

Risks in the Geriatric Patient

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Introduction

Since human beings are born, the oral tissues are exposed to constant aggressions, from the external and internal environment. What the body, from its perfection, as long as it remains in balance, is capable of defending itself against harmful agents. Over the years, these defenses decrease physiologically.

Care for the geriatric patient must be comprehensive, staggered, without haste, with extreme delicacy and a sense of detail. The Latin American population has been experiencing a change in its demographic indicators in recent years and one of them is related to the aging of the population, translated into greater life expectancy and the proportion of people considered older adults.

Oral diseases are progressive and cumulative, becoming more complex over time. They can affect our ability to eat, how we look, and the way we communicate. The oral cavity does not escape aging, therefore, the dentist must be prepared to provide excellent care to the elderly [1].

Which, depending on your general health, oral health, the procedure or procedures you are going to receive, will be the possible risks to which you will be exposed. As we always emphasize, patients must be studied as a whole and not the oral cavity and exclude everything else.

In this chapter we will show you the main risks of the elderly, going from the biological, through the social to the surgical.

Aging should be observed and understood as a normal physiological process of man, can be accelerated more and more by the action of various factors, such as economic, environmental or biological. The older adult also depends on healthy lifestyles, which, when adopted early, reduce the risk of suffering from systemic diseases that manifest themselves with alterations in the oral cavity and that considerably affect general health [2-3].

There are more and more people over the age of sixty in the world. It is said that by the year 2040, individuals aged 64 and over will represent 24% of the population and will absorb 50% of health care spending. Therefore, this issue has become a priority for all

health systems.

The World Health Organization (WHO) conceptualized health as: “a state of complete physical, mental and social well-being and not merely the absence of disease”, and later added “the ability to function in society”.

When the elderly for one reason or another do not have adequate oral health, they no longer comply with this concept at all.

On the other hand, quality of life is called: “the perception that an individual has of his place in existence, in the context of the culture and value system in which he lives and in relation to his objectives, his expectations, your standards and concerns.

When a person cannot eat well, communicate properly and feels affected aesthetically, then their quality of life is impaired, and this will negatively influence many aspects [4].

For a better study, some authors divide the stages of the elderly by age:

- 60 to 74 years old are considered elderly
- 75 to 90 years old, old or elderly
- Over 90 years old they are called great old or great long-lived

Every individual over 60 years of age will be called, indistinctly, “elderly person”, according to the WHO.

Cellular aging is the result of a progressive decline in the proliferative capacity, the lifespan of cells, and the effects of continued exposure to exogenous factors that cause accumulation of cellular and molecular damage. Physiological age is more important than chronological age.

While some people maintain a good level of health well into old age, others begin to accumulate multiple health problems at much earlier ages. This variability in the rate of aging makes it necessary to differentiate between the concepts of chronological age (age in years) and biological age (degree of frailty).

The development that care has experienced in the elderly population in recent years is impressive, due to advances in the different surgical and anesthetic techniques, as well as the different drug treatments, but above all because of the better knowledge of aging. All of this has made it possible to extend therapeutic offers to patients of even very advanced ages, with results similar to those obtained in groups of younger patients [5].

Although we must not forget that these patients have greater comorbidity, with significant changes at the cardiac, pulmonary, hepatic, renal and mental levels, in addition to poor nutritional status, limited functional status, confinement to bed and isolation from their families.

Older people have invasive procedures four times more frequently than the population under 65 years of age, suffer more complications and require more days of hospitalization on average.

Surgical risk (assessed according to the American Society of Anesthesiology Classification, ASA) and aging are associated with an increase in post-surgery complications. The increase in age is linked to an increase in the number of diseases and a decrease in the physiological reserve.

There is little evidence to support age as the only factor in increased surgical risk. Due to the comorbidity that usually accompanies the elderly, it is generally the dysfunction of multiple systems that determines the results of surgery [6].

Physiological changes

In the skin there is a flattening at the junction between the dermis and the epidermis. This impairs wound healing and increases the

susceptibility to ablation or ulceration of aged skin after minor trauma.

With aging, the heart and vascular system become less compliant, less responsive to beta-receptor stimulation. There will be thickening of the ventricular walls. They may present atrial fibrillation, increased rate and complexity of supraventricular and ventricular arrhythmias [7].

