

SECTION 2. DENTISTRY

DOI: 10.46299/ISG.2023.MONO.MED.3.2.1

2.1 Assessment of the clinical condition of the oral cavity before choosing the method of adhesive splinting of movable teeth

According to WHO experts, the prevalence of periodontal tissue diseases reaches 98%. Among the most common dental diseases, periodontitis is one of the most common. Therefore, the tendency to progress, its diverse effects on the body, as well as frequent relapses make this pathological condition one of the most pressing problems of modern dentistry [62, 63]. Local factors play an important role in the occurrence of periodontal tissue diseases, such as: abnormal attachment of the frenulum of the lips, tongue, shallow anterodorsum of the oral cavity, abnormalities of the bite and individual teeth, traumatic occlusion, incorrect orthopedic appliances, etc. [64, 65, 66]. These factors lead to impaired blood circulation in periodontal tissues, functional overload of teeth, their pathological mobility, and eventually their premature loss [67]. As the authors point out [68, 69, 70], abnormalities in the position of the teeth are accompanied by functional traumatic overload of periodontal tissues, which makes it difficult or even impossible to carry out effective orthopedic treatment without first correcting dentoalveolar anomalies.

In addition, crowding of teeth makes it difficult for patients to clean them properly, which contributes to the formation of biofilm and tartar, which lead to inflammation and destruction of the periodontal tissues [71, 72, 73]. Therefore, the choice of treatment method depends on the pathology detected during the examination [74, 75]. At the same time, such pathology can be prevented or a positive result can be obtained with its complex treatment only through rational modern and timely orthodontic treatment [76, 77].

The analysis of the state of the oral tissues for the choice of the method of adhesive splinting of the anterior teeth was carried out. the state of the oral tissues for the choice of the method of invasive adhesive splinting of the anterior teeth with the

placement of the reinforcing element orally or vestibular, depending on the type of bite and the inclination of the abutment teeth.

To achieve this goal, 81 patients who applied for preventive examination and rehabilitation in the period from 2017 to 2021, aged 35 to 45 years, male and female, who were diagnosed with periodontitis of varying severity, were examined and treated. The following criteria were taken into account when forming patient groups: type of occlusion, absence of foci of chronic infection in the body, multiple lesions of hard dental tissues, and depth of periodontal pocket. Patients with burdened somatic pathology and severe destructive forms of periodontitis were excluded from the study. Stabilization of the dentition with splints based on reinforcing and adhesive technology was the final stage of the complex treatment of periodontal tissue diseases, which included normalization of oral hygiene, treatment and observation by a periodontist, as well as therapeutic and surgical measures.

The clinical study was conducted according to generally accepted methods. During the examination of patients, the teeth and dentition were examined, the type of occlusion, dental formula, abnormalities in the position of individual teeth, the presence of dental-alveolar deformities, increased tooth abrasion, wedge-shaped defects, and hard tissue defects were determined, the nature of the closure of the dentition (occlusion), assessment of occlusal contacts, determination of the type of alveolar bone resorption, attachment and severity of the frenulum of the lips and tongue, buccoalveolar folds, and the depth of the anteroinfraoral cavity. Patient examination data were recorded in the developed dental patient examination card and recorded in the medical record of the dental patient, form No. 043/y.

The study was conducted in compliance with the basic principles of the Good Clinical Practice Guidelines (1996), the Council of Europe Convention on Human Rights and Biomedicine (1997), the World Medical Association's Declaration of Helsinki for the Ethical Principles of Medical Research Involving Human Subjects (1964-2000) and the Order of the Ministry of Health of Ukraine (1964-2000) and the Order of the Ministry of Health of Ukraine of the Ministry of Health of Ukraine No.

281 of November 1, 2000, approved by the Bioethics Committee of Bukovinian State Medical University (Protocol No. 25 of November 13, 2019).

The obtained data were statistically processed using descriptive statistic methods involving Microsoft Office Excel 2010 spreadsheet. As quantitative indicators, we calculated sample mean, standard deviation, and mean error. In case of normal distribution of quantitative indicators, we used Student's t-test for their comparison. The difference between the analyzed indicators was considered statistically significant at a significance level of 0.05 (error probability 5% ($p < 0.05$)).

Based on the clinical examination of 81 patients at the stage of preparation for splinting of the anterior group of teeth, the following was found. The main complaints were: bleeding gums, pain or discomfort in the gums, bad breath, varying degrees of pathological tooth mobility, tooth displacement, and hypersensitivity. Thus, among the examined patients, 67 (82.7 %) complained of gum bleeding during brushing, 25 (30.8 %) - while eating, 65 (80.2 %) - of tooth mobility, 33 (40.7%) - of bad breath, 17 (20.9 %) - pain or discomfort in the gums, 14 (17.2 %) - fan-shaped teeth separation, 11 (13.5 %) - tooth displacement, nine (11.1 %) people - varying degrees of tooth hyperesthesia.

