



Dental Surgical Approach in Patients with Chronic Renal Failure: Considerations and Specific Approach

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Article History	Abstract
Received: 06 June 2023 Revised: 05 Sept 2023 Accepted: 11 Sept 2023	<i>Currently in Ecuador, knowledge about the various care options for patients with systemic diseases, such as chronic renal failure, is limited. It is important to highlight that health professionals, particularly dentists, face the challenge of acquiring the necessary knowledge to carry out a multidisciplinary approach between medicine and dentistry. In this research, our objective was to exhaustively analyze the scientific bases and previously published studies that address dental surgical treatments in patients with chronic renal failure. To carry out this article, we carried out a thorough preliminary search in the relevant databases, identifying a total of 37 scientific articles, of which 34 met the established inclusion criteria. The focus of our research was descriptive and applied, allowing us to deepen the knowledge available in the area and establish relevant conclusions. Our research has revealed that patients with chronic renal failure require special consideration before undergoing dental treatment. Within the context of dentistry, the approach to patients with chronic renal failure must be carefully planned, considering the systemic health of the patient and avoiding possible drug interactions.</i>
CC License CC-BY-NC-SA 4.0	Keywords: Surgical procedures, Dentistry, Renal failure, Dental treatments, Patients, Health professionals

1. Introduction

Chronic renal failure (CRF) is determined as the gradual and progressive loss of the ability of the kidneys to perform glomerular filtration, producing the deterioration of renal function, causing the retention of various waste products of metabolism such as urea, urea nitrogen and creatinine, a state called azoemia, and that in its final stage is incompatible with life.^{1At} this stage, irreversible damage to renal function occurs and the patient needs lifelong replacement treatment for this function, either through haemodialysis, dialysis or peritoneal and renal transplantation.² Previous studies mention that between 40% and 75% of patients with CRF undergoing dialysis and haemodialysis develop Cardiovascular Disease, therefore, it is considered an etiological factor of CVD.⁽¹⁻³⁵⁾

The treatment of chronic noncommunicable diseases establishes one of the greatest challenges facing health systems worldwide, affecting all age groups, regions and countries.⁽²⁻³⁻³⁶⁾ Among the many chronic pathologies that harm the population, chronic renal failure (CKD) is considered a disease

without a therapeutic perspective and of rapid progression, which harms both the health and quality of life of the patient. ⁽⁴⁻³⁷⁾

Failure to recognize CKD early has a detrimental impact, as decreased renal function is linked to several complications, resulting in an adverse prognosis for the patient. During its evolution, it produces progressive renal deterioration, as well as cardiovascular morbidity and mortality. Current studies have shown that the possibility of death from this disease due to cardiovascular complications such as: congestive heart failure, pulmonary hypertension, pericarditis, arrhythmias, peripheral edema and mainly arterial hypertension, are more frequent if we compare with the development of the disease towards the stage of terminal renal failure ⁽⁵⁻³⁸⁾

It is worth mentioning that chronic renal failure arises as a public health problem in developed and developing countries. ⁽⁶⁻³⁹⁾ In Latin America, an increase in its incidence has been observed because the average number of patients with this disease is 267 cases per 1 million inhabitants, the main countries being Argentina, Colombia, Mexico, Venezuela, Chile,

Puerto Rico and Brazil. ⁽⁷⁻⁴⁰⁾

Ecuador does not escape this reality due to its high prevalence, where it is revealed that 11% of older adults in the country suffer from this disease, raising the expenditure of the health budget, limited by high morbidity and a large consumption of medicines. Different demographic studies revealed that the early diagnosis of different alterations such as: hemodynamic, mineral and hormonal, have managed to reduce the mortality rate. ⁽⁸⁾

In Ecuador, epidemiological data on CRF show key problems obtained from care in the health system, among the most relevant are: late reference in advanced stages, lack of early study methods in patients with risk factors for CKD, lack of medical specialists, limitations of therapeutic alternatives to better manage the complications of this disease and the scarcity of clear regulatory documents aimed at this pathology. ⁽⁹⁾

It is essential prior to a surgical procedure, to request specific laboratory tests in order to locate any alteration of hemostasis. ⁽¹⁰⁾

After the development of this research, it is intended to collaborate educationally with dentists on chronic renal failure, so that there is an adequate evaluation and a clear clinical conduct to follow with these patients.

2. Materials And Methods

This bibliographic review was carried out based on the analysis of scientific articles, collected from high-impact databases such as: Doaj, Pubmed, Medline, Science Direct, Researchgate, Scielo, in a systematic way with a focus on the study variables that are dental surgical treatments (dependent variable) in patients with chronic renal failure (independent variable), from the last 6 years from the date, so the study period was defined from 2016 to 2021 inclusive.

Gathered all this information, a large study was conducted, pointing out and extracting the highlights of all the authors on the subject of research, analysis and conclusions about dental management focused on patients with chronic renal failure.

