

FEATURES OF DENTAL IMPLANTATION IN PATIENTS WITH
HYPERTENSION DISEASE

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Annotation Today, concomitant somatic pathology requiring dental implantation speaks for the relevance of this problem and its practical significance in general. The purpose of the study: Improving methods of prevention and predicting complications that arise after dental implantation surgery in patients with hypertension, and developing tactics for preoperative preparation and determining diagnostic criteria for selecting patients with adentia with concomitant disease in the process of planning dental implantation. An algorithm for the actions of the medical staff of the dental clinic has been created, which makes it possible to achieve an objective assessment of both the general condition of the patient with hypertension and the local status of the tissues in the area of the planned intervention. Exact criteria have been developed to determine the very possibility of endosseous implantation. In accordance with them, this manipulation is possible only in cases of hypertension of I and II degrees of severity.

Keywords: dental implantation, hypertension, arterial hypertension, dental implants, osseointegration, osteoporosis.

Relevance. To date an integrated approach to dental implantation in persons with secondary adentia against the background of concomitant diseases and prevention of various complications in patients with hypertension, increasing the effectiveness of treatment, introducing effective methods of treatment of the disease remains relevant throughout the world.

In this regard, it is necessary to expand the scope of research in the direction of increasing the level of identification of the functional state in the oral cavity in patients with edentulism in the maxillofacial area, improving the quality of surgical practice aimed at eliminating defects in the dentition using an

integrated approach in combination with dental implantation of the jaws in patients with hypertension.

The need to reduce the recovery time of patients before and after implantation of dental implants (DI) seems global and deserves attention. One of the promising areas is the improvement of methods for direct implantation after tooth extraction directly into the alveolus, which is clearly the most relevant and economically proven improvement in dental care. However, the major disadvantages of these methods are poor adaptation and insufficient stability of installed implants in the tooth alveolus, as well as low osseointegration into the bone.

To date, no criteria have been developed for the possibility of expanding the indications for implantation.

Today, concomitant somatic pathology requiring dental implantation speaks for the relevance of this problem and its practical significance in general.

In our country, a number of authors are working on new methods to combat complications of concomitant diseases and restore acquired defects of the upper and lower jaws. In particular, Akbarov A.N. (2021) studied the microflora of the prosthesis obtained from patients who had Covid-19. Manannov Zh.Zh. (2023) proposed preoperative preparation of patients with coronavirus infection during implantological treatment of patients, Kamilov Kh.P. (2021) studied and refined therapeutic treatments for Covid-19 survivors. Scientists Khasanov A.I., Baykhodzhaeva E.B. (2022) proposed surgical methods for correcting defects of the upper jaw acquired as a result of Covid-19. Kudratov Sh.Sh. (2020) optimized implant treatment for patients with diabetes mellitus. Shirynbek Ilyas, Pulatova B.Zh. (2023) described the author's method of alveolar ridge augmentation for bone loss and atrophy.

In this regard, effective implantological treatment, prevention and timely diagnosis of postoperative complications associated with the presence of underlying diseases and previous coronavirus pathology remains one of the current areas that require research work.

The purpose of the study: Improving methods of prevention and predicting complications that arise after dental implantation surgery in patients with hypertension, and developing tactics for preoperative preparation and determining

diagnostic criteria for selecting patients with adentia with concomitant disease in the process of planning dental implantation.

Materials and methods of research.

Clinical and dental examination of patients

In order to determine diagnostic criteria, we diagnosed 87 and implanted 77 patients operated on at the Department of Maxillofacial Surgery and at the Polyclinic of Surgical Dentistry of the Tashkent State Dental Institute. Characteristics of patients by gender and age are presented in Table 1

Characteristics of patients by gender and age

Floor		Age (number of years)			Total
		40-44	45-59	60-65	
Men	Absolute	7	35	10	54
	%	9.2%	39.1%	12.6%	61.2%
Women	Absolute	5	13	17	35
	%	4.7%	15.8%	17.5%	38.8%
Total	Absolute	eleven	49	26	88
	%	13.8%	55.2%	31%	100%

Preoperative preparation of patients consisted of the following stages [1,2]:

- clinical and biochemical blood examination (complete blood count, coagulogram; PCR analysis for the presence of Covid);
- analysis for hepatitis B, C, infection with syphilis, human immunodeficiency virus;

At subsequent stages, X-ray examinations and photographs of the patient were performed, monitoring information in the preoperative, operational and postoperative periods for the documentary basis of the study.

