

## **CLASSIC IMPLANT -PROSTHETIC THERAPY VERSUS GUIDED IMPLANT -PROSTHETIC THERAPY**

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### **ABSTRACT**

To be able to formulate a favorable treatment plan and in accordance with the clinical situation, it is necessary to know the advantages and disadvantages of TIPC and TIPG, to determine which type of TIP is more accurate, a fact for which the study topic was chosen. The given paper was based on a clinical trial, which evaluates the success of TIPC and TIPG in the case of 4 patients. The location of this study is a private dental office, which used to practice dento-alveolar surgery, in Chisinau between July 2021 and July 2023.

Method and place of selection: during the study period, 122 patients presented themselves to benefit from dental treatment in order to replace different types of dentition. From the group of 122, following the application of the study inclusion and exclusion criteria, the final group was composed of 52 patients. The use of digital technologies and computer tomography in dental treatments offers numerous benefits in treating patients

**Key words:** guided implant -prosthetic therapy, prosthetic stage, classical therapy, digital technologies

### **INTRODUCTION**

Since implant -prosthetic treatments are continuously developing, becoming a field whose practitioners are constantly growing, multiple ways and techniques to perform the given treatment appear. Choosing the right way to perform TIP requires determining both the positive and negative sides of a type of surgery[1-4]. To be able to formulate a favorable treatment plan and in accordance with the clinical situation, it is necessary to know the advantages and disadvantages of TIPC and TIPG, to determine which type of TIP is more accurate, a fact for which the study topic was chosen.

The objectives of the given paper are:

- Evaluation of the complexity of the types of classical and guided surgical interventions :
- Analysis of the results of classic prosthetic implant treatments , comparing them with the results of guided therapy;
- Demonstrating the importance of using guided therapy and continuous development in the implant - prosthetic branch;
- Establishing the indications for the types of implant therapy depending on the clinical situation[5-8].

The choice of the classical or the modern method of implantation is in full agreement with a whole factorial how it related to the general condition of the patient and the local and locoregional status aspects that

influence the final therapeutic decision[9-18].

## MATERIAL AND METHOD

The given paper was based on a clinical trial, which evaluates the success of TIPC and TIPG in the case of 4 patients. The location of this study is a private dental office, which used to practice dento-alveolar surgery, in Chisinau between July 2021 and July 2023.

Method and place of selection: during the study period, 122 patients presented themselves to benefit from dental treatment in order to replace different types of dentition. From the group of 122, following the application of the study inclusion and exclusion criteria, the final group was composed of 52 patients.

Exclusion criteria: Patients younger than 18 years ; Patients older than 65 years; Patients with acute leukemias; Patients with coagulopathy: Hemophilia A, B; Patients with von Willebrand disease ; Patients with osteodystrophies ; Patients with osteopaths; Patients with chronic immunosuppression; Patients undergoing radio- chemo -therapeutic treatments; Pregnant or lactating patients; Uncooperative patients; Patients who refuse prosthetic implant treatment ; Patients treated with biphosphonates .

Inclusion criteria: Patients aged between 18 and 65 years; Patients without acute leukemias; Patients without coagulopathy: Hemophilia A, B; Patients suffering from von Willebrand 's disease ; Patients without osteodystrophies ; Patients without osteopathy; Patients without chronic immunosuppression; Patients not subject to radio- chemo -therapeutic treatments; Non-pregnant and non-lactating patients ; Cooperative patients; Patients who accept prosthetic implant treatment ; Patients not treated with biphosphonates .

Based on the data of the patients included in the study, a database was created in Microsoft Excel. The entire database was transferred and processed in the SPSS Statistics program .

All patients were evaluated clinically and paraclinically, their data being noted in the observation sheet. The clinical examination was performed in sequence: subjective examination, objective examination, exooral examination, endooral examination . The paraclinical

methods used were: cone beam computed tomography and general blood tests at a specialized laboratory. Before the treatment plan was put into action, all the steps were explained to the patients in detail and all permissions were obtained from the patients such as their consent and agreement regarding the treatment, taking pictures and including them as patients in the study.