Systolic arterial hypertension, which represents 60% of hypertension in people over 65 years of age, is a major risk factor for both heart failure and cerebrovascular events.

With aging, the intrinsic function of both the sympathetic and parasympathetic nervous systems declines. Older patients cool more during anesthesia and require a longer period to rewarm.

The aging respiratory system undergoes changes in the upper and lower airways. There is greater weakness of the pharyngeal muscles causing a predisposition to obstruction at this level. Protective reflexes, coughing and swallowing, deteriorate with age, increasing the risk of aspiration and pneumonia.

From the fifth decade of life there is a decrease in the glomerular filtration rate. Normally these age-associated changes happen slowly and function remains adequate for survival, but if other diseases are present, such as diabetes or hypertension, the aging kidney becomes vulnerable to failure [8].

In the elderly, there is a marked decrease in liver size of up to 40% by the time they reach the eighth decade. There is a decrease in hepatic blood flow.

Age-related changes in the oropharynx and esophagus include decreased pressures of the esophageal sphincter and the amplitude of its peristalsis, which implies a high risk of gastroesophageal reflux.

There is evidence of activation of coagulation in basal states in the elderly. Hypercoagulability increases cardiac morbidity and affects outcomes in patients undergoing vascular surgery [9].

Nutritional status is closely linked to the socioeconomic conditions of the environment in which the elderly live.

Changes in pharmacokinetics and pharmacodynamics associated with aging can alter the metabolism and response to different drugs.

Older adults can fall into depression showing lack of interest in the social environment, lethargy and psychomotor retardation with a tendency to isolation and, therefore, to immobilization [10].

Dementia is also counted as a major risk factor for other geriatric problems such as falls, incontinence, and immobilization. It is also said that the incidence of this disease doubles every five years from the age of 60 years and between 30 and 50% of those older than 85 years in the United States present it.

Geriatric dentistry (odontogeriatrics)

It is defined as the branch of dentistry that deals with the dental problems of the elderly. In a broad sense of the word, it is oriented to oral health care for people 65 years of age and older, and for people of any age, whose general physical condition is significantly influenced by degenerative processes and diseases that are usually associated with advanced age.

It is the dental specialty whose primary objective is the prevention, treatment and rehabilitation of the oral health of the elderly, considering the systemic and oral biological changes inherent to aging.

Gerontology, derived from the word gerontology, began in Europe in the late 1970s and is defined as the dental specialty that seeks

to provide optimal oral care for older adults, through prevention, treatment and rehabilitation of inherent oral disorders. to aging, as well as its dental impact on chronic degenerative diseases that occur in old age.

The difference between these two specialties lies in the fact that gerodontology emphasizes the psychosocial prevention of oral problems in older adults, a gerodontologist cares for healthy or sick older people, in order to achieve maximum oral health and well-being, considering the aspects biological, psychological and social aspects of aging according to the sociocultural context [11].

While the dentists and dental clinics specialized in geriatric dentistry (odontogeriatrics), are responsible for the oral health care of the elderly, considering the changes: biological, systemic and oral inherent to aging; In addition to addressing the etiological and pathophysiological aspects of oral alterations and complications linked to the most prevalent chronic diseases in old age.

These individuals require a different approach, modified treatments and knowledge of how the changes typical of old age, considered natural and associated with old age, can actually become specific pathological processes. Oral health is not only related to the presence of teeth naturally or artificially, it is related to the state in which they are found, in addition to the state of the soft tissues that do not disturb the functional capacity of the oral cavity in specific and general health of the individual. Older adults mostly downplay their conservation and the relationship that may exist with general health.

The biological, cultural, social and political context of some subgroups of the older adult population places them in a situation of vulnerability, since there may be a decrease in the flow of their social relations, some biological alterations in their organism and a decrease in the income, retirement or employment discrimination, among other conditions. Aspects that the stomatologist cannot lose sight of when providing differentiated care to these patients. Since they are going to have a direct or indirect impact on the doctor-patient relationship, an essential parameter for the final success [12].

