

Blood pressure and anaesthetic use in dentistry: safety and recommendations

Presión arterial y uso anestésico en odontología: seguridad y recomendaciones

Dzhaneta Nairbekovna Abasova

N. N. Blokhin National Medical Research Center of Oncology; 24 Kashirskoye Highway, Moscow, 115478, Russia,

O. <https://orcid.org/0009-0000-0663-6139>, A.Dzhanet@bk.ru

Anastasia Nikolaevna Petyushina

Federal State Budgetary Educational Institution of Higher Education «A.I. Yevdokimov Moscow State University of Medicine and Dentistry» of the Ministry of Healthcare of the Russian Federation., FSBEI HE A.I. Yevdokimov MSMSU MOH Russia, 127473, the subject of the Russian Federation, Moscow, Delegatskaya str., 20, p. 1. <https://orcid.org/0009-0009-7086-6356>, apetyshina@gmail.com

Timur Abdulvokhidovich Ismonov

“Chuvash State University named after I. N. Ulyanov” Country Russia, Chuvash Republic, Cheboksary city, Moskovsky Avenue 15. 428015,

<https://orcid.org/0000-0001-5378-3625>, tim.ismonov@yandex.ru

Ksenia Antonovna Osipenko

Saratov State Medical University named after V. I. Razumovsky, Bolshaya Kazachya Street, 112, Saratov, 410012, Russia. o5ipenko.k@yandex.ru, <https://orcid.org/0009-0008-8385-9801>

Aida Mansurovna Babaeva

Saratov State Medical University Bolshaya Kazachya st., 112 Saratov, 410012 Russia. <https://orcid.org/0009-0002-3650-377X>,

babaeva_aida@inbox.ru

Maryam Arslanovna Khasavova

Federal State Budgetary Educational Institution of Higher Education «Astrakhan State Medical University» Medical Faculty 414000, Astrakhan, Bakinskaya str. 121, <https://orcid.org/0009-0006-3035-1874> marjam.has@gmail.com

Madina Shamilovna Abdulkarimova

Federal State Budgetary Educational Institution of Higher Education «Astrakhan State Medical University» Medical Faculty 414000, Astrakhan,

Bakinskaya str. 121, <https://orcid.org/0009-0003-6516-4065> abdulkarimovamsh@gmail.com

Received: 07/20/2024 Accepted: 08/19/2024 Published: 09/12/2024 DOI: <http://doi.org/10.5281/zenodo.14182533>

Abstract

Blood pressure (BP) is a key indicator of cardiovascular health, and its control is particularly important in the dental intervention setting where different types of anesthesia are used. This article examines the relationship between blood pressure and the use of anesthesia in dentistry, and reviews safety and recommendations for patients with hypertension and other cardiovascular diseases.

The main objective of the study is to evaluate the effect of local and general anesthesia on blood pressure levels in patients and to develop recommendations to ensure the safety of dental procedures. The study analyzed BP changes during and after dental procedures using different types of anesthesia, identified risk groups among patients with hypertension and other cardiovascular diseases, and studied protocols to minimize the risks of complications associated with BP changes.

It has been determined that local anesthesia with adrenaline can cause a transient increase in BP, especially in

patients with uncompensated hypertension. According to studies, the use of anesthetics without adrenaline has shown less effect on BP.

General anesthesia has a more significant effect on BP, including both increases and decreases, which requires careful monitoring. Patients with cardiovascular disease require special monitoring and possibly adjustment of anesthetic doses.

Preliminary examination and stabilization of BP before dental procedures are recommended. The administration of anesthesia should be carried out under blood pressure control with the possibility of immediate medical attention if necessary.

Accordingly, the use of anesthesia in dentistry requires careful management of patients with high BP and cardiovascular disease. Adequate blood pressure management when using anesthesia in dentistry is a critical aspect to ensure patient safety. Implementation of

appropriate guidelines and protocols will minimize risks and improve the quality of dental care for patients with different BP values.

