



## Risks and Complications in Patients with Malignant Skin Tumors of the Head and Neck

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### Abstract

The skin is the largest organ of the human body, it fulfills multiple functions that make it an anatomical structure, essential for life. There are multiple conditions that can occur in the Bucco maxillofacial complex from a dermatological point of view. This motivated the realization of the present investigation with the objective of describing the main risks and complications in patients with malignant skin tumors in the head and neck. For this, an exhaustive bibliographic review was carried out based on national and international literature, using different descriptors in English and Spanish. The previous experience of the author was taken into account. A critical analysis was then carried out, highlighting the main risks and complications that may occur in these patients. Illustrations of different therapeutic procedures performed on patients are shown. The content was organized by diagnosis and location of the lesions. At the end of the investigation, it is concluded that there are multiple complications and risks to which these patients are exposed, causing functional, mechanical, aesthetic damage, psychological and nutritional alterations.

**Keywords:** Dermatology; Oromaxillofacial Manifestation; Orofacial Dermatology

### Introduction

Since man is born, he is exposed to multiple risk factors that can damage his skin. As the years go by, the damage accumulates, with the possibility that the tissues at the cellular level undergo malignant transformation. Whenever we talk about malignant skin tumors of the head and neck, dissimilar questions arise. These aspects motivated to carry out the present investigation.

### Objective

To describe the main risks and complications in patients with malignant skin tumors in the head and neck.

### Reference Search Methods

The scientific information was compiled through a search using the following descriptors in English: the Medical Subject Headings (MeSH): "dermatology, skin, risks, complication, Head and Neck.

### Analysis strategy

The search was based solely on malignant dermatological conditions in the head and neck

### Developing

#### Epitelioma basocelular

(Basalioma. Basal cell carcinoma)

Basal cell carcinoma (BC) is a malignant neoplasm derived from non-keratinized cells, which originate from the basal layer of the epidermis. It occurs locally, grows slowly, and rarely metastasizes, but it can be disfiguring and cause severe deformity or loss of function of the affected organ [1].

80% occur primarily on the exposed skin of the face and scalp. Internationally, its predominance has been demonstrated in skin subjects white, pink. The facial region being more frequent; within it, the most affected is the area of the face mask, which presents a high risk, also known as area H, which includes the nasal pyramid, paranasal areas, temporal, periocular, perioral, preretroauricular and retroauricular regions [1,2].

In this area there are different factors, such as a greater density of nerves and sebaceous glands, in addition to the fact that the der-

mis is closer to the perichondrium, periosteum and muscle, which favors the development of larger lateral and deeper extensions of the tumor. Neoplasms originating in this region have a higher rate of local relapse, destruction and mutilation in these structures [3].

The appearance of basal cell carcinoma (BC) is closely associated with prolonged exposure to sunlight; This has great local destructive power, which, together with its most frequent location on the face, makes early diagnosis and treatment (TTO) important. However, it has an excellent prognosis due to its slow evolution and its low capacity to metastasize. It should be noted that it is the most common malignant skin tumor and occurs mainly after the fourth decade of life.

In his study, it has been classified in different ways. Here we show one of the most complete.

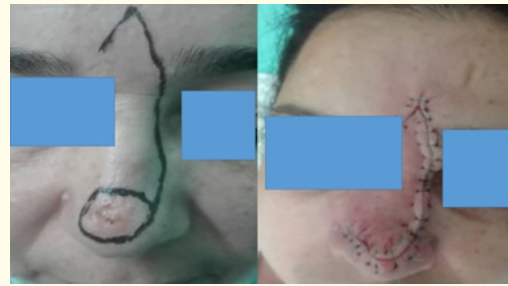
- Protrusions (Tumoral, Vegetative, Pseudocystic)
- Planes (Plane cicatrized, (scleroatrophic) or ulcerocicatrized, Morpheiform or sclerodermiform, Pagetoid or superficial)
- Ulcerated (Terebrant or ulcerous, Ulcerated tumor)
- Pigmented

The evolution is chronic, asymptomatic; patients may report pain or itching, growth is slow, infiltration is almost nil, general aggressiveness is low and greater in minors 35 years old; Exceptionally, they establish metastases, and it is closely related to the size of the lesion, that is, the larger it is, the greater the probability of distant dissemination.

The most frequent complications are hemorrhage and added infection. It is also known that these neoplasms bring with them sequelae that affect the functional aspect of the organism: sensitivity, mobility, vision, phonation, hearing and smell.