Oral characteristics of the geriatric patient

Dental tissues such as enamel and dentin undergo modifications that increase their mineralization and therefore become more fragile, and also change the color tone, becoming yellowish. due to the aging process itself and there is a very noticeable change produced by the replacement of the original dentin by the so called repair dentin, bringing with it the aforementioned coloration.

There are changes in the gingival color due to the decrease in blood supply, showing a pale pink color. In addition, it is thinned and fragile due to poor connective tissue, so it tends to be injured more easily.

The rest of the buccal mucosa becomes thinner, smoother, and its appearance is edematous, it presents a loss of elasticity and stippling, making it more prone to lesions. This is basically due to changes in the epithelium and connective tissue [13].

At the gingival level, a recession of the tissue is produced, leaving part of the dental root uncovered. In the periodontal tissue of the elderly there is a decrease in the sensitivity of the periodontal fibers that sometimes does not allow pain to be evidenced, this added to the decrease in manual or psychomotor dexterity, typical of aging, generates the presence and accumulation of bacterial plaque leading to serious periodontal problems and cervical dental caries.

They will present decreased salivary excretion (xerostomia), affecting its functions, thus creating an imbalance in the oral ecosystem.

Regarding the changes observed in the tongue, there is an atrophy of the superficial epithelium, especially at the level of the back, it has a smooth appearance with loss of filiform papillae, problems with the sense of taste due to a decrease in the number and density of sensory nerve endings and a decrease in taste corpuscles. Sublingual varices will increase.

Degenerative changes may occur in the temporomandibular joint (TMJ). Premalignant lesions due to toxic habits for years, soft tissue hyperplasia due to continued use of misaligned prostheses.

When they suffer from immunological alterations, they can be diagnosed with opportunistic microorganisms such as *Candida Albicans*, or angular cheilitis, etc.

It is well argued that the oral structures undergo changes typical of aging, but the partial or total loss of teeth is not typical of age, but rather an indication of poor oral health of the patient over time.

The morphological and functional changes that take place in the oral cavity related to age are part of the general aging of the organism, so that a significant number of elderly people present diseases in the supporting tissues and in the stomatognathic apparatus in general.

The loss of teeth unbalances the distribution of compression forces along the supporting tissues, causing disorders in the remaining teeth, since the masseter muscle compresses food with a force of 200 Kg/cm².

The excess and imbalance of occlusal forces also cause the root cement to increase in volume in the apical area of the tooth, causing various degrees of hypercementosis. When the teeth lose their support, the facial muscles are lost, which determines the typical appearance of the elderly face.

Changes in the periodontal ligament and the production of secondary dentin reduce sensitivity to pain, so older adults may not report pain despite poor oral health.

It is valid to mention that after dental extractions in the elderly patient, the maxillary bone where the teeth were located: the alveolar bone, begins a chronic, progressive, cumulative and irreversible process, called "residual ridge resorption" or "physiological reduction of the alveolar processes", which occurs more rapidly during the first year of use of the removable prosthesis, until reaching a certain point it is called alveolar atrophy, generally, when the construction of a Complete denture due to extreme bone loss [14].

In addition to tooth loss, there are various related factors that influence alveolar resorption, especially systemic and endocrine, metabolic, and traumatic disorders; pre-existing periodontal disease; dietary factors; the anatomical and mechanical structures; gender and facial shape; therefore, it can be indicated that this process has a multifactorial cause, induced primarily by the altered functional load that is transmitted to the tissues over time. When the reabsorption of the residual ridge has been generated, the vestibular grooves become diminished and interference of the muscles found in that area occurs.

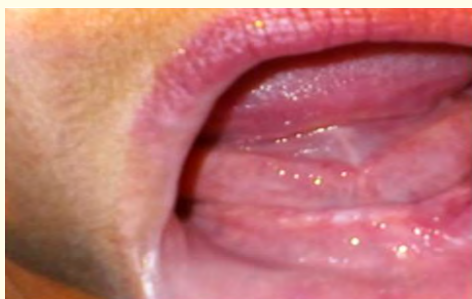


Figure 1: Patient who had to deepen the vestibular groove due to its reduction.

Without a doubt, it has been shown that for many stomatologists, whether they are specialists or not, their casuistry includes a large percentage of elderly patients, since these have notably increased the demand for dental services.