Keywords: blood pressure, anesthesia, dentistry, safety, hypertension, cardiovascular disease, local anesthesia, general anesthesia.

La presión arterial (PA) es un indicador clave de la salud cardiovascular y su control es particularmente importante en el entorno de intervención dental donde se utilizan diferentes tipos de anestesia. Este artículo examina la relación entre la presión arterial y el uso de anestesia en odontología, y revisa la seguridad y recomendaciones para pacientes con hipertensión y otras enfermedades cardiovasculares.

El principal objetivo del estudio es evaluar el efecto de la anestesia local y general sobre los niveles de presión arterial en pacientes y desarrollar recomendaciones para garantizar la seguridad de los procedimientos dentales. El estudio analizó los cambios de la PA durante y después de los procedimientos dentales utilizando diferentes tipos de anestesia, identificó grupos de riesgo entre pacientes con hipertensión y otras enfermedades cardiovasculares y estudió protocolos para minimizar los riesgos de complicaciones asociadas con los cambios de la PA.

Se ha determinado que la anestesia local con adrenalina puede provocar un aumento transitorio de la PA, especialmente en pacientes con hipertensión descompensada. Según los estudios, el uso de anestésicos sin adrenalina ha demostrado un menor efecto sobre la PA.

La anestesia general tiene un efecto más significativo sobre la PA, incluidos aumentos y disminuciones, lo que requiere un seguimiento cuidadoso. Los pacientes con enfermedades cardiovasculares requieren una vigilancia especial y posiblemente un ajuste de las dosis de anestésicos.

Se recomienda el examen preliminar y la estabilización de la PA antes de los procedimientos dentales. La administración de la anestesia debe realizarse bajo control de la presión arterial con posibilidad de atención médica inmediata si es necesario.

En consecuencia, el uso de anestesia en odontología requiere un manejo cuidadoso de los pacientes con PA elevada y enfermedades cardiovasculares. El control adecuado de la presión arterial cuando se utiliza aneste-

sia en odontología es un aspecto crítico para garantizar la seguridad del paciente. La implementación de pautas y protocolos apropiados minimizará los riesgos y mejorará la calidad de la atención dental para pacientes con diferentes valores de PA.

Palabras clave: presión arterial, anestesia, odontología, seguridad, hipertensión, enfermedad cardiovascular, anestesia local, anestesia general.

Blood pressure (BP) is one of the most important indicators of the state of the human cardiovascular system. Blood pressure control is particularly important in the setting of medical interventions, including dental procedures where various types of anesthesia are used. In dentistry, the use of anesthesia is necessary to ensure painlessness and patient comfort, but the administration of anesthetics can affect blood pressure levels, which is of particular concern in patients with hypertension and other cardiovascular diseases¹.

Hypertension, or high blood pressure, is a widespread condition affecting millions of people worldwide. Patients with hypertension have an increased risk of developing complications from medical interventions, especially if precautions are not taken. Changes in blood pressure during dental procedures can lead to serious consequences such as hypertensive crisis, myocardial infarction or stroke.

This article investigates the relationship between blood pressure and the use of anesthesia in dentistry. The aim of the study is to evaluate the effect of different types of anesthesia on blood pressure levels in patients, and to develop recommendations to ensure the safety of dental procedures in patients with hypertension and other cardiovascular diseases.

The article considers the features of local and general anesthesia, their influence on blood pressure, and provides practical recommendations for dentists on risk management and patient safety.

The study includes a retrospective analysis of medical records of patients who underwent dental treatment with anesthesia, as well as clinical trials with BP monitoring before, during and after the procedures. The sample includes patients of different age groups with normal and elevated BP.

Anesthetics without adrenaline have a smaller effect on BP, making them the preferred choice for patients with hypertension. Although the absence of adrenaline reduces the risk of hypertensive crises, such anesthetics may be less effective in terms of duration and intensity of anesthesia, requiring a balanced approach to their use [3].