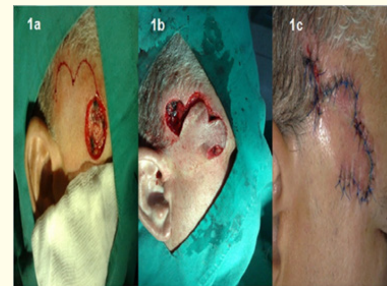
The aesthetic results are alterations of the form and, therefore, of the appearance, which are linked to psychological disorders, since individuals find it very difficult, or impossible, to join society with these mutilations, to name them in some way [3,4].

In these patients, surgery continues to be an excellent option, with the use of skin flaps for post-resection closure of the tumor. The displacement and relocation of skin segments following aesthetic planes, allow an adequate closure, with minimal distortions and scars, which provides very convenient therapeutic possibilities for those affected. (See Figure 1)



**Figure 1:** Patient with basal cell carcinoma of the nasal tip. Glabellar flap reconstruction was performed.

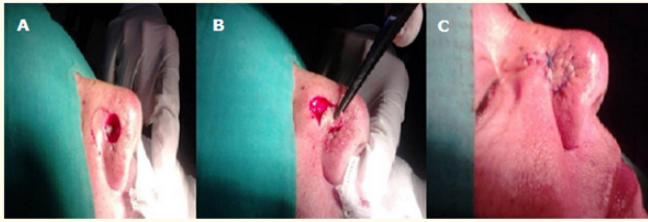
For this reason, it is essential to carry out the reconstruction of any surgical defect that occurs, using dissimilar techniques; Consequently, negative effects of any kind on patients and their families will be avoided, to whom a good degree of well-being and satisfaction will be restored. (See Figure 2).



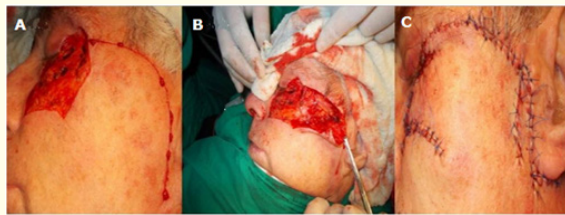
**Figure 2:** Bilobed flap in the right temporal region: 1a) preparation, 1b) replacement and 1c) closure. Courtesy of doctors José Jardón Caballero and Otto Alemán Miranda.



**Figure 3:** Nasal advancement flap on the right side: A) preparation, B) replacement and C) closure. Courtesy of doctors José Jardón Caballero and Otto Alemán Miranda.



**Figure 4:** Nasogenian rotation flap on the right side: A) preparation, B) replacement and C) closure. Courtesy of doctors José Jardón Caballero and Otto Alemán Miranda.



**Figure 5:** Mustardé flap: A) preparation, B) replacement and C) closure. Courtesy of doctors José Jardón Caballero and Otto Alemán Miranda.



**Figure 6:** Limberg flap to reconstruct defect by excision of a basal cell carcinoma in the lower lip region. Courtesy of Dr. Otto Alemán Miranda.



**Figure 7:** Limberg flap to reconstruct defect by excision of a basal cell carcinoma in the frontal region. Courtesy of Dr. Otto Alemán Miranda.



**Figure 8:** Upper base nasogenian flap to reconstruct defect by excision of a basal cell carcinoma in the frontal region. Courtesy of Dr. Otto Alemán Miranda.



**Figure 9:** Rotation flap in the genian region. to reconstruct defect by excision of a basal cell carcinoma in the frontal region. Courtesy of Dr. Otto Alemán Miranda.



**Figure 10:** Island advancement flap to reconstruct defect by excision of a basal cell carcinoma in the lateral nasal region. Courtesy of Dr. José Jardón Caballero.



**Figure 11:** Lobed flap to reconstruct defect by excision of a basal cell carcinoma in the region of the nasal ala. Courtesy of Dr. Otto Alemán Miranda.

Basal cell carcinoma brings aesthetic and psychosocial affectations to those who suffer from it, so professionals in the field must have an integrative thought on how to solve the defects that it leaves in most of those affected, through numerous surgical techniques and giving it value both functionality as well as aesthetics.

We expose multiple Figures so that they have an idea of the damage to which these patients are exposed if these injuries are not captured in time. In addition to the risk of affecting important structures, such as the ophthalmological regions, the facial and trigeminal nerves, etc.