The inspection data was compiled and entered into Table 2.

Table 2 Clinical symptoms of patients

Symptoms	FULL NAME.
Soft tissues are swollen	yes/no
Pain	yes/no
Hyperemia, edema	yes/no
Increased body temperature	yes/no
Lymphadenitis	yes/no
Suture failure	yes/no

The observed patients were distributed according to nosology and gender (see Table 3)

Table 3 Characteristics of patients by nosology and gender

Background disease	Number of patients		Floor	
	N	%	Men	Women
Chronic ischemic heart disease	thirty	35.56%	18	13
Arterial hypertension	37	41.27%	17	20
CG-persons without concomitant	20	21.99%	9	eleven
Total	87	100%	44	43

The examination of patients consisted of completing medical documentation; anamnestic data, external examination and local status of the oral cavity were collected; damage to dental tissues by the carious process, a description of the clinical picture when analyzing the periodontal complex, namely, the indices were analyzed: PI index, PMA (papillary-marginal-alveolar) [10,11].

Laboratory examination methods.

The examination of patients included analysis of the following biochemical indicators of blood status: TC (Total cholesterol); LDL cholesterol (Low density lipoprotein cholesterol); HDL (High Density Lipoprotein Cholesterol);

Orthopantomography and tomography were used; the study made it possible to obtain complete materials.

The photographing stage and the area of the implantation itself were carried out during implantation, 14 days, 3 months after the end of the operation.

Method of X-ray examination of patients

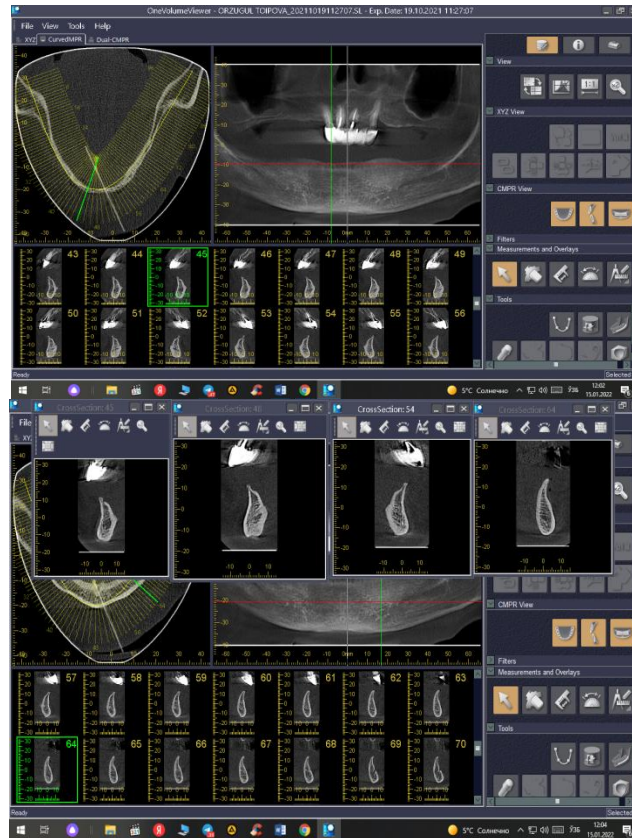
47 patients were examined radiographically. A dental tomograph was used Veraviewepocs 3DR100, J.Morita (Japan), shown in Fig. 1