In the United States, dental services for the elderly clearly represent a growing demand for the dental profession. In the year 2000, 28.8% of a dentist's total admissions came from patients 60 years of age or older, a group that only accounted for 12% of admissions in

1988. When the dentist is over 40 years of age, the The income of these older patients represents 64.3% of their income, while in 1988 it represented 30.3 %. Clearly, the demographics of our population have radically changed the economics of dental practice.

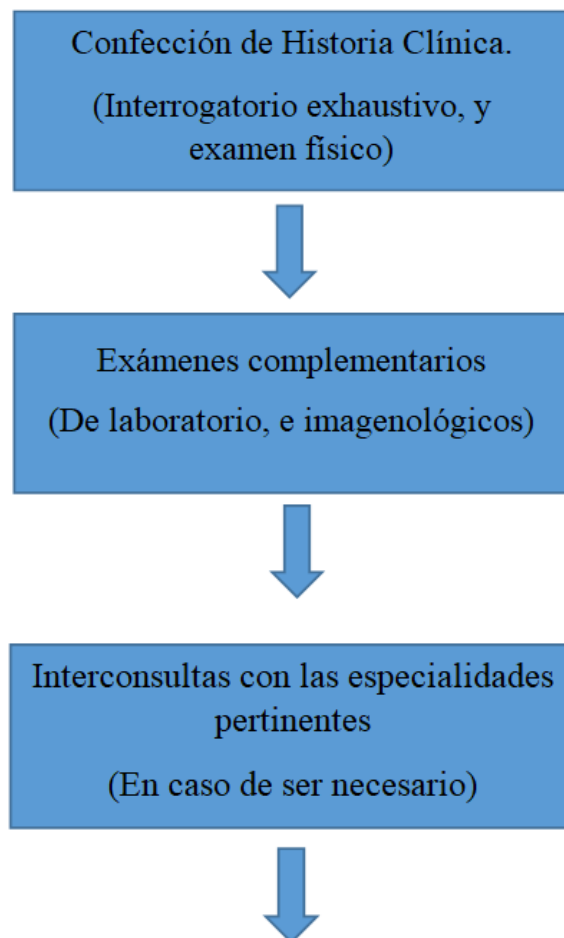
Today these patients maintain their desire to socialize, travel, eat properly, because they do not think twice to go in search of alternatives that improve their quality of life, such as implant treatments, or conventional prostheses. Adding that important accumulation of patients who come to perform facial rejuvenation procedures, such as blepharoplasty, rhytidectomy, cervicoplasty, eyebrow lift, etc. Others will go to consultation for presenting multiple lesions on the facial skin. Topics that will be covered in detail in later chapters.

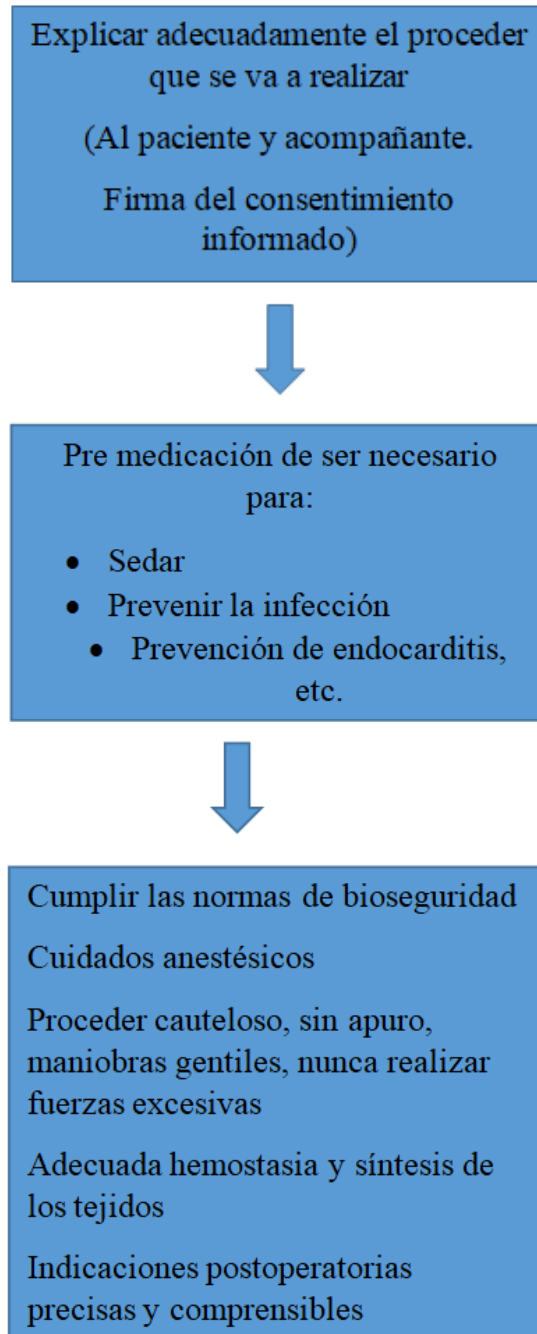
Professionals in the branches of dentistry must take several preventive measures with these patients, which can range from prior medication the night before the procedure, to prioritizing it within the first shifts in the consultation.