The survey found that 31 subjects (38.2 %) had sought help from a periodontist, 28 people (34.5%) believed that they had been ill for more than 10 years, and 22 (27.1 %) - for no more than 5 years. In 50 (61.7 %) of the subjects, previous treatment consisted of professional oral hygiene and topical therapy in the form of drug applications, in 12 (14.8 %) people - physiotherapy. All patients who had previously undergone treatment by a periodontist considered it successful, and the duration of its effectiveness in terms of the absence of gum bleeding, discomfort, and bad breath ranged from 6 months to 12 months.

Among those surveyed, there were no people with harmful occupational factors or bad habits, 34 (41.9 %) smoked cigarettes. When patients were interviewed about their personal oral hygiene, it was found that 17 (20.9 %) people brush their teeth 2 times a day, 24 (29.6 %) - once a day, and 13 (16.0 %) - brush their teeth irregularly

(several times a week). The majority of respondents used only a toothbrush and toothpaste, six (7.40 %) used dental floss and floss, and eight (9.87 %) used only rinses.

When examining the anterodorsum of the oral cavity (Fig. 1), a short massive frenulum of the upper lip was found in eight (9.81 %) patients, the lower lip - in nine (11.1 %), and the tongue - in five (6.17 %).



Figure 1. Patient K., 41 years old. Shallow vestibule of the oral cavity.

The presence of massive cords was detected in 16 (19.7 %) patients. 11 (13.5 %) people had previously been operated on for abnormalities of the attachment of the frenulum of the lips and tongue. Thus, pathology of the attachment of the transitional fold was detected in 46.7 % of patients, i.e. almost half of the examined (Table 1).

Table I:

Pathological conditions that interfere with splinting

Pathological state	n - 81	
	%	abs.
Traumatic occlusion %	95,74	78
Anomalies in the location of individual teeth %	73,52	59
Pathology of the vestibule of the oral cavity %	46,71	37
Massive traction %	19,75	16
Short frenulum of the lower lip %	11,13	9
Short frenulum of the upper lip %	9,81	8
Short frenulum of the tongue %	6,17	5

During the examination of the gingival margin, congestive hyperemia of the free and attached parts of the gingiva was noted, the interdental gingival papillae were loose, swollen, and bled during probing. Edema and hyperemia were detected in 37 (45.6 %) patients, and hyperemia with congestion in 18 (22.2 %) patients. Retraction

of the gingival margin up to 4 mm was detected in 21 (25.9%) patients in the anterior group of teeth of the lower jaw, in nine (11.1 %) - in the anterior group of teeth of the upper jaw. Gingival recession of Miller grades 1 and 2 (Fig. 2) was determined in four patients (4.98 %), mild recession - in seven (8.64 %) patients, with two cases (2.46 %) teeth being removed from the palatal position, and seven cases (8.64 %) being vestibular.



Figure. 2. Patient T., 20 years old, Miller class II gingival recession in the area of the 4th tooth (on the background of traumatic occlusion).

Tooth mobility of the I-II degree was detected in 35 (71.4 %) patients, in 14 (28.6 %) patients it corresponded to the II-III degree, and periodontal pockets with a depth of more than 5 mm were determined without purulent discharge from periodontal pockets. Gingival bleeding during probing was detected in all (100 %) of the subjects.

The examination revealed that all patients (100 %) needed professional oral hygiene. Thus, in 28 (34.5 %) of the examined patients, mineralized supragingival plaque was detected, in 22 (27.1 %) - mineralized subgingival plaque, in 21 (25.9 %) - soft plaque, in ten (12.4 %) - pigmented plaque.

When assessing the state of occlusion in 42 (54.2 %) patients, various forms of occlusion disorders were detected: in 21 (25.9 %) patients - deep bite, in 16 (19.7 %) - distal bite, in five (6.17 %) - mesial bite, in two (2.46 %) - crossbite (Fig. 3).



Figure. 3. Patient R., 37 years old. Progenitorial ratio of the jaws (mesial).

Abnormalities of the position of individual teeth were found in 53 (65.4 %) patients, three teeth in 23 (28.3 %), diastema in 13 (15.9 %), crowding of the teeth of the lower jaw in 12 (14.8 %), fan-shaped separation of the teeth of the upper jaw in seven (8.65 %). Traumatic occlusion was detected in 77 (95.7 %) of the subjects (Figs. 4, 5, 6).



