other services, or previously treated. Although delayed reconstruction may require additional procedures, it can prevent unnecessary flaps or

Table 1 Geographical distribution of patients referred to the Plastic Surgery Service of Hospital de Clínicas de Porto Alegre with skin lesions

Mesoregions of the state of Rio Grande do Sul	n	%
Northwest	3	1.0
Northeast	3	1.0
Midwest	2	0.7
Mideast	5	1.7
Metropolitan	269	93.7
Southwest	0	0.0
Southeast	5	1.7
Total	**287**	**100.0**

Source: Hospital de Clínicas de Porto Alegre.

Table 2 Diagnoses of patients with skin lesions referred to the Plastic Surgery Service of Hospital de Clínicas de Porto Alegre

Diagnosis	n	%
Basal cell carcinoma	171	59.6
Squamous cell carcinoma	36	12.5
Keloid	15	5.2
Actinic keratosis	13	4.5
Granulation	10	3.5
Cicatricial fibrosis	9	3.1
Melanocytic nevus	5	1.7
Lentigo maligna	4	1.4
Neurofibroma	4	1.4
Epidermal cyst	3	1.0
Epithelioid sarcoma	2	0.7
Hemangioma	2	0.7
Bowen's disease	2	0.7
Cutaneous polypoid	2	0.7
Lipoma	1	0.3
Lipogranuloma	1	0.3
Viral wart	1	0.3
Pilomatricoma	1	0.3
Keratoacanthoma	1	0.3
Juvenile xanthogranuloma	1	0.3
Epithelioma	1	0.3
Actinic poikiloderma	1	0.3
Trichoepithelioma	1	0.3
Total	**287**	**100.0**

Source: Hospital de Clínicas de Porto Alegre.

Table 3 Distribution of skin lesions by anatomical subregion

Subregion of the skin lesion	n	%
Scalp	6	2.1
Frontal	23	8.
Temporal	14	4.9
Auricular	38	13.2
Upper eyelid	2	0.7
Lower eyelid	10	3.5
Nasal	112	39.0
Upper labial	14	4.9
Lower labial	5	1.7
Infraorbital	13	4.5
Zygomatic	12	4.2
Buccinator	4	1.4
Mental	3	1.0
Mandibular	6	2.1
Cervical	3	1.0
Upper limb	10	3.5
Trunk	6	2.1
Lower limb	6	2.1
Total	**287**	**100.0**

Source: Hospital de Clínicas de Porto Alegre.

grafts in cases with compromised margins, since these structures require partial or complete removal with the surgical specimen in patients with residual neoplasms.

Discussion

In our study, patients undergoing surgical procedures for excision of non-melanoma skin cancers were older, with a mean age of 62.2 ± 18.9 years. This age range is consistent with the epidemiological profile of these lesions in the state of Rio Grande do Sul, where the incidence of skin cancer is higher in subjects over 60-years-old. The sample had a similar distribution regarding gender, reflecting this population proportion.[6] Rio Grande do Sul has the highest percentage of white subjects in Brazil, according to the 2022 Brazilian Demographic Census, with 78.4% of the state's population presenting Fitzpatrick phototypes I to III.[7] Areas with this combination of ethnic characteristics and high sun exposure, such as Brazil and Australia, have a higher incidence of skin cancer.[8]

Table 4 Distribution of surgical procedures performed at the Plastic Surgery Service of Hospital de Clínicas de Porto Alegre from January 3, 2022 to July 3, 2023

Technique	n	%
Primary closure	148	51.6
Healing by secondary intention	15	5.
Skin graft	51	17.8
Skin flap	73	25.4
Total	**287**	**100.0**

Source: Hospital de Clínicas de Porto Alegre.

As agriculture is the state's main economic activity, prolonged and cumulative sun exposure affects a significant portion of the population. This chronic exposure, combined with a predominant phototype, contributes to the increased incidence of skin cancer in this population.[9] This aspect was evident in the present sample, which consisted of more than 95% patients with fair skin.

The anatomical regions most affected by skin lesions were at the head and neck, with a predominance of the nasal and auricular regions. Patients with tumors in these areas frequently receive referrals to specialized plastic surgery centers, such as HCPA, due to the complexity of the required reconstructions and the higher risk of scarring.[10] Lesions in the central face ("T" region: eyelids, nose, and lips) have a high potential for functional and aesthetic impairment. This higher impairment occurs because small tissue losses in these structures can have a significant impact on the patients' quality of life.[11] The Mohs micrographic surgery has a wide indication for treating the T region.[12] However, it was not addressed in this study because it was not performed during the period analyzed.

Regarding reconstructive techniques, the most frequent approach was primary closure. We used more skin flaps (25.4%) than grafts (17.8%), mainly because they provide better functional and aesthetic outcomes in the head and neck region.[13] However, this choice requires even greater rigor in obtaining free surgical margins due to the lower availability of donor areas. Additionally, the need for reoperations may compromise future reconstructive options.

Most cases referred to the Plastic Surgery Service at HCPA were suspected or confirmed skin neoplasms, accounting for approximately 75% of the cases analyzed. The remaining sample consisted of miscellaneous etiologies, including those with benign or undetermined origin or uncertain surgical requirements. Referral often resulted from diagnostic doubts or concerns about potential functional and aesthetic complications resulting from excision and scarring. The HCPA's Plastic Surgery Service also manages other conditions, such as congenital malformations, trauma, and acquired deformities.

However, it is crucial to treat injuries of lower complexity at the primary and secondary levels of healthcare, preserving HCPA's role as a tertiary referral center. The shortage of specialized professionals in smaller institutions, exacerbated by economic and political crises, contributes to the overload of tertiary centers.