Be friendly, receptive, listen carefully, create a pleasant environment for them.

We must bear in mind that oral health is a fundamental component of general health, which is essential in functions such as nutrition, communication, affection and sexuality, in addition to its relationship with physiological, psychological and social aspects. The mouth is considered a mirror of health or disease, an accessible model for the study of other organs and tissues, and a potential source of diseases that affect other organs and systems.

In cases where dental extractions or other surgical procedures are to be performed with local anesthetics, there are parameters that cannot be ignored. To avoid any complication, for a better understanding we outline them.





Source of the scheme: own elaboration.

When larger interventions are carried out with general anesthesia, other essential aspects must be taken into account for a favorable evolution.

Pre anesthetic management

The goals of premedication include: relief of anxiety, sedation, analgesia, amnesia, reduction of anesthetic requirements, reduction of postoperative vomiting and nausea.

Premedication should be minimal and if the operation is an emergency, nothing will be administered. Oral diazepam and intramuscular (IM) meperidine produce frequent amnesia. Lorazepam and intravenous (IV) morphine are also a compatible combination of drugs, they complement each other and have no side effects.

Hydroxykinin, due to its antiallergic and bronchodilator actions, can be used in patients with irritable airways; in large doses its anticholinergic side effects can be a problem.

Atropine is sometimes used alone, and scopolamine causes restlessness and excitement.

After five minutes of preoxygenation, anesthesiologists begin induction, remembering that in the elderly there is a delayed circulation time and a lability of the circulatory system to compensate for the physiological effects of drugs. Anesthesia must be light and with a minimum amount of drug; the dose of anesthetics should be reduced in the elderly.

Generally should be used:

1. Precordial stethoscope, which is difficult to place in the chest of the emphysematous elderly. Sounds can be muffled.
2. Esophageal stethoscope, invaluable for monitoring intubated patients.
3. ECG as with simultaneous paper recording; in pre-induction they detect many arrhythmias; It should be used routinely in all kinds of operations, especially the V5 lead, with which greater evidence of the ischemia that develops can be obtained.
4. Temperature: serves as a general care guide; the only method to control heat loss is to maintain the operating room temperature between 21 and 24°C.
5. Arterial line, used to determine blood gases and arterial depression. Number 20 Teflon catheters are the most suitable and do not cause radial artery thrombosis or ischemic digitalis problems. ALLEN's test should always be performed, since the incidence of peripheral vascular disease is high in the elderly.
6. PVC is very important; The right internal jugular vein must be cannulated, avoiding carotid puncture and the formation of a hematoma.
7. Bladder catheter in order to measure urine output and realize renal function index, should be 25ml/hr and square meter of body surface.
8. SWAN-GANZ catheter, in patients with compromised ventricular function.
9. Transcutaneous monitoring of PCO₂ and PO₂ that act as early indicators of hypoxia or shock.

As mentioned above, biological age is very important as it takes into account the degree of frailty. And it is important to emphasize that frailty in itself should not be considered a contraindication for surgery. On the contrary, it gives us the opportunity to identify people at risk, and depending on the characteristics of the individuals, personalize treatments and surgical interventions.