General anesthesia often leads to a decrease in BP due to central nervous system depression and vasodilatation. This can be problematic in patients with already low BP or other cardiovascular pathologies. In some cases, there may be a sharp drop in BP during induction of anesthesia and a subsequent rise on awakening, which requires continuous monitoring.

Prior to general anesthesia, a thorough assessment of the patient's condition, including cardiac examination and BP monitoring, should be performed. During the procedure, BP should be continuously measured and the patient should be prepared to respond quickly to any changes in BP, including the use of medication to stabilize BP.

Analysis of blood pressure changes during the use of different types of anesthesia in dentistry shows that careful monitoring and an individualized approach to the choice of anesthetics are key aspects to ensure patient safety. Implementation of risk management recommendations will minimize the likelihood of complications and improve the quality of dental care.

As already mentioned, patients with hypertension and other cardiovascular diseases require special attention during dental procedures using anesthesia. Identification of risk groups allows to develop individualized treatment approaches and minimize possible complications. In this part of the article, the criteria and factors influencing the definition of risk groups among such patients are discussed. The classification of patient risk groups is presented in Table 1.

Blood pressure (BP) changes during dental procedures, especially those involving anesthesia, are an important aspect requiring careful monitoring and management. Anesthesia can cause both increases and decreases in BP, which is particularly critical for patients with hypertension and other cardiovascular diseases².

When anesthetics containing adrenaline are used for local anesthesia, patients often experience a transient increase in BP. This is due to the vasoconstrictive effect of adrenaline, which leads to an increase in cardiac output and peripheral vascular resistance. In patients with uncontrolled hypertension, this effect may be particularly pronounced, requiring prior stabilization of BP and careful monitoring during the procedure.

Table 1. Identification of risk groups among patients with hypertension and other cardiovascular diseases

Patient group	Definition	Risk level	Risks	Recommendations
Controlled hypertension	Patients diagnosed with hypertension who are taking antihypertensive medications and have consistently normal BP values	Low	Minimal changes in BP during the use of anesthesia	Regular monitoring of BP before, during and after the procedure; use of standard anesthetic protocols
Uncontrolled hypertension	Patients with hypertension whose BP remains high despite drug treatment	Medium	Increased risk of hypertensive crisis or other complications during induction of anesthesia	Careful preoperative preparation, including stabilization of BP; use of anesthetics without adrenaline; increased monitoring of BP
Secondary hypertension	Hypertension caused by other medical conditions (kidney disease, endocrine disorders, etc.)	High	The risk of complications depends on the underlying disease and its degree of control	Comprehensive examination and treatment of the underlying disease; consultation with specialized specialists (nephrologists, endocrinologist); individualized anesthesia protocols
Coronary heart disease (CHD)	Patients with CHD, including angina pectoris and previous myocardial infarction	High	Increased risk of cardiac complications with stress and BP changes	Preoperative cardiac assessment; sedation may be used; minimize stress; enhanced monitoring during and after the procedure
Heart failure	Patients diagnosed with chronic heart failure	High	Risk of cardiac decomposition with changes in BP	Careful preoperative preparation; use of anesthetics with minimal impact on the cardiovascular system; increased cardiac and BP monitoring

Let us consider the figures presented in the table in more detail. Patients with controlled hypertension constitute a relatively low-risk group for dental procedures using anaesthesia⁴. These patients have a diagnosis of hypertension and are taking antihypertensive medications that effectively maintain their blood pressure within normal limits. Due to drug therapy, these patients usually do not experience significant changes in blood pressure in response to the induction of anaesthesia.

However, despite the low risk, certain precautions must be taken to ensure patient safety. Regular blood pressure monitoring should be carried out at all stages of dental treatment: before, during and after the procedure. This allows any abnormalities to be detected in time and treatment to be adjusted if necessary⁵.