For all patients, surgical and prosthetic interventions were performed according to the typical protocol, respecting the sequence, depending on the clinical situation.

## RESULTS

The study group included 30 men and 22 women.

Table 1. The distribution of the edentulousness topography

	<b>The edentulousness topography</b>		
	Frequency	Percent	Cumulative Percent
<b>1</b>	13	25.00	25.00
<b>2</b>	15	28.85	53.85
<b>3</b>	10	19.23	73.08
<b>4</b>	5	9.62	82.69
<b>5</b>	9	17.30	100.00
<b>Total</b>	52	100.00	

\*Table codes: 1 – frontal edentulousness, 2 – lateral edentulousness, 3 – terminal edentulousness, 4 – mixed edentulousness, 5 – total edentulousness

According to the given table, we can establish that most of the patients presented with a lateral breach – 15 cases.

Table 2. The distribution of presentation reasons within the sample

	<b>Reasons of presentation</b>		
	Frequency	Percent	Cumulative Percent
<b>1</b>	12	23.08	23.08
<b>2</b>	7	13.46	36.54
<b>3</b>	8	15.38	51.93
<b>4</b>	5	9.62	61.54
<b>5</b>	22	38.46	100.00
<b>Total</b>	52	100.00	

\*Table codes : 1 – pain, 2 – emergency, 3 – rehabilitation, 4 – dysfunctionality, 5 – edentulousness.

From the given table we can conclude that most often, the reason for the presence of patients was pain.

Table 3. The distribution of age groups within the sample

	Age groups		
	Frequency	Percent	Cumulative Percent
<b>1</b>	2	3.85	3.85
<b>2</b>	8	15.38	19.23
<b>3</b>	20	38.46	57.70
<b>4</b>	13	25.00	82.70
<b>5</b>	9	17.31	100.00
<b>Total</b>	52	100.00	

\*Table codes : 1 – 18-25 years, 2 – 25-35 years, 3 – 35-45 years, 4 – 45-55 years, 5 – 55-65 years.

Patients between the ages of 35 and 45 have a higher frequency of achieving TIP.

Table 4. The distribution of implanto-prosthetic therapies within the sample

	Implanto-prosthetic therapies		
	Frequency	Percent	Cumulative Percent
<b>1</b>	29	55.76	55.76
<b>2</b>	23	44.23	100.00
<b>Total</b>	52	100.00	

\*Table codes : 1 – classical implanto-prosthetic therapy, 2 – guided implanto-prosthetic therapy

The type of prosthesis that the patients benefited from in most cases was joint.

Table 5. The distribution of prostheses types within the sample

	Prostheses types		
	Frequency	Percent	Cumulative Percent
<b>A</b>	44	84.61	84.61
<b>B</b>	8	15.38	100.00
<b>Total</b>	52	100.00	

\*Coduri tabel: A – joint prosthesis on implants, B – overdenture on implants.

According to the data in the table, the classic implanto -prosthetic therapy was used more than the guided one.

Table 6. The distribution of prostheses types in association with the implanto-prosthetic therapies

		Implanto-prosthetic therapies				Total	
		1		2		n	%
		n	%	n	%		
<b>Prostheses types</b>	<b>A</b>	2	75.	2	95.	4	84.
	<b>B</b>	2	86	2	65	4	61
		7	24.	1	4.3	8	15.
		14	5	5	38		
	<b>To tal</b>	2	10	2	10	5	10
		9	0.0	3	0.0	2	0.0

\*Coduri: 1 – classical implanto-prosthetic therapy, 2 – guided implanto-prosthetic therapy

A – joint prosthesis on implants, B – overdenture on implants.

Evaluating the data, it can be found that most often the patients were subjected to a classic implanto -prosthetic treatment, combined with a joint prosthesis.

From all the patients included in the study, in order to exemplify the results of TIPC and TIPG, it was chosen to present the following 2 cases in stages.