Surgery continues to be the fundamental pillar in treatment, multiple variants have been used such as chemotherapy that is in disuse, radiotherapy, etc. Always taking into account various aspects such as the location of the lesion and its relationship with neighboring structures, size, clinical and histological classification, age and comorbidities of the patient, as well as the experience of the professional [5,6].

At present, the Cuban drug, known as HeberFERON®, whose composition lies in a combination of interferon alpha 2b and gamma, is being applied with very good results; these have an antitumor response in basal carcinomas. Its antiproliferative, immunomodulatory and antiangiogenic properties indicate that this formulation is another reasonable alternative to treat skin tumors, specifically basal cell carcinoma [7-9].

These 2 active ingredients act synergistically and promote a faster and longer antitumor response, with an excellent safety pro-

file. This treatment is 5-10 times more powerful than the use of interferons alone. It can be applied as monotherapy or in combination with other oncospecific treatments.

Among its fundamental indications are tumors of great extension or located in anatomical regions that are difficult to reconstruct, and/or that are in close proximity to structures of great importance. So, this conservative alternative is very helpful [3,5].

Of course, it is still under study, we must explain to patients and relatives the possible risks and complications that may occur.

Adverse events may contribute to noncompliance with treatment regimens, with negative implications for clinical response. These reactions occur during treatment and have been well described.

They can be broadly divided into four groups: constitutional, neuro-psychiatric, hematological, and hepatic effects.

These vary in degree, persistence and in their handling. They can be classified as acute (decrease over time) and chronic. The severity of many of the adverse effects of interferons is directly related to the duration of treatment.

Acute toxicity is characterized by flu-like syndrome (fever; headache, chills, myalgia, asthenia, arthralgia, and malaise), which manifests between 3 and 6 hours after receiving the drug. With prolonged treatment and without interruptions of administration, tolerance to these symptoms may develop.

All these aspects must be well explained before applying it to affected individuals [7-9].

### Cutaneous epidermoid carcinoma

(Squamous cell epithelioma, spinalioma, squamous or squamous cell carcinoma)

It is a type of skin cancer that is caused by an abnormal proliferation of keratinocytes in the epidermis. It is defined as the primary tumor of the skin that expresses a predominant desquamative differentiation, and that, unlike other cutaneous carcinomas, invades the dermis [10,11].

It is the second most common neoplasm of the skin after basal cell carcinoma, its incidence is approximately 20% of cases of non-melanoma skin cancer, which has increased in recent decades due to growth in life expectancy, increased sun exposure, the use of tanning beds and improved detection of this type of tumor.



**Figure 12:** Squamous cell carcinoma of the right cervical region. Courtesy of Dr. Otto Alemán Miranda. It is the malignant neoplasm with the highest incidence in the mouth (more than 95%).



**Figure 13:** Surgical field after excision of the lesion and selective dissection of the lymph node levels. Courtesy of Dr. Otto Alemán Miranda.



**Figure 14:** Reconstruction of the defect with fascio-cervico-pectoral flap. Courtesy of Dr. Otto Alemán Miranda.

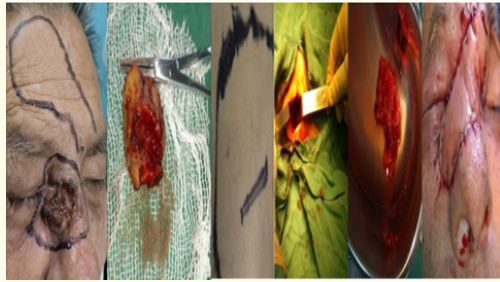
The stomatology professional must carry out a detailed physical examination of all patients in the consultation, in order to detect early any alteration that makes us suspect, this together with the epidemiology presented by the patient.

It is important to know that squamous cell carcinoma occurs mainly in males over 40 years of age, who are also exposed to any of the aforementioned risks.

It can present with dissimilar clinical characteristics

- Flat: which can be a red or white spot
- Exophytic or vegetative
- Ulcerovegetable
- Endophytic or infiltrating (see Figure )
- Mixed
- Submucosal
- Cystic
- Multicentric

The diagnosis is made mainly by biopsy, so it is necessary to know the main histological characteristics.