The use of standard anesthetic protocols appropriate for patients with hypertension is also an important recommendation. These protocols include the selection of anesthetics and techniques that minimize the risk of significant blood pressure fluctuations. If it is necessary, the use of anesthetics without the addition of adrenaline may be considered to avoid the transient increase in blood pressure that can occur when vasoconstrictor anesthetics are used⁶.

It is also important to consider that patients with controlled hypertension should continue taking their antihypertensive medication as prescribed by their physician and not discontinue treatment before the dental procedure. Interruption of medication may lead to uncontrolled fluctuations in blood pressure and an increased risk of complications⁷.

Patients with controlled hypertension can safely undergo dental procedures using anesthesia provided that blood pressure is carefully monitored and standard anesthetic protocols are followed. This approach can minimize the risk of complications and ensure comfortable and safe treatment.

Patients with uncontrolled hypertension represent an intermediate-risk group for dental procedures requiring the use of anaesthesia. These patients have a diagnosis of hypertension, but their blood pressure remains high despite medication. Uncontrolled hypertension increases the likelihood of complications during anaesthesia induction, including the risk of hypertensive crisis, myocardial infarction or stroke⁸.

For patients with uncontrolled hypertension, a more thorough preoperative preparation is required. The first step is to stabilize blood pressure. This may require a change in antihypertensive therapy regimen under the supervision of a general practitioner or cardiologist. It is important to ensure that the patient's blood pressure is within tolerance before starting dental treatment.

During dental procedures, it is recommended to use anaesthetics without adrenaline to avoid a sudden increase

in blood pressure associated with the vasoconstrictor effect of adrenaline. The choice of an anaesthetic should be made with consideration of minimizing the cardiovascular risk to the patient⁹.

Patients with uncontrolled hypertension represent an average risk group for dental procedures requiring the use of anesthesia. These patients are diagnosed with hypertension, but their blood pressure remains high despite drug treatment. Uncontrolled hypertension increases the likelihood of complications during anesthesia, including the risk of hypertensive crisis, myocardial infarction, or stroke⁸.

Enhanced blood pressure monitoring is mandatory for patients with uncontrolled hypertension. Blood pressure measurements should be taken before, during and after dental procedures to detect any changes in time and take appropriate action. In case of hypertensive crisis or other complications, medical staff should be prepared to intervene immediately¹⁰.

In addition, the dentist should be aware of all medications that the patient is taking and possible interactions between anesthetics and antihypertensive drugs. This avoids adverse reactions and improves the overall safety of the procedure.

Patients with uncontrolled hypertension should keep their dentist informed of their condition and any changes in their health or treatment. Open communication between the patient, dentist and the prescriber of hypertension treatment promotes better planning and risk reduction¹¹.

Accordingly, it can be concluded that patients with uncontrolled hypertension require special attention and careful preparation before dental procedures using anesthesia. Stabilization of blood pressure, use of non-adrenaline anesthetics and increased monitoring can minimize risks and ensure safe and effective treatment.

Patients with secondary hypertension are a high-risk group for dental procedures using anesthesia. Secondary hypertension is caused by other medical conditions such as kidney disease, endocrine disorders (e.g. hyperthyroidism), obstructive sleep apnoea and other pathologies. These underlying conditions can significantly complicate blood pressure control and increase the risk of complications during dental intervention¹².

A comprehensive approach is needed for patients with secondary hypertension, including the following. A thorough physical examination should be performed to identify and control the underlying disease causing hypertension. This may include laboratory tests, instrumental investigations and consultations with subspecialists (e.g. nephrologists, endocrinologist). Treatment of the underlying pathology should be optimized as much as possible prior to dental intervention.

Before dental procedures, consultation with the doctors who are treating the patient's underlying disease is

recommended. These specialists can provide important information about the patient's condition and treatment recommendations, which will help the dentist and anesthesiologist to make the right decisions. In some cases, it may be necessary to co-manage the patient by several specialists to ensure the safety and efficacy of treatment¹³.