**1.** Patient UA, 58 years old, presented himself at dental clinic F, where he previously underwent TIPC. He requested the insertion of an implant in place of the root rest specific to tooth 2.4. The observation sheet was drawn up for the patient following the extra- and intra-oral clinical examination. In order to draw up the treatment plan, the patient underwent a paraclinical orthopantomography examination , as well as general blood tests at a specialized laboratory. After establishing the treatment plan, the plan was explained to the patient, along with the stages and materials that will be used, rules that must be followed and indications, contraindications after TIP. Before the treatment plan was put into action, all the steps were explained to the patient in detail and all permissions were obtained from the patients such as their consent and agreement regarding the treatment, taking pictures and including them as patients in the study.

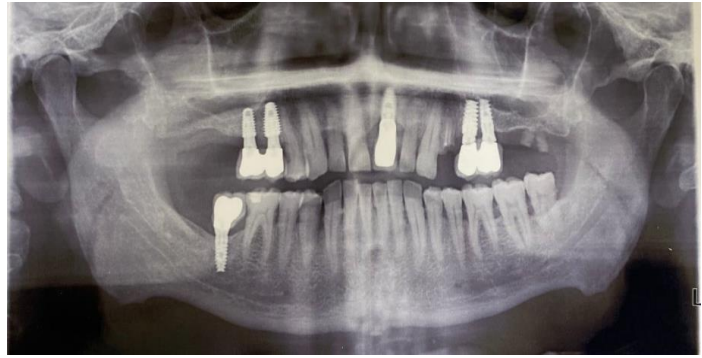
The established treatment plan was:

- Making the patient aware of the need to continue to maintain as rigorous a hygiene as possible, using primary, secondary and auxiliary methods of sanitation. The use of bacterial plaque revealers to establish the correctness of oral hygiene has been recommended.

- Cleaning the oral cavity by performing piezoelectric scaling above and below the gums, airflow and brushing .
- Carrying out the surgical stage: atraumatic extraction of the tooth-specific root rest 2.4. to allow the insertion of an immediate post-extraction implant .
- Intraosseous implant insertion ;
- Treatment delay for a minimum of 6 months until the successful integration of the intraosseous implant .
- Realization of the prosthetic stage: impression and prosthesis of the implant;
- Patient monitoring.(Fig.1, Fig.2)

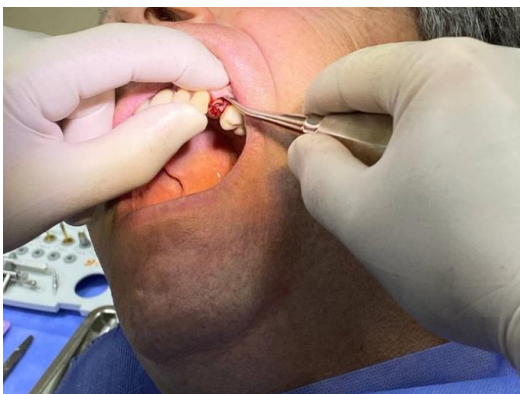


**Fig.1** Intraoral appearance



**Fig. 2** Ortopantomography

Extraoral and intraoral mucous membranes were disinfected with 70% alcohol solution, then topical anesthesia, 10% lidocaine solution, followed by periapical and palatal anesthesia infiltrative with Septanest anesthetic 1:200 000. The next stage was the extraction of the root rest specific to the tooth 2.4(Fig.3, Fig.4).



**Fig.3** Tooth extraction 2.4.



**Figura 4** The post-extraction appearance of the alveolus

Tooth extraction 2.4. it was performed minimally invasively, atraumatically , with the help of the right elevator.

The Lindemann bur was removed, followed by the application of the bur with a diameter of 3 mm and a length of 14 mm.

Afterwards, burs with increasing diameter were used in stages to reach the diameter corresponding to the implant chosen for making TIP

Until the healing abutment was screwed in, antibiotic paste was applied to prevent infection(Fig.5)



Fig. 5 Aspects of the intraoperative implant application protocol

After applying the healing bont, a flap with a large apical base was made, to allow optimal healing of the mucosa. The post-operative imaging evaluation was done(Fig.6).