Figure. 4. Patient B., 45 years old. Prognathic jaw relationship (distal). Trims between the lateral incisors of the maxilla. Fan-shaped tooth discrepancy. Soft dental plaque.



Figure. 5. Anomalies in the position of the lateral incisors of the upper jaw.



Figure. 6. Crowding of the front teeth of the lower jaw

During the examination of the dentition, wedge-shaped (abfraction) defects were detected in 56 (69.3 %) patients, carious lesions in eight (9.87 %), and pathological abrasion in six (7.40 %). Surgical rehabilitation of the oral cavity was required in 17 patients (20.9 %), prosthetics - in 23 (28.3 %), in 15 (18.5 %) of the examined patient's lateral defects of the dentition were replaced with fixed bridges with bilateral support, in eight (9.87 %) - with partial removable lamellar and arch prostheses.

Thus, among the complaints of the examined patients we can note Bleeding gums while brushing teeth in 67 (82.7%), tooth mobility of varying degrees in 65 (80.2%), bad breath in 33 (40.7%), bleeding while eating in 25 (30, 8 %), pain or discomfort in the gums in 17 (20.9 %), fan-shaped teeth in 14 (17.2 %), tooth displacement in 11 (13.5 %) and tooth hyperesthesia in nine (11.1 %) patients.

During the examination of the gingival margin, congestive hyperemia of the free and attached parts of the gingiva was noted, the interdental gingival papillae were loose, swollen, and bled during probing. Edema and hyperemia were detected in 37 (45.6 %) patients, and hyperemia with congestion in 18 (22.2 %) patients. Retraction of the gingival margin up to 4 mm was detected in 21 (25.9%) patients in the anterior group of teeth of the lower jaw, in nine (11.1 %) - in the anterior group of teeth of the upper jaw. Gingival recession of Miller grades 1 and 2 was determined in four patients (4.98 %), mild recession - in seven (8.64 %) patients, with two cases (2.46 %) teeth being removed from the palatal position, and seven cases (8.64 %) being vestibular.

All patients who had previously undergone treatment by a periodontist considered it successful, and the duration of its effectiveness in terms of the absence of gum bleeding, discomfort, and bad breath ranged from 6 months to 12 months.

Gingival bleeding during probing was detected in all (100 %) of the subjects. In 35 (71.4%) patients, tooth mobility of the I-II degree was detected, in 14 (28.6%) patients it corresponded to the II-III-degree, periodontal pockets with a depth of more than 5 mm were determined without purulent discharge from periodontal pockets.

The examination showed that all patients needed professional oral hygiene. Thus, 28 (34.5%) of the examined patients had mineralized supragingival plaque, 22 (27.1%) had mineralized subgingival plaque, 21 (25.9%) had soft plaque, and ten (12.4%) had pigmented plaque.

When assessing the state of the bite, 42 (54.2%) patients had various forms of malocclusion: 21 (25.9%) had a deep bite, 16 (19.7%) had a distal bite, five (6.17%) had a mesial bite, and two (2.46%) had a crossbite.

Traumatic occlusion was detected in 77 (95.7%) of the examined. Abnormalities in the position of individual teeth were detected in 53 (65.4%) patients, three teeth in 23 (28.3%), diastema in 13 (15.9%), crowding of the lower jaw teeth in 12 (14.8%), and fan-shaped separation of the upper jaw teeth in seven (8.65%).

Thus, according to the data obtained as a result of the study, among 81 patients with periodontal tissue diseases, 55 (67.9 %) patients required preliminary orthodontic treatment, which corresponds to the data of previous studies [67, 68, 76].

Taking into account the state of the oral cavity of patients with periodontal tissue diseases and consulting related specialists (dental surgeon, orthopedist, orthodontist and hygienist) before splinting movable teeth is the key to their successful comprehensive treatment.

1. It can be stated that the predominant complaints in periodontal tissue diseases were gum bleeding when brushing teeth (82.7%), tooth mobility of varying degrees (80.2%), bad breath (40.7%), and tooth bleeding when eating (30.8%).

2. Oral hygiene was not maintained in 45.6% of the surveyed. Pathology of the attachment of the transitional fold of the oral cavity was detected in 46.7% of patients, that is, almost half of the examined.

3. Abnormalities of the position of individual teeth were found in 73.5% of the examined. Traumatic occlusion was detected in 95.7 % of the examined.

Therefore, taking into account the condition of the oral cavity of patients with periodontal tissue diseases and consulting related specialists (dental surgeon, orthopedist, orthodontist and hygienist) before splinting movable teeth is the key to their successful complex treatment.