It is also important to use anesthetics and techniques adapted to the patient's condition and the specificity of the underlying disease. For example, it may be necessary to avoid anesthetics with adrenaline to avoid a sudden increase in blood pressure. Anesthesia should be supervised by an anesthesiologist with experience in high-risk patients.

Continuous monitoring of blood pressure and other vital signs during and after the procedure. This allows any abnormalities to be detected in time and the necessary corrective measures to be taken. Specialized monitoring equipment may be used, especially in patients with serious cardiovascular disease.

Medical staff should be prepared to respond immediately in the event of a hypertensive crisis or other complications. This includes having the necessary medications and equipment for emergency care. The dental clinic should be equipped to provide emergency care and have clear emergency protocols¹⁴.

Patients with secondary hypertension should inform the dentist in advance about their condition and all medications taken. Open and full communication between the patient, dentist and treating physicians allows for optimal conditions for safe dental procedures.

Thus, patients with secondary hypertension require an individualized approach and close monitoring of both the underlying disease and blood pressure. Comprehensive screening, specialist advice and adapted anesthesia protocols are key to minimizing risks and ensuring patient safety during dental treatment.

Patients with coronary heart disease (CHD) are also included in the high-risk group for dental procedures, especially if the use of anesthesia is required. CHD includes various conditions such as angina pectoris and a history of myocardial infarction. These conditions are characterized by impaired blood supply to the heart muscle, which can lead to complications in response to stress, changes in blood pressure and other exposures that occur during dental interventions¹⁵.

A comprehensive assessment of the patient's cardiovascular status should be performed prior to the dental procedure. This may include a craniological examination, ECG, stress tests and other diagnostic techniques to determine the current stability of the condition and risks. The cardiologist can advise on the optimal approach to the procedure, including possible limitations and specifics of patient management.

Dental treatment should be carried out with minimal stress to the patient. It is important to use techniques that will help to reduce stress and anxiety levels, such as sedation or local anesthetics that do not significantly increase blood pressure¹⁶.

The dental clinic should be prepared to use technologies and techniques that reduce stress, such as creating a calm environment and performing procedures in comfortable conditions. The choice of anesthetics should be adapted to the patient's condition. Anesthetics with minimal cardiovascular effects should be preferred. Anesthetics with adrenaline should be used with caution or avoided as they may cause an increase in blood pressure and heart rate.

It is necessary to take into account the interaction of anesthetics with medications that the patient is taking for the treatment of CHD. During and after the procedure, continuous monitoring of blood pressure, heart rate and other vital signs should be carried out. This will allow timely detection of changes in the patient's condition and promptly respond to them.

It is important to ensure the availability of the necessary medical equipment and medicines for emergency care in case of cardiac complications.

The planning of a dental procedure should take into account all features of the patient's condition, including their cardiac status and current treatment. The clinician should ensure that the procedure is carried out in accordance with the cardiologist's recommendations and in an environment that minimizes risk. If necessary, consideration may be given to inpatient options where equipment is available for continuous monitoring and possible emergency treatment¹⁷.

Patients with CHD should provide the dentist with full information about their condition and any medications they are taking. This will help to create a safe and effective treatment plan that considers risks and minimizes the likelihood of complications.

It can be concluded that patients with coronary heart disease require special attention and a comprehensive approach during dental procedures. Preoperative cardiac assessment, minimization of stress, careful choice of anesthetics and enhanced monitoring are key factors to ensure the safety and efficacy of treatment¹⁸.

Patients with heart failure represent a particularly high-risk group for dental procedures, especially if anesthesia is used. Heart failure is characterized by the inability of the heart to pump blood efficiently, which can lead to circulatory disturbances and fluid accumulation in tissues. This condition can complicate dental interventions and increase the risk of various cardiovascular complications. A comprehensive approach is required for patients with heart failure.