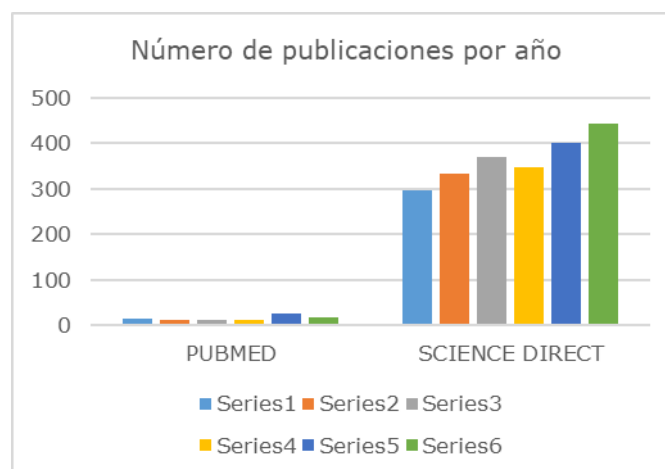
Inclusion criteria.

- Scientific articles taken from bibliographic sources whose journals are indexed from the last 6 years.
- Scientific articles describing dental management in patients with chronic renal failure.
- Scientific articles describing previous management in patients with CRF who must undergo surgical treatments.
- Scientific articles describing the interdisciplinary management between dentistry and other branches of medicine.

After a preliminary search in the database, a total of 37 scientific articles were identified, of which only 34 publications met the inclusion criteria, which were emphasized in the dental treatment of patients with chronic renal failure. In several studies, the importance of the inter-disciplinary participation of health professionals in the treatment of CRF has been mentioned. It is important that

these patients focus on their oral care, and the professional must ensure good postoperative hemostasis control if a certain type of surgical procedure is required.

Graph 1: Number of publications per year of the bases with the greatest impact



Source: Oswaldo Miranda

In the graph it can be seen that in the scientific bases of greater impact the search was carried out through the study variables and it was observed that in the scientific base PubMed results of 10-20 articles published per year were obtained, on the contrary in Science direct there were 200-300 publications per year related to the variables, However, due to the selection criteria, not all articles were chosen.

3. Results and Discussion

TABLE 1. Risk factors, complications and oral alterations in patients with CKD.

Author	Oral Alterations	Risk Factors and Complications
Jung Y, Martins L, Caldas C. ⁽¹¹⁾		Out of 115 dialysis patients 61% Hypertension and Diabetes are risk factors
Gichki AS, Ahmed K, Ali NA. ⁽¹³⁾	Periodontal disease.	20% chronic glomerulonephritis as a risk factor
Dennewitz et al. ⁽¹²⁾		CVD is the leading cause of death
Amara L, Koppolu P, Jyothi P. ⁽¹⁴⁾	Periodontal disease and alterations in salivary glands.	16% had interstitial nephritis as a complication
Yuan Q et al. ⁽¹⁵⁾	Salivary gland involvement Xerostomia – halitosis	
Roukonen H. et al. ⁽¹⁶⁾	Xerostomia causes more cavities	
Fregoneze AP et al. ⁽¹⁷⁾	38% had enamel hypoplasia	
Oyetola EO. et al ⁽¹⁸⁾	90% of a group of 90 patients have abnormal lip pigmentation	
Ausavarungnirum R et al. ⁽¹⁹⁾	Periodontal disease is common Gingivitis in more than 50% patients with mild CRF	
Laheij A et al. ⁽²⁰⁾	13% dialysis patients have periodontitis	
College of Dental Hygienists of Ontario ⁽²¹⁾	Lingual alterations such as: cracked, atrophic, geographical, spotted and hairy tongue.	
Vizuite M et al. ⁽¹⁰⁾	Study in 59 patients Paleness of oral tissue on the lips, cheeks, palate and gums between 30 and 50%	

Andaloro C et al. ⁽²²⁾	Alterations in mucous membranes such as spots, ulcers, colour change volume and integrity, lichen planus, ecchymosis and leukoplakia, which can be painful
Hernandez C. ⁽²³⁾	Renal osteodystrophy in more than 50% of patients. It presents pain and facial deformation.
Nazish K et al. ⁽²⁴⁾	Abnormal bone remodelling posexodontia
Marinoski J et al. ⁽²⁵⁾	The oral manifestations are associated in CRF with strict diets, malnutrition, inadequate hygiene, drugs and uremic toxins in oral tissues.
Kesmez O, Frojk M, Eidamak I. ⁽²⁶⁾	IRC patients have oral adverse drug reactions especially gingival hyperplasia, recommend routine monitoring to monitor effects.