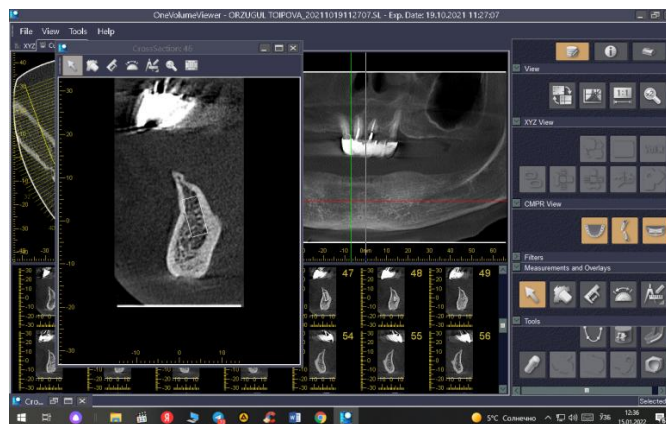
Fig. 1: Veraviewepocs 3DR100 tomograph, J.Morita (Japan).

During the postoperative stage, orthopantomograms made it possible to determine the state of the peri-implant tissue in the bone, when there was no need for a 3-dimensional study of the implantation area. OPTG has the advantage that it eliminates irradiation of the patient, as well as dynamic surveillance with a cone-beam computed tomography apparatus.

Computed tomography (CT) provides the advantage of high-resolution three-dimensional imaging for precise virtual positioning of the implant and clarification of the bone condition, reflecting its density, for the purpose of surgical interventions.



A)



b)

Fig.2 a and b. The patient's lower jaw, produced by MSCT,

for the purpose of the best installation of the DI and the creation of a guide template using computer simulation

Multislice CT was performed before the surgical stage of dental implantation.

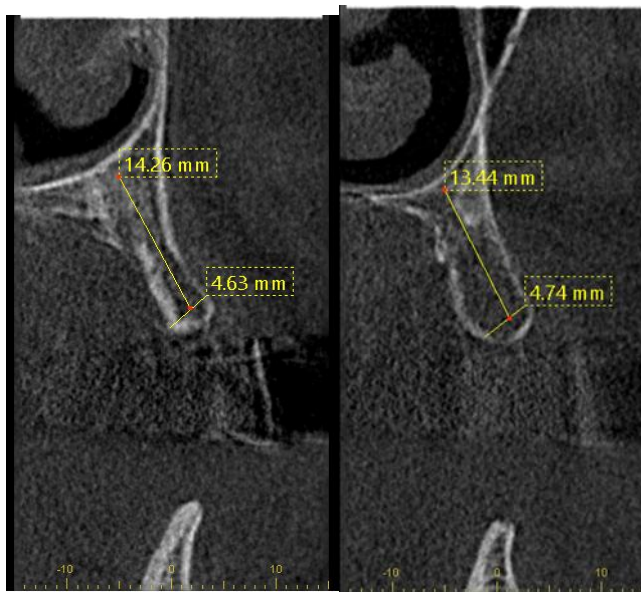
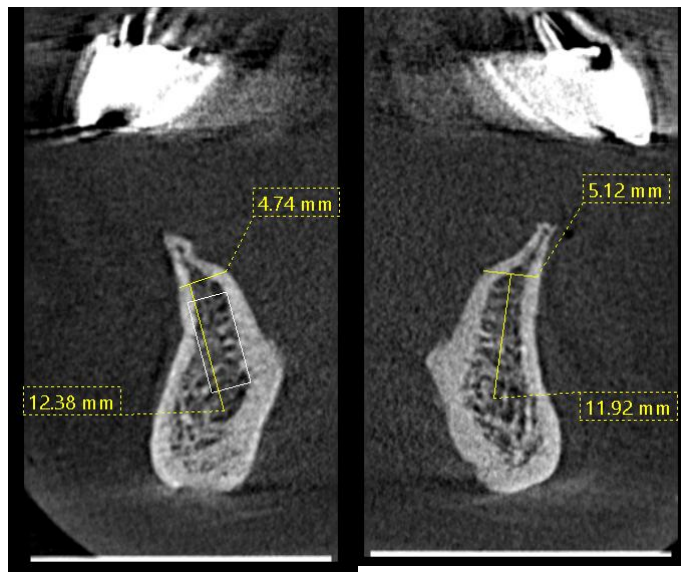


Fig.3. MSCT n/h and v/h. Transversal projection.