**Figure 15:** Squamous cell carcinoma in the nasal region, which was removed with safety margins and reconstructed with an iliac crest graft and frontal flap. Courtesy of Dr. Otto Alemán Miranda and Dr. Fernando Fuentes Moreno.

They are atypical epithelial cells forming nests with the following characteristics

- Mitoses increased in number and abnormal in appearance
- Changes in the nucleus cytoplasm ratio.
- Hyperchromatic nucleus.
- Loss of Cellular Polarity.
- Cellular pleomorphism.
- Nuclear pleomorphism
- Loss of cell adhesion with increased intercellular spaces [12,13].
- Alteration of the normal sequence of maturation of the keratinocyte.
- Individual keratinization and formation of corneal pearls.
- Basal lamina invasion

Squamous cell carcinomas present degrees of differentiation taking into account the variation of the above characteristics, hence a classification that groups them into 4 categories. Roman numerals from I to IV are used to define these categories and there are three elements to consider in this gradation

- Degree of Differentiation
- Degree of Proliferation
- Cellular and nuclear pleomorphism

The degree of differentiation is given by the presence of corneal pearls and desmosomes, fundamentally since these are elements present in the tissue of origin. Proliferation by the number of mitoses per field and hyperchromatism. Nuclear and cellular pleomorphism due to the presence to a variable degree of nuclei and cells of different sizes.

**Broders classification**

- **Grade 0:** Carcinoma In Situ
- Infiltrating carcinoma (is when it has ruptured the basement membrane)
- **Grade I:** Well Differentiated Epidermoid Carcinoma. Less than 25% undifferentiated cells.
- Numerous corneal pearls, abundant intercellular bridges, fewer than 2 mitoses per high-power field, atypical mitoses, and absent multinucleated cells. Little cellular and nuclear polymorphism.
- **Grade II:** Moderately Differentiated Squamous Cell Carcinoma. Between 25 and 50% of undifferentiated cells.
- Presents intermediate characters
- **Grade III:** Poorly Differentiated Squamous Cell Carcinoma. Between 50 and 75% of undifferentiated cells [14-16].
- Rare corneal pearls, 2 to 4 mitoses per high power field, moderate polymorphism in cells and nuclei, rare giant cells and aberrant mitoses.
- **Grade IV:** Undifferentiated Carcinoma. More than 75% of undifferentiated cells.

Absence of intercellular bridges and corneal pearls, more than 4 mitoses per field with atypical frequency, notable cellular and nuclear polymorphism, giant cells and frequent aberrant mitoses [15-17].

The stomatologist and maxillofacial surgeons must master the risks and complications to which patients with this disease are exposed, in order to explain to patients and their families everything they could face.



**Figure 16:** Patient with squamous cell carcinoma in the right nasogenian region, who underwent surgery. With frontal flap in two stages, only the first stage is shown in the Figure . Courtesy of Dr. Otto Alemán Miranda.

A large percentage of these patients have some other toxic habit that by itself brings with it multiple conditions.

Hence, for a better understanding, we decided to divide the risks into three stages.

- **Diagnosis:** At this stage the patient is exposed to different risky situations, ranging from surgical intervention for diagnostic purposes, to all imaging tests.
- **Therapeutic:** Here it is necessary to explain to the patient and/or relatives that there are multiple risks, which will depend on the tumor; that is, the larger the size, the greater the risk of metastasis, of compressing vital structures, etc. The histology, the higher the degree, the worse the prognosis, location, etc. There are risks depending on the patient's general condition and comorbidities.
- **Post-therapy:** It is essential to make it clear that cancer should be observed as if it were a chronic non-communicable disease, that is, patients and relatives are told that the patient is under control, we do not recommend saying that he is one hundred percent cured, since that must be followed for life and there is always the possibility of persistence and/or recurrence. The other is psychological support so that they can be incorporated into society. And finally, there are the risks and complications depending on the treatment(s) imposed.

The extension of the cancer at the time of diagnosis is a key factor that defines the prognosis, as well as being a critical element for the indication of the most appropriate treatment.

Based on the experience and previous results with groups of patients, in similar stages of the disease. In addition, disease stage is a key component of inclusion, exclusion, and stratification criteria for clinical trials and to facilitate sharing and comparison of information between treatment centers, within and across cancer registries, and to serve as foundation for clinical cancer research [17-19].

### Malignant melanoma

It is a cancer of melanocytes, cells originating in the neural crest that migrate during fetal development to various organs and tissues, although predominantly to the skin. Cutaneous melanocytes are located along the basement membrane at the dermal-epidermal junction [19,20].