TABLE 2. Considerations for dental treatment in patients with CRF

Author	Considerations for Dental Treatment in Patients with Ckd
Kuravatti S et al. ⁽²⁷⁾	Avoid aspirin and some NSAIDs for gastric irritation and bleeding. Avoid COX-2 inhibitors because they are hepatotoxic
Yuan Q et al. ⁽¹⁵⁾	Prior to dental treatment blood pressure control. Attention in the morning quiet environment. Care aimed at avoiding sources of infection with appropriate treatment and oral physiotherapy. Antisepsis with chlorhexidine 0.12% or 0.20% before surgery.
Martinez C. ⁽²⁸⁾	Recommends 1 day before stress-free. Surgery at least 8 hours after dialysis better next day, previous antibiotic prophylaxis
Carriel O. ⁽²⁹⁾	Recommends correct pharmacological management to avoid accelerating kidney damage
Ruas B et al. ⁽³⁰⁾	It reveals that there is a high rate of refusal to attend dentistry due to systemic commitment.
Verdezoto G. ⁽³¹⁾	Prior dental treatment consult treating physician of the IRC to know the conditions of the patient
Naranjo V. ⁽³²⁾	Before dental intervention complete blood count Intervention 8 hours after dialysis by use of heparin + antibiotic prophylaxis
Yuan Q et al. ⁽¹⁵⁾	Antibiotic prophylaxis Amoxicillin 1 hour before or clindamycin 600mg 1 hour before
Carriel O. ⁽²⁹⁾	Pharmacological management, avoid: Antibiotics cephalixin, cefamandol, cefaclor. Anti-inflammatory eterocoxib, celecoxib, meloxicam. Antifungals Acyclovir antivirals.
Yuan Q et al. ⁽¹⁵⁾	Postoperative care: No smoking. Avoid strong exercise 24 h. Postoperative indications in writing. Use paracetamol as an analgesic, its short-term use is safe. Avoid exaggerated trauma in surgery. Be careful when removing infectious foci to avoid infection. Remove poorly positioned teeth or third molars to avoid periocoronar infections.

The study conducted by Yuan ⁽¹⁵⁾ in 2017 represents an important advance in the understanding of Xerostomia and its impact on the balance of oral structures and tissues in patients with chronic renal failure (CKD). In addition, the contribution of other authors such as Gichki ⁽¹³⁾, Amara (14),

Ausavarungnirum (19), Marinosky (25), Laheij (20) and Kezmes (26), who have also highlighted the relevance of oral alterations, especially at the periodontal level, in this population.

The year 2020 brought to light a worrying trend observed by Ruas B. et al ⁽³⁰⁾, who identified that patients with CRF present a refusal to receive dental care, which is inconsistent and questionable from the professional perspective. In this context, Carriel ⁽²⁹⁾, Cerveró ⁽³⁴⁾, Kuravati ⁽²⁷⁾ and Yuan ⁽¹⁵⁾ emphasize the importance of prevention to avoid a more significant and complex renal deterioration from the pharmacological point of view. This research highlights the need to raise awareness among patients with CKD about the importance of dental care and the relevance of prevention to improve their quality of life and overall well-being.

In particular, Yuan's research ⁽¹⁵⁾ is of great relevance, as he is the only author who directly mentions the importance of infection prevention in patients with CKD. This approach becomes a primary behaviour for health professionals when managing these patients, emphasizing the need to perform frequent controls and apply adequate preventive measures to avoid infectious complications that may affect their health status.

In relation to surgical interventions, both Yuan ⁽¹⁵⁾ and Sulejmanajic ⁽³³⁾ highlight the importance of a careful and minimally invasive surgical technique to reduce the risk of postoperative complications in patients with CKD. This precise and meticulous surgical approach is essential to preserve tissue integrity and minimize risks associated with procedures, emphasizing the importance of specialized and personalized care for this vulnerable population.

4. Conclusion

It is essential to acquire a thorough knowledge about the various stages of kidney disease, as well as its treatment, complications and other relevant aspects. This will allow dental professionals to be prepared to provide appropriate care to patients with chronic renal failure (CKD) and offer them the best possible care.

Before carrying out any dental procedure in these patients, it is very important to make an interconsultation with the attending physician. This becomes especially relevant if it is necessary to modify the conventional medications that the patient is receiving for the management of their kidney disease. Close communication between the dentist and doctor will allow efficient coordination and ensure that dental treatment is safe and compatible with the patient's overall condition.

It is also recommended to periodically evaluate the state of the oral cavity of patients with CKD. Since these patients usually receive lifelong immunosuppressive treatments, there is an increased risk of developing foci of infection in the oral cavity. Timely identifying and treating any signs of oral infection is essential to avoid complications and maintain the patient's oral health.

Multidisciplinary treatment becomes a cornerstone to achieve a comprehensive and successful approach to patients with CKD. The collaboration between dentists, doctors, nurses and other specialists contributes to a better result in the treatment and postoperative control of the patient. By working as a team, eventual situations that could significantly affect the patient's health can be prevented and resolved.

The progressive increase in the morbidity and prevalence of CKD, according to epidemiological data, highlights the importance of recognizing and understanding the specific signs and symptoms of this systemic pathology. Dental professionals must be prepared to face these challenges and appropriately and responsibly address the nursing procedures necessary in the care of these patients. Efficient and well-informed management is key to providing optimal care to those suffering from this complex kidney disease.

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