Before dental intervention, it is important to perform a comprehensive medical examination to assess the current status of heart failure and its control. This may include cardiac examination, chest radiography, blood tests and renal function assessment. Treatment of heart failure should be adjusted and therapy with diuretics, ACE inhibitors and other drugs optimized to minimize symptoms and improve the patient's general condition prior to the procedure.

When choosing anesthesia for a patient with heart failure, preference should be given to techniques that minimize cardiac workload and do not cause abrupt changes in blood pressure or heart rate. Local anesthetics may be preferable to general anesthetics, which can cause significant fluctuations in hemodynamic parameters.

If general anesthesia is necessary, it is important to use anesthetics and drugs that have minimal cardiovascular effects.

During the procedure, continuous monitoring of vital signs, including blood pressure, heart rate, oxygen saturation, and other parameters should be performed to detect changes and take action in a timely manner. Post procedural monitoring is also important to detect and correct possible complications, such as oedema or cardiac decomposition¹⁹.

For minimizing the stress and physical strain on the patient, procedures should be carried out in a comfortable and controlled environment. An important measure is to eliminate factors that can make heart failure worse, such as prolonged sitting or the need to stay in one position for long periods of time. It may be necessary to perform procedures in an inpatient setting or in specialized clinics where the necessary medical support is available.

Medical staff should be prepared for emergencies such as worsening heart failure or the development of pulmonary oedema. For this purpose, the necessary medications and emergency equipment should be available and clear protocols for dealing with complications should be prepared²⁰.

Patients with heart failure should inform the dentist in advance about their condition and all current treatments. Open communication between the patient, dentist and cardiologist allows for an optimal treatment plan that minimizes risks and ensures safe dental procedures.

During dental procedures, especially those involving anesthesia, it is important to consider the risks associated with changes in blood pressure (BP). To ensure patient safety and minimize potential complications associated with BP fluctuations, protocols need to be developed and implemented to help manage these risks effectively. Let us consider the key aspects of developing such protocols.

Accordingly, the use of anesthesia in dentistry requires careful management of patients with high BP and cardiovascular disease. Adequate blood pressure management when using anesthesia in dentistry is a critical aspect to ensure patient safety. Implementation of appropriate guidelines and protocols will minimize risks and improve the quality of dental care for patients with different BP values.

Keywords: blood pressure, anesthesia, dentistry, safety, hypertension, cardiovascular disease, local anesthesia, general anesthesia.

1. Preoperative assessment

1.1 Medical history and examination.

A complete medical history of the patient should be collected, including information on the presence of hypertension, cardiovascular disease, current treatment, and medications. It is also important to perform a thorough physical examination, including blood pressure measurements, cardiac examination, blood tests, and other diagnostic procedures as needed.

1.2 Consultation with specialists.

For high-risk patients (e.g. those with uncontrolled hypertension, ischaemic heart disease or heart failure), a consultation with a cardiologist is recommended to assess the condition and provide advice on risk management.

1.3 Optimizing treatment.

It is important to ensure that the patient is taking their antihypertensive medication as prescribed by the physician and, if it is necessary, adjust therapy to achieve stable BP control prior to the procedure.

2. Anaesthesia protocols

2.1 Selection of anaesthetics.

If there is a risk of elevated BP, anaesthetics without adrenaline should be preferred to avoid vasoconstrictor effects that may increase blood pressure. Interactions of anaesthetics with medications that the patient is taking, especially antihypertensives, should be considered.

2.2 Minimizing stress:

It is important to use sedation to reduce patient stress and anxiety, which can contribute to BP stability, and to provide a comfortable environment for the patient, including management of temperature, noise level and duration of the procedure.

3.1 Monitoring before and during the procedure.

Blood pressure should be measured continuously or regularly before, during and after the dental procedure. For this purpose, it is advisable to use automatic monitors for accuracy and convenience. It is also important to record all BP readings and note any deviations from normal values.