Calculation of sufficient bone tissue volume.

Research results and discussion:

In the development of diseases of the cardiovascular system, the main pathognomonic link is atherosclerosis, in connection with this, during the biochemical examination of blood serum, close attention was paid to a group of tests from the lipid composition (TC, LDL-C, HDL-C).

In our study, in addition to lipid parameters, blood coagulation was analyzed, since it is considered very necessary in every surgical procedure.

For arterial hypertension and coronary heart disease of I and II degrees (CIHD I, II), as well as angina pectoris of class I and II, the value of TC level in the blood corresponds to 5.74 ± 1.23 ; 6.24 ± 1.15 and 5.75 ± 1.45 ; 6.35 ± 1.45 mmol/liter. The above indicators reach physiological standards.

In degree I of severity, the LDL level was 3.84 ± 1.35 mmol/liter, in grades II and III it corresponded to 4.31 ± 1.08 mmol/liter and 4.75 ± 1.27 mmol/liter. A history of angina pectoris leads to the distribution of LDL values in the following order: first FC of the disease - 4.23 ± 1.12 mmol/liter;

The fact of increased activation of the sympathetic-adrenal system is described everywhere in the literature, therefore, in persons with angina pectoris class III and IV, there is an increase in the blood coagulation system.

The discussed problem exactly confirms the provisions of foreign sources, that atherosclerotic changes are probable, but not always an obligatory background accompaniment in the pathogenesis of the development of CHD and hypertension.

According to literary sources, there is information: in the absence of an angina attack, no special lesions are detected.

This observation was also observed in our work: with arterial hypertension of the second and third degrees and angina pectoris of functional class IV, changes in electrocardiograms were observed.

NOSOLOGY	Total cholesterol	Low density drug	High density drug
Arterial			
I	5.91±1.34 P> 0.05	3.93±1. P > 0.05	1.53±0.24 P > 0.05
II	6.14±1.25 P> 0.05	4.22±1. P >0.05	1.24±0.32 P > 0.05
III	6.25±1.34 P> 0.05	4.78±1. P > 0.05	1.80±0.22 P > 0.05
Stenocardia			
I	5.82±1.34 P> 0.05	4.15±1. P > 0.05	1.48±0.39 P > 0.05
II	6.13±1.34 P> 0.05	4.28±1. P > 0.05	1.36±0.34 P > 0.05
III	6.52±1.43 P> 0.05	4.28±1. P > 0.05	1.08±0.27 P > 0.05
IV	7.43±1.65 P> 0.05	5.23±1. P > 0.05	0.97±0.14 P = 0.05
KG	5.46±1.23	3.8±1.14	1.9±0.4

The main indicators of the blood lipid profile are presented in table 4.

Table4

Main indicators of blood lipid profile (M ±m) P mmol/l/liter

In the study groups, when analyzing the data obtained, the reliability of the dynamics of the significance of biochemical parameters was $\geq 5\%$ in relation to healthy individuals, which means the obtained differences in the indicators of all groups are statistically insignificant.

The mobility of dental implants installed in the lower jaw according to A-PTV on the 10th day (M±m, P) was 3.1±0.5 in patients with hypertension with degree I severity, and 3.3 in patients with hypertension with degree II. ±0.2. These data are presented in Table 5.

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Pathol	PTV	
AG		
I	3.1 \pm 0.5	P > 0.05
II	3.3 \pm 0.2	P > 0.05
III	*	*
ST		
I	2.9 \pm 0.3	P > 0.05
II	3.1 \pm 0.4	P > 0.05
III	*	*
IV	*	*
KG	2.7 \pm 0.4	

*- studies were not carried out

Abbreviation A-PTV (. Average Periotest Value) – Periotestometry based on average values

In cases of hypertension - stage I, systole was 126 \pm 5 mmHg, diastole was 87 \pm 4 mmHg, (p>0.05), heart rate - 75 \pm 7 beats/min, P>0.05. In situations of hypertension - II degree: systole. Approximately determined was 132 \pm 3 mmHg, diastole in the range of 89 \pm 4 mmHg, heart rate 81 \pm 3, level of significance (P) > 0.05.