Cutaneous melanoma is the most frequent cause of death within skin tumors. It is produced by the malignant transformation of normal melanocytes present in the skin, mucous membranes, eye, central nervous system, mesentery and inner ear.

It affects both sexes and its incidence increases significantly between 16 and 50 years of age.

Mucosal melanoma is a rare entity that represents less than 1% of all melanomas. Its location in the head and neck region rises to 55%. The most frequently affected sites are the sinus and oral cavity [19,20].

Cutaneous melanoma mainly affects white people. The degree of skin pigmentation is a relative protective factor against cutaneous melanoma. Risk factors for getting it include high-risk skin type (eg, people with blue eyes, blonde or red hair, and fair skin).

Reaction to sun exposure (eg, with freckles, difficulty tanning skin, prone to skin burns), history of severe blistering sunburn, intense intermittent sun exposure, high socioeconomic status, family history of melanoma, large number of nevi, giant congenital nevi, presence of dysplastic nevi, immunosuppression, history of melanoma or other skin cancers, and pigmentary xeroderma [19,20]. This neoplasm has the ability to metastasize early and can do so through both the lymphatic and hematic routes. For this reason, we recommend professionals not to delay carrying out a biopsy for any hyperchromic lesion in the oral cavity, and in the cervicofacial regions, if the patient has itching, burning, pain, that bleeds at the slightest stimulus, that he or she is in an area where it is traumatized, that has noticed its rapid growth, etc., since excision must be carried out immediately.

These aspects must be duly explained to the affected individuals and their families.

### Soft tissue sarcomas in the head and neck

Soft tissue sarcomas in the head and neck account for less than 1% of all neoplasms. Its incidence is estimated at 2-3 new cases per year per 100,000 inhabitants. They are three times more frequent than malignant bone tumors.

Head and neck sarcomas constitute a diverse group of rare tumors that have historically been associated with short survival. This is related to the fact that the diagnosis is made once the lesion has advanced and to the diversity of anatomical structures in the region, which limit complete surgical removal [19,20].

They are rare and are also histologically heterogeneous. They represent about 20% of solid tumors of childhood.

These tumors can be located in different parts of the body and can also be found in different systems and viscera, but the head and neck, as a location, play a predominant role in the degree of involvement. The average age of presentation varies according to the series between 45 and 50 years with limits between 20 and 86 years. Multiple cases have already been described internationally, in children under 14 years of age.

For the most part, no specific etiological agents have been found, but some carcinogens are known, such as exposure to herbicides, vinyl chloride, and Thorium dioxide (hepatic angiosarcoma); ionizing radiation (latency period of 15 years) and certain retroviruses. Genetic syndromes such as neurofibromatosis, familial adenomatous polyposis, and Li-Fraumeni syndrome have been shown to be associated with the development of this disease.

Some cytogenetic and molecular abnormalities have been identified in association with these tumors, many sarcomas are characterized by recurrent chromosomal translocations, which are specific for certain histological types.

Its control to date is purely surgical where chemotherapy and radiotherapy play a secondary role. It should be removed with a good safety margin (2cm of healthy tissue) to prevent recurrence or persistence as much as possible. Bear in mind that its metastatic dissemination is carried out mainly through the hematic route.

In general, we mention the most frequent

- Liposarcoma.
- Leiomyosarcoma.
- Undifferentiated pleomorphic sarcoma
- Synovial sarcoma
- Malignant peripheral nerve sheath tumor
- Desmoid tumor (aggressive fibromatosis)
- Solitary fibrous tumor/hemangiopericytoma
- Fibrosarcoma and its variants

Dermatofibrosarcoma protuberans

Adult fibrosarcoma

- Vascular sarcomas

Epithelioid hemangioendothelioma

Kaposi's sarcoma

angiosarcoma

- Alveolar sarcoma
- Clear cell sarcoma
- Desmoplastic round cell tumor
- Extraskelatal myxoid chondrosarcoma
- Developmental sarcomas:

Extra skeletal Ewing sarcoma

- Rhabdomyosarcoma

Among the multiple risks to which patients are exposed, distant metastases that worsen the prognosis, large facial deformities, hemorrhages, infections, malnutrition, and systemic failure are mainly evident.