As a strategy to mitigate this demand, a partnership between the head of the Plastic Surgery Service at HCPA and the Municipal Government of Porto Alegre enables the treatment of injuries of lower complexity in a secondary-level outpatient surgical center, at the Health Center of

Instituto de Aposentadorias e Pensões dos Industriários (IAPI).

Healthcare systems operate across prevention, treatment, and rehabilitation. The priority at HCPA's Plastic Surgery Service is the treatment and rehabilitation of patients with neoplasms, requiring surgeons trained in several types of reconstruction. The department employs professionals skilled in craniomaxillofacial surgery and reconstructive microsurgery. Furthermore, the service is multidisciplinary, including dental professionals with expertise in anaplastology, as well as speech therapists, nutritionists, nurses specializing in wound care, physical therapists, and psychologists specializing in rehabilitation.

Conclusion

Most patients with skin lesions treated by HCPA's Plastic Surgery Service , a tertiary and specialized center, were elderly subjects, predominantly over 60-years-old, from the Porto Alegre Metropolitan mesoregion. Most lesions were on the face, predominantly in the nasal and auricular regions.

In this reference service, a significant portion of the cases presented compromised margins, requiring surgical reinterventions with enlarged resections, often involving bone and cartilaginous structures.

Such cases often require a multidisciplinary approach with other surgical specialties, such as Head and Neck Surgery, Ophthalmology, and Neurosurgery, highlighting the complexity of management in a specialized tertiary service.

Authors' Contributions

CPP, GPB, RVP, LPF, AFM, DWD, ACPO, and MVMC: data analysis and/or interpretation, statistical analysis, final manuscript approval, funding acquisition, data collection, conceptualization, resource management, project management, investigation, methodology, performance of surgeries and/or experiments, writing – original draft, writing – review & editing, software, supervision, validation, and visualization.

Clinical Trials

None.

Financial Support

The authors declare that they did not receive financial support from agencies in the public, private or non-profit sectors to conduct the present study.

Conflict of Interests

The authors have no conflict of interests to declare.

References

1 Instituto Nacional de Câncer (INCA) Estimativa 2023: incidência de câncer no Brasil. Rio de Janeiro: INCA; 2022:160
2 Instituto Nacional de Câncer (INCA) Câncer de pele não melanoma. Rio de Janeiro: INCA; 2022. Available from: https://www.gov.br/inca/pt-br/assuntos/cancer/tipos/pele-nao-melanoma
3 Bachtold GA, Welter CS, Cerrutti CM, Frainer DA, Fiamoncini H, Penteado R. Tumores de pele não melanoma: estudo retrospectivo do perfil epidemiológico e desfecho a partir de margens comprometidas. Rev Bras Cir Plást 2022;37(03):320–325. Doi: 10.5935/2177-1235.2022RBCP.619-pt
4 Santos MO, Lima FCS, Martins LFL, Oliveira JFP, Almeida LM, Cancela MC. Estimativa de incidência de câncer no Brasil, 2023-2025. Rev Bras Cancerol 2023;69(01):e-213700. Doi: 10.32635/2176-9745.RBC.2023v69n1.3700
5 Semple HK, Langbart MJ. Margin of error: accuracy of estimated excision margins. Australas J Plast Surg 2022;5(01):13–16. Doi: 10.34239/ajops.v5n1.257
6 Gruber CR, Giovanini AFG, Skare TL, et al. Câncer de pele não melanoma: revisão integrativa. Bioscience 2023;81(02):16–19. Doi: 10.55684/81.2.16
7 Instituto Brasileiro de Geografia e Estatística (IBGE) Censo Demográfico 2022: panorama do Rio Grande do Sul [Internet]. Brasília: IBGE; 2023. Available from: https://censo2022.ibge.gov.br/panorama/. Accessed March 4, 2025.
8 Imanichi D, Gasparello Filho JL, Moraes CF, Sotero RC, Gomes LO. Fatores de risco do câncer de pele não melanoma em idosos no Brasil. Diagn Tratamento. 2017;22(01):3–7. Available from: https://docs.bvsalud.org/biblioref/2017/03/832424/rdt_v22n1_3-7.pdf
9 Ceretta RSR, Zuse CL, Lopes MWP, Soares NV. Câncer de pele: incidência na população residente na região noroeste do Rio Grande do Sul no ano de 2009. Vivencias 2012;8(14):86–91. Available from: https://vivencias.reitoria.br/Numero_014/artigos/artigos_vivencias_14/n14_08.pdf
10 Gutjahr GM, Almeida TS, Bastiani ES, Tejada VFS, Rodrigues O. Câncer da pele não melanoma - análise de 293 casos diagnosticados em um hospital universitário no extremo sul do Brasil. Vittalle 2010;22(02):63–72. Available from: https://periodicos.furg.br/vittalle/article/view/1515/2175
11 Buffo TH, Stelini RF, Serrano JYM, Pontes LT, Magalhães RF, Moraes AM. Mohs micrographic surgery in rare cutaneous tumors: a retrospective study at a Brazilian tertiary university hospital. An Bras Dermatol 2023;98(01):36–46. Doi: 10.1016/j.abd.2022.01.009
12 Almeida ACM, Alves JCR, Portugal EH, et al. Reconstrução em cirurgia micrográfica. Rev Bras Cir Plást 2015;30(02):235–241. Doi: 10.5935/2177-1235.2015RBCP0143
13 França L, Negri SL. Reconstrução em cirurgia de cabeça e pescoço: retalhos locais e enxertos. In: Conegundes JM, França L, Negri SL, editors. Noções práticas em cirurgia de cabeça e pescoço. 1st ed. Belo Horizonte: Pasteur; 2022:59–66. Doi: 10.29327/557864.1-6