The mobility of dental implants in the lower jaw according to the average numerical values on the 30th day was -1.3 \pm 0.1 in group 1 patients; -1.2 \pm 0.2 in group 2 (Table 6).

Table 6

Mobility of DI according to their average data (lowerjaw), day 30 (M \pm m, P)

Diseases	PTV
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AG		
I	-1.3±0.1	P "0.05
II	-1.2±0.2	P ~ 0.05
III	*	*
ST		
I	-1.1±0.3	R « 0.05
II	-1.0±0.4	P ~ 0.05
III	*	*
IV	*	*
KG	-1.8±0.2	

*- research not carried out

Conclusions:

1. An algorithm for the actions of the medical staff of the dental clinic has been created, which makes it possible to achieve an objective assessment of both the general condition of the patient with hypertension and the local status of the tissues in the area of the planned intervention.

2. Exact criteria have been developed to determine the very possibility of endosseous implantation. In accordance with them, this manipulation is possible only in cases of hypertension of I and II degrees of severity.

Bibliography:

1. Akhmetzyanov A. M. Improving the methods of preoperative diagnosis and planning of orthopedic treatment with dental implants: Dis... candidate of medical sciences / Kazan State Medical University. - 2012. - 131 p.
2. Bazikyan E. A. Principles of prediction and prevention of complications during dental implantation (clinical and laboratory study): Dissertation... Doctor of Medical Sciences/Moscow State Medical and Dental University. - 2018.-250 p.
3. Dolgalev A.A. Modern approaches to osseointegration of dental implants // Current issues in medicine: Collection of scientific papers based on the materials of the scientific and practical conference "New technologies in dentistry, May 23-24, 1996. / Ed. IN AND. Grechishnikova. - Stavropol, 1996.

- P. 3132

4. Nazarova Sh.H., Nazarov Z.Z., Pulatova B.Zh., Dzhakhangirova D.A. The state of bone tissue when planning dental implantation in patients with somatic diseases. JOURNAL OF MEDICINE AND INNOVATIONS №3(7) (August 2022) ISSN 2181-1873(Online)

5. Ivanov S.Yu., Lomakin M.V. and others. Development and clinical application of osseointegrable implants of the LIKO system. // Selected reports and lectures on dentistry. M.: Medpress, 2000, pp. 35-42

6. Kalashnikov O. Yu. Prediction of complications of dental implantation based on indicators of lipid peroxidation and antioxidant systems: Dissertation ... candidate of medical sciences / Moscow State Medical and Dental University. 2001.-212 p.

7. Kozlov V.A., Artyushenko N.K., Shalak O.V. and others. Ultrasound and Dopplerography in assessing the state of hemodynamics in the tissues of the neck, face and oral cavity in normal conditions and in some pathological conditions. Guide - atlas - St. Petersburg: LLC "SP Minimax", 2000 - 30 p.

8. Mirgazizov Airat Marselevich. Improving the structural elements of dental implants based on the selection of optimal implantation materials and prosthetic methods. Thesis ... candidate of medical sciences / Institute for Advanced Studies of the Federal Administration of Medical Biological and Extreme Problems. - 2002. - 132 p.

9. Morozov K.A. Method for measuring tooth mobility / Current issues in dentistry. Collection of scientific works for the 90th anniversary of V.Yu. Kurlyandsky. Moscow.-2018.- P. 148 - 149.

10. Wenz H. J., Bartsch J., Wolfart S. & Kern M. Osseointegration and clinical success of zirconia dental implants: a systematic review. International Journal of Prosthodontics. 2008; 21:27-30.

11. Vered Y., Zini A., Mann J. Teeth and implant surroundings: Clinical health indices and microbiological parameters. J. Quintessence International. 2011; 42: 339-344.