For better organization, they can be governed by those mentioned in cutaneous epidermoid carcinoma, by stages. It should be treated as a team, made up of the head and neck surgeon, the pathologist, the radiotherapist and the reconstructive plastic surgeon.

### Cutaneous lymphomas

The term primary cutaneous lymphoma defines those lymphomas that develop in the skin without evidence of extracutaneous involvement at the time of diagnosis after complete staging that includes a bone marrow study and radiological examinations.

The exception to this rule is, within the cutaneous T-cell lymphomas, the group of mycosis fungoides/Sézary syndrome, which can always be considered as primary cutaneous lymphomas, even though extracutaneous dissemination has occurred before establishing the diagnosis. They present a different prognosis and epidemiological, clinical, histological and molecular characteristics [17,19,20].

Primary cutaneous T-cell lymphomas include

- Mycosis fungoides (MF)
- Variants or subtypes of MF



- folliculotropic MF.
- Pagetoid reticulosis.
- Granulomatous cutis laxa.
- Sézary syndrome (SS)
- Primary cutaneous CD30+ lymphoproliferative disorders
- Primary cutaneous CD30+ anaplastic large cell lymphoma
- Lymphomatoid papulosis
- Panniculitis-like subcutaneous T-cell lymphoma
- Extranodal NK/T-cell lymphoma, nasal type
- Unspecified primary cutaneous peripheral T lymphomas
- Aggressive squamous cell T lymphoma CD8+ (provisional)
- Gamma delta T lymphoma. 9CD4+ primary cutaneous small/medium cell lymphoproliferative disorder (provisional)
- Primary cutaneous acral CD8+ T-cell lymphoma
- Adult T-Cell Lymphoma/Leukemia.

Primary cutaneous B-cell lymphomas

- Primary cutaneous marginal zone B-cell lymphoma.
- Primary cutaneous follicle center B-cell lymphoma
- Primary cutaneous diffuse B-cell lymphoma, leg-type large cell
- Primary cutaneous diffuse large-cell B-cell lymphoma, other
- Cutaneous intravascular large cell B-cell lymphoma [19,20].

The etiology is unknown. Genetic or viral factors have been implicated (herpes simplex virus, Epstein-Barr virus); chronic and persistent antigenic stimulation; and possible relationship with environmental or occupational exposure to chemical products, metals, herbicides and pesticides, among others.

Diagnosis is made based on clinical symptoms, histopathology, immunohistochemistry, and T cell receptor (LT) gene rearrangement examination, usually by PCR. In all cases, clinical-histological correlation is essential. Skin biopsies are always necessary to establish the diagnosis.

The great heterogeneity of these lesions makes it a challenge for the professional who is going to provide care to these patients. There are multiple risks to which these patients are exposed depending on the form of presentation of the disease. But in general,

these patients can be victims of great deformities, immunosuppression, which will expose them to multiple infections, which will affect the systemic state.

On many occasions the history of the disease is very long, which can lead to confusion. Treatments can vary from surgery, radio and chemotherapy, the use of interferons, among other modalities aimed at the care and protection of the skin. Depending on these therapeutics, other risks will be added. It is essential to emphasize the importance of caring for body and oral hygiene in these patients.

**Dermatological surgery**

It can be performed by maxillofacial surgeons, oncology surgeons, head and neck surgeons and by dermatologists specialized in this branch.

To carry out these surgical techniques, a series of elements must be taken into account, ranging from the type of suture to be used, to the instruments that you use, because with the proper use of them, better aesthetic results can be obtained and complications will be avoided. complications [19,20].

Some complications are vital, such as the appearance of cardiac arrhythmia, anaphylaxis or cardiorespiratory arrest; and others, derived directly from skin surgery, which can affect the healing process and the final aesthetic appearance of the scar.

Most skin tumors are located on the head and neck. Therefore, it is important for the dermatologic surgeon to have a thorough understanding of the surgical anatomy of this area.

To carry out any surgical procedure, it must be discussed as a team or request an assessment from your family doctor, who can be a dermatologist, a specialist in peripheral tumors, and sometimes the oncohematologist's criteria can be very useful.

**Conclusion**

In this work we have addressed a large number of benign and malignant dermatological lesions, with the aim of dominating the main risks and complications that they can face. We emphasize that it is important not to make mistakes out of desperation, although patients come with a certain degree of haste, we must look for different methods to calm them down and guide them in the best way.

With each patient cared for properly, we learn and become better professionals and human beings.

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