3.2 Responding to changes in BP.

Standard operating procedures should be developed and implemented for rapid response to changes in BP, including the administration of medication to stabilise BP and emergency treatment if necessary. It is also important to train health-care staff in the correct actions to take in the event of a hypertensive crisis or other BP-related complications.

4 Post-operative follow-up

4.1 Post-procedure monitoring.

It is important to continue monitoring blood pressure after the procedure, especially in high-risk patients. The patient's general condition and the presence of possible complications such as oedema or palpitations should be assessed.

4.2 Instructions for the patient.

The patient should be given advice on monitoring and management of BP after the procedure, including instructions on medication and lifestyle, as well as information on the need for follow-up visits and contact in case of problems.

5. Documentation and analysis

5.1 Documentation of protocols. It is essential that protocols for managing the risks associated with BP changes are prepared and documented. These should be based on best practice and clinical guidelines. It is important to regularly review and update protocols to reflect new evidence and changes in medical guidelines.

5.2. Analyzing and improving.

The incidence of complications related to BP changes should be analyzed to identify causes and develop future prevention measures.

The protocols presented will help to minimize the risks associated with changes in blood pressure and ensure safe dental procedures for patients with cardiovascular disease.

Blood pressure plays a critical role in the management of patient safety during dental procedures. BP fluctuations can lead to serious complications, especially when anesthesia is used. Therefore, effective BP control before, during and after the procedure is essential to ensure patient safety.

Patients with various forms of hypertension and cardiovascular disease require an individualized approach. Controlled hypertension has a relatively low risk of complications when standard anesthesia protocols are used. However, uncontrolled hypertension, secondary hypertension, ischemic heart disease and heart failure require more careful preparation and a specific approach to minimize risks.

A thorough preoperative assessment, including history taking, physical examination and consultation with specialists, is necessary to ensure safety. Optimizing treatment of the underlying disease and adjusting therapy are important steps to prepare the patient for the procedure.

The choice of anaesthetics and anesthetic techniques should be adapted to the patient's condition. Anaesthetics without adrenaline are preferable for patients at high risk of BP elevation. Continuous monitoring of vital signs, such as blood pressure and heart rate, is essential to detect and respond to possible changes in time. After the procedure, it is important to continue monitoring the patient, monitoring BP and general condition. Patients should be given clear instructions on postoperative BP management and information on the need for follow-up visits.

Documentation of protocols and standards for managing the risks associated with BP changes is necessary to ensure a systematic approach and improve the quality of care. Regular updating of protocols based on new data and clinical research promotes patient safety.

Training medical staff, including dentists and anesthetists, in the correct methods of monitoring and responding to BP changes is key to effective risk management. Trained personnel are able to ensure safe procedures and respond quickly to potential complications.

The interaction between blood pressure and anesthesia in dentistry requires a careful and comprehensive approach. Individualized protocols based on careful patient assessment, appropriate choice of anesthesia, continuous monitoring and quality postoperative care are key to ensuring safe and effective dental procedures.