We classify the degree of fragility depending on the following factors:

Fragilidad leve:

- paciente de 55 a 60 años con enfermedad crónica no transmisible compensada y/o controlada.
- Paciente de más 60 años sin diagnóstico de enfermedad.
- Se traslada sin ayuda.
- Bien nutrido
- Sin hábitos tóxicos

Fragilidad moderada:

- paciente de 55 a 60 años con enfermedad crónica no transmisible descompensada y/o descontrolada.
- Paciente de más 60 años con diagnóstico de enfermedad crónica no transmisible, o cualquier otra dolencia, pero, compensada y/o controlada.
- Se traslada con ayuda

Fragilidad severa

- Paciente de más de 60 años con enfermedades descompensadas y/o descontroladas
- Encamado imposible trasladarse
- Malnutrido
- Riesgos de infección, de hemorragia, y/o fragilidad ósea severa.

Source: personal elaboration.

The fundamental objective of our classification is to have an idea of the surgical risk to which the patient will be exposed. There are also multiple methods and tools to measure frailty. It can be through questionnaires, physical execution tests, software, etc.

We are sure that there will be an increase in patients in need of different surgical interventions in the stomatological branches. Therefore, teamwork between oral and/or maxillofacial surgeons and geriatricians will play a key role.

There are certain complications that are not very addressed by the stomatologist in his training and we consider that we should show them in this work. Such is the case of delirium, which is a frequent complication in surgical patients who are increasingly older and have more comorbidities. It is an acute change in the cognitive situation of the patient, transient and fluctuating. In addition, patients with delirium have a worse prognosis during admission, with higher mortality. We must be oriented in case it is necessary to take a precise and accurate conduct.

The diagnosis of delirium is clinical. We will detect an acute change in the patient's cognitive situation, usually transient and fluctuating throughout the day. For a short period there is an alteration in the level of consciousness and the cognitive situation, with difficulty in focusing, maintaining or modifying attention. Perceptive alterations such as illusions, delusions or hallucinations also occur.

It is important to establish the diagnosis in the first 24 hours, as well as to detect the possible causes that have precipitated the appearance of delirium in order to consult with the relevant specialist.

The elderly patient, in general, has his physiological reserves worn out, it is necessary to create protocols directed directly at odontogeriatric patients.

There are scales to measure the frailty of the elderly from the clinical, functional or mixed points of view. We recommend readers to delve into this topic through other bibliographies and that in this treatise we will only mention them in a general way.

Functional scales

Barthel scale

Karnofsky scale

Vulnerable Elders Survey (VES-13)

Clinical scales

American Society of Anesthesiologists (ASA) Index

Charlson Comorbidity Index

Pfeiffer's test

POSSUM Scale

MIXED SCALES

ACS NSQIP Surgical Risk Calculator®

Edmonton Frailty Scale

It is essential to do a good preoperative, where all measures will be taken to avoid any complications as far as possible. Good communication must be achieved with the patient and relatives, explaining the operation in detail, listening to the expectations of the patient and his family, and clarifying what the true results may be.

That he arrives at the pre-anesthetic consultation, with all the pertinent complementary exams. So that there are no unnecessary delays. And the specialist in anesthesiology can in other fundamental aspects, such as the characteristics of the oral cavity at the time of intubation.

Que valorar en el preoperatorio

- Contraindicaciones médicas a la cirugía.
- Riesgos y beneficios de la cirugía propuesta.
- Documentación del deseo del paciente de un “manejo agresivo posquirúrgico” en caso de ser necesario.
- Anestesia propuesta.
- Manejo posquirúrgico del dolor.
- Delirio posquirúrgico.
- Atelectasias y neumonía posquirúrgicas.
- Desacondicionamiento posquirúrgico

Índice de la American Society of Anesthesiologists (ASA)

- I. Paciente sano, cirugía electiva
- II. Paciente con enfermedad sistémica leve
- III. Paciente con enfermedad sistémica severa que limita actividad pero no incapacita
- IV. Paciente con enfermedad sistémica severa incapacitante que pone en constante peligro la vida
- V. Paciente moribundo que no se espera sobreviva 24horas con o sin cirugía