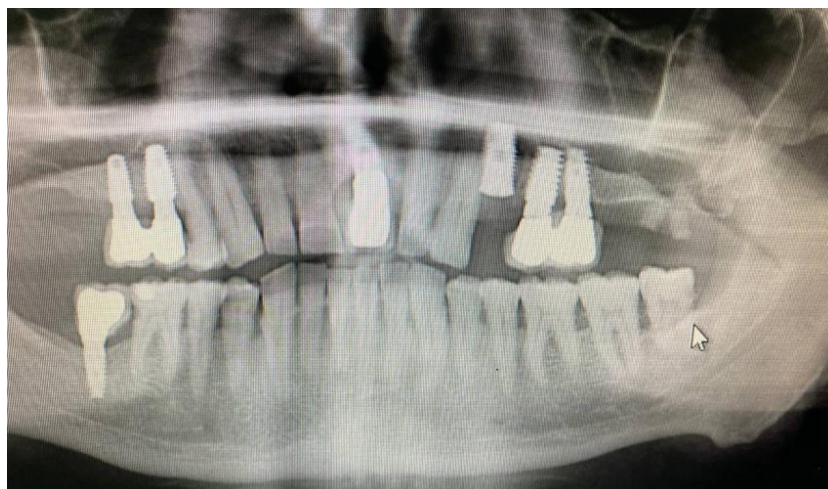


Fig.6 Preoperative orthopantomography.

The patient received oral rinses with chlorhexidine starting the second day after TIP until the time of suture removal, antibiotic therapy to exclude superinfection, and analgesics as indications. Sanitization will be done gently, to avoid affecting the post-surgical wound, sanitization being resumed from the first day after the intervention. The patient will consume food at room temperature, will not consume dairy products and carbonated drinks.

3. Patient V.U. aged 48, he presented himself at dental clinic F requesting a consultation. He requested the extraction of the root rest specific to tooth 3.6 and performing TIP. The patient underwent clinical and paraclinical examinations, after which the observation sheet was drawn up. In order to draw up the treatment plan, the patient was subjected to a CBCT paraclinical exam, intraoral scan. He presented his blood tests from a specialized laboratory. After establishing the treatment plan, the treatment plan was explained to the patient, along with the steps and materials that will be used, rules that must respect, advantages, disadvantages, as

well as indications, contraindications after TIP. Prior to actual TIP, the patient understood the entire treatment plan and provided all permissions such as consent and agreement to treatment, taking photographs and including them in the given study.

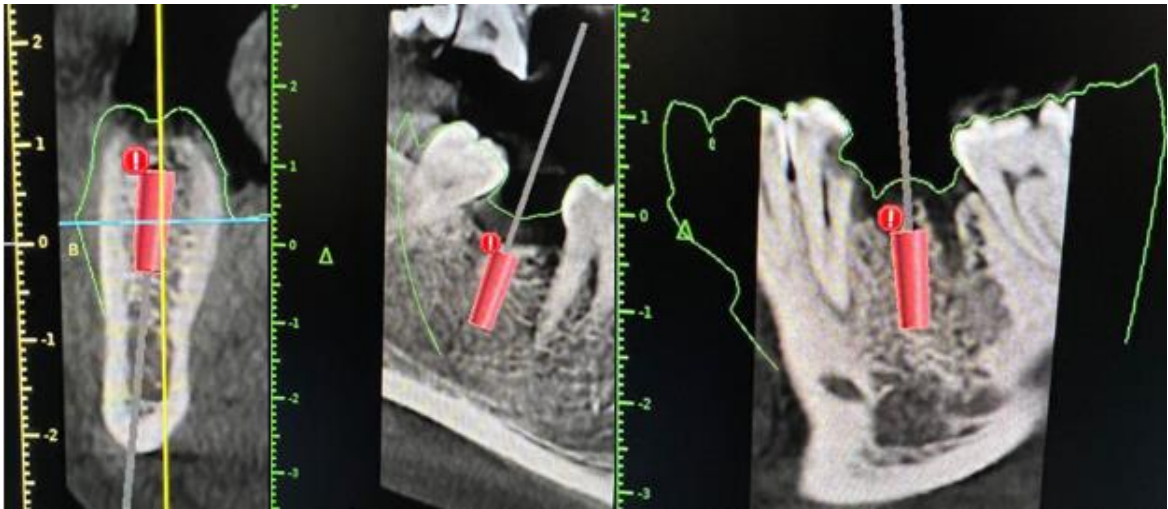
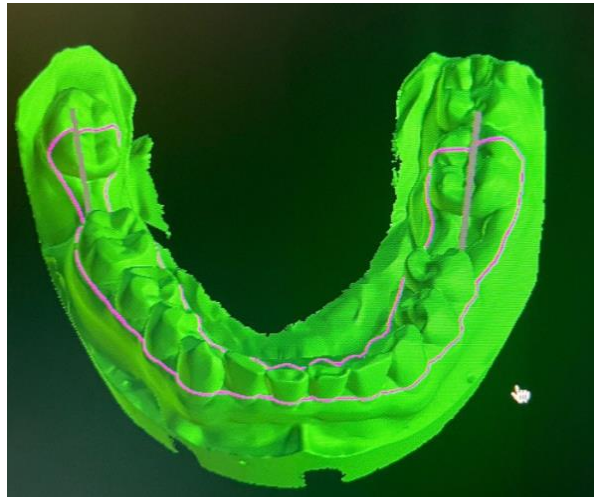
The treatment plan was established:

- Improving the degree of oral hygiene of the patient ;
- Professional hygiene of the oral cavity;
- Intraoral scanning ;
- Carrying out the surgical stage: atraumatic extraction of the tooth-specific root rest 3.6. and immediate implantation of implants;
- Treatment delay for at least 6 months until the successful integration of the intraosseous implant ;
- Realization of the prosthetic stage: impression and prosthesis of the implant;
- Patient monitoring(Fig.7).



**Fig.7** Oropantomography of the patient at the first visit

After cleaning the oral cavity and the necessary extractions, the TIP was delayed, later the patient presented himself for the continuation of the TIP. The patient underwent an intraoral scan and received an indication for a CBCT(Fig.8).



Using the available data, the insertion of the implants was designed using a specialized software(Fig. 9).

**Fig.9.** *Design of the surgical stage*

Later, CAM was used to obtain the surgical guide(Fig.10).



Fig.10 The resulting surgical guide in the specialized software and the physical guide  
 The surgical guide was analyzed, evaluating its stability, accuracy, presence or absence of imperfections or deficits , and was prepared for performing the guided surgery(Fig.11).



Fig.11 The instruments used for TIP and the surgical kit  
 The use of digital technologies and computer tomography in dental treatments offers numerous benefits in treating patients(Fig.11, Fig.12)







Fig.12 . Application of cover screws and suturing of the wound

Due to the benefits it offers, TIPG occupies an increasingly important role in dental medicine, being used in the treatment of both partially edentulous and total edentulous patients. The given type of surgical intervention is indicated both for novice doctors, who do not have experience in the field of TIP, and for experienced doctors, as evidenced by the multitude of initiation courses in oral implantology, which are based on the use of surgical guides as an optimal solution treatment.

### Conclusions

Surgical guides with different types of support represent the physical support used by the clinician, offering him the possibility of performing a much more precise intervention.

Making a comparison between TIPC and TIPG, advantages can be established in favor of TIPG such as:

- The possibility of planning the surgical stage prior to the surgical treatment ;
- The possibility of planning the prosthetic stage prior to the actual treatment;

- The possibility of previewing the final result of TIPG;
- The possibility of the patient to express his own wishes regarding the aesthetics of the prosthetic work;
- Reducing the time of surgical intervention by excluding the creation of flaps ;
- Reduction of post-surgical healing time;
- Reduction of inflammatory phenomena after surgical intervention;
- Reduction of pain and discomfort felt by the patient;
- Reducing the risk of post-surgical complications;
- The almost total exclusion of the risk of damaging some anatomical formations that could have significant consequences;
- The possibility of maintaining a safety space of 2 mm between the implant and the formations in the immediate vicinity;
- Increasing the degree of accuracy of positioning dental implants;
- Increased TIP durability.

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