1. Burgette JM, Quiñonez RB. Cost-effectiveness of Treating severe childhood caries under general anesthesia versus conscious sedation. *JDR ClinTransRes*. 2018;3(4):336–45.
2. Saxen MA, Tom JW, Mason KP. Advancing the Safe delivery of office-based dental anesthesia and sedation. *AnesthesiolClin*. 2019;37(2):333–48.
3. Vanderheyden PJ, Williams RA, Sims TN. Assessment of ST segment depression in patients with cardiac disease after local anesthesia. *J Am Dent Assoc*. 1989;119:407–12.
4. Fernieini EM, Bennett JD, Silverman DG, Halaszynski TM. Hemodynamic assessment of local anesthetic administration by laser Doppler flowmetry. *Oral Surg Oral Med Oral Pathol Oral RadiolEndod*. 2001;91:526–30.
5. Neves RS, Neves IL, Giorgi DM, Grupi CJ, Cesar LA, Hueb W, et al. Effects of epinephrine in local dental anesthesia in patients with coronary artery disease. *Arq Bras Cardiol*. 2007;88(5):545–51.
6. Conrado VC, de Andrade J, de Angelis GA, de Andrade AC, Timerman L, Andrade MM, et al. Cardiovascular effects of local anesthesia with vasoconstrictor during dental extraction in coronary patients. *Arq Bras Cardiol*. 2007;88(5):507–13.
7. Elad S, Admon D, Kedmi M, Naveh E, Benzki E, Ayalon S, et al. The cardiovascular effect of local anesthesia with articaine plus 1:200,000 adrenalin versus lidocaine plus 1:100,000 adrenalin in medically compromised cardiac patients: a prospective, randomized, double blinded study. *Oral Surg Oral Med Oral Pathol Oral RadiolEndod*. 2008;105(6):725–30.
8. Gazal G. Is prilocaine safe and potent enough for use in the oral surgery of medically compromised patients. *Saudi Med J*. 2019 Jan;40(1):97–100.
9. Plakhotnik J, Zhang L, Estrada M, Coles JG, Lonnqvist PA, Maynes JT. Local Anesthetic Cardiac Toxicity Is Mediated by Cardiomyocyte Calcium Dynamics. *Anesthesiology*. 2022 Dec 1;137(6):687-703.
10. Donald MJ, Derbyshire S. Lignocaine toxicity; a complication of local anaesthesia administered in the community. *Emerg Med J*. 2004 Mar;21(2):249-50.
11. Brandão CMA, Pomerantzeff PMA, Souza LR, Tarasoutchi F, Grimberg M, Oliveira SA. Risk factors to hospital mortality valvar reoperations. *Rev Bras Cir Cardiovasc*. 2002;17:345–51.
12. Gorenstein C, Andrade L. Validation of a Portuguese Version of the Beck Depression Inventory and the State-Trait Anxiety Inventory in Brazilian subjects. *Brazilian J Med Biol Research*. 1996;29:453–57.
13. Niwa H, Sugimura M, Satoh Y, Tanimoto A. Cardiovascular response to epinephrine-containing local anesthesia in patients with cardiovascular disease. *Oral Surg Oral Med Oral Pathol Oral RadiolEndod*. 2001;92:610–6.
14. Grinberg M. In: *ValvopatiasAdquiridas: umavisãogeral*. Porto CC, editor. Doenças do Coração Rio de Janeiro: Guanabara Koogan; 1998. pp. 703–708.
15. Torp KD, Metheny E, Simon LV. Lidocaine Toxicity. 2022 Nov 21. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023.
16. Usami N, Tooyama M, Oda W, Kawamoto Y, Kishimoto S, Minamide A, et al. A case of wide QRS tachycardia after the local administration of Epinephrine to reduce bleeding during general anesthesia. *AnesthProg*. 2022 Jun 1;69(2):38-40.
17. Guimaraes CC, Lopes LC, Bergamaschi CC, Ramacciato JC, Silva MT, Araújo JO, et al. Local anaesthetics combined with vasoconstrictors in patients with cardiovascular disease undergoing dental procedures:systematic review and meta-analysis. *BMJ Open*. 2021 Jul 15;11(7):e044357.
18. Tom J. Management of Patients With Cardiovascular Implantable Electronic Devices in Dental, Oral, and Maxillofacial Surgery. *AnesthProg*. 2016;63(2):95-104.
19. Sato K, Miyamae Y, Kan M, Sato S, Yaegashi M, Sakanoue W, Sakai H, Sakamoto S, Vaba K. Accelerated Idioventricular Rhythm Following Intraoral Local Anesthetic Injection During General Anesthesia. *AnesthProg*. 2021 Dec 1;68(4):230-4.
20. Neves I, Scanavacca M, Sacilotto L, Olivetti N, Hachul D, et al. Arrhythmic Events in Patients With Cardiac Channelopathies Submitted to Local Dental Anesthesia. A Randomized Pilot Study. *Circulation*. 2017;136