Perioperative recommendations:

- Protect the skin during the perioperative period
- Maintain adequate skin temperature
- Monitor bleeding and scarring data in the postoperative period
- Complete cardiac assessment determining the need for invasive diagnostic methods
- Perform pre- and postoperative electrocardiograms
- Monitor for hypotension during anesthesia
- Monitor heart failure data
- Continuous cardiac monitoring
- Monitor and manage blood pressure
- Protect against hypothermia during anesthesia and postoperatively
- control blood pressure
- protect airway
- Monitor bronchial aspiration
- Assess the need for preoperative respiratory function tests
- Control chest X-ray
- Smoking cessation
- Judicious use of bronchodilators, antibiotics, adequate hydration, and pulmonary physiotherapy
- Assess kidney function
- Adjust anesthetic drugs and antibiotics according to creatinine clearance
- Monitor fluids and electrolytes
- Assess Liver Profile in the preoperative period
- Do not use potentially hepatotoxic drugs
- Correct ascites, coagulopathies and encephalopathy
- Monitor bronchial aspiration data
- Evaluate enteral or paraenteral nutrition in the postoperative period
- Rule out the presence of H. pylori and establish treatment if it is present
- Monitor thrombosis data

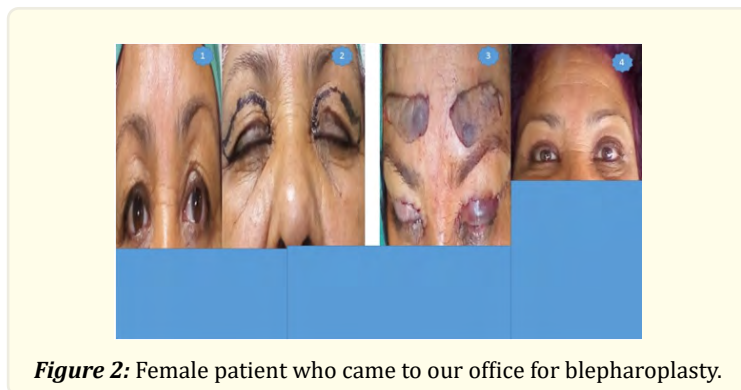
Evaluate anticoagulation in the postoperative period
Carry out nutritional assessment in the preoperative period in case of suspecting malnutrition
Assess the need for enteral or parenteral nutrition with food supplements
Take care of infections in the oral cavity and protect against aspiration
Monitor hydration status
Adjust medications according to kidney and liver function
Monitor toxicity data for drugs used in the perioperative period
Rule out infectious foci
Apply modified Mini-mental to assess cognition
Monitor for development of postoperative delirium
Avoid medications that promote delirium

As you can see, today we have all the necessary means to provide comprehensive and quality care to the elderly. We just have to work every day to reinforce our knowledge and update ourselves on the different topics.

I always heard a teacher say to the old man, we have to treat him as we would like our grandparents to be treated. They no longer grasp as quickly as we do, the senses are diminished. On many occasions they come to us after having bad experiences with other professionals.

Where they received traumatic interventions that left them with different consequences with irregular edges, sharp edges, loss of soft tissues. Damage of dissimilar degrees in the temporomandibular joint. Partial and total edentulisms, with the complications and ailments that these bring with them. We recommend reading the chapters dedicated to conventional prostheses and the one on implantology and bone regeneration.

Others in the case of women, especially, are embarrassed, because they want to continue looking beautiful and youthful (see figure), so we must be prepared to offer them the best options. Always taking into account the individual characteristics of each individual.



A high number of older patients have used a removable prosthesis for more than five years, which results in the appearance of potentially malignant lesions. Hence the importance of carrying out an adequate examination of the entire upper aerodigestive tract (VADS).

Added to this are toxic habits, for decades. (we recommend seeing the chapter corresponding to this topic).

Head and neck cancer statistically occurs mostly in these age groups. As well as other tumors. (See figure)



Figure 3: Patient with nasal tip basal cell carcinoma.

As it was possible to verify in this chapter, the geriatric patient constitutes a very important pillar in our casuistry. So we must be ready, from a human and professional point of view, to offer them the care that they deserve.

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