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Abstract.

The purpose of the study is to analyze the condition of the oral cavity tissues to choose the method of adhesive splinting of the anterior teeth. Increasing the efficiency of patient curation strategies and tactics based on forecasting the functional capabilities of the dental and periodontal complex.

In the period from 2017 and 2021, 81 male and female patients aged 35 to 45 years were examined and treated for preventive examination and rehabilitation at the University Clinic Educational and Medical Center of Bukovinian State Medical University and diagnosed with periodontitis of varying severity. The following criteria were taken into account when forming patient groups: type of bite, absence of foci of chronic infection in the body, absence of multiple lesions of hard dental tissues, depth of periodontal pocket. During the examination, attention was paid to the shape of the dental arch, the inclination of the crowns of the teeth in the anterior region, the location of individual teeth, occlusion, the state of the oral vestibule (places of attachment of the transitional fold, depth, presence of gingival recession).

Among the pathological conditions that interfere with splinting, the following were identified: traumatic occlusion (95.7 %), anomalies in the location of individual teeth, fan-shaped tooth separation, crowded teeth (73.5 %), pathology of the oral vestibule (46.7 %), and the third degree of tooth mobility. These pathological conditions required preliminary orthodontic preparation or surgical treatment.

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 %). Oral hygiene was not maintained by 45.6 % of the surveyed. The 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. Abnormalities of the position of individual teeth were found in 73.5 % of the examined. Traumatic occlusion was detected in 95.7 % of the subjects.

Key words. Periodontal tissue diseases, depth of the anterodental cavity, abnormal position of the teeth, traumatic occlusion, gingival bleeding, tooth mobility.

Introduction.

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 [1,2]. 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. [3-5]. These factors lead to impaired blood circulation in periodontal tissues, functional overload of teeth, their pathological mobility, and eventually their premature loss [6]. As the authors point out [7-9], 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 [10-12]. Therefore, the choice of treatment method depends on the pathology detected during the examination [13,14]. 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 [15,16].

The purpose of the study. To analyze the condition of the oral cavity tissues to choose the method of adhesive splinting of the anterior teeth. Increasing the efficiency of patient curation strategies and tactics based on forecasting the functional capabilities of the dental and periodontal complex.

Materials and Methods.

To achieve the goal, 81 patients, aged 35 to 45 years, male and female, with a diagnosis of periodontitis of varying degrees of severity, were examined and treated. When forming groups of patients, the following criteria were taken into account: in all patients, the presence of dental plaque and tartar in the area of 6 teeth was determined: on the vestibular surface of 16, 11, 26 and 31 and on the lingual surface of 36, 46. For greater visibility, the plaque was stained with Schiller-Pysarev solution. The papillary-marginal-alveolar index reflects the degree and prevalence of inflammation in periodontal tissues. For better visualization of the inflammation, the mucous membrane of the gums is stained with Schiller-Pysarev solution, to clarify the diagnosis and assess the condition of the cortical layer of the tops of the interdental partitions, an X-ray examination was performed, which included orthopantomography and intraoral X-ray imaging. In our study, the orthopantomograph "Planmecca ProOne" (Finland), occlusal type, was used. Patients with severe somatic pathology and severe destructive forms of periodontitis were excluded from the study. Stabilization of tooth rows with
splints based on reinforcing and adhesive technology was the final stage of 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.

Clinical research was conducted according to generally accepted methods. During the examination of the patients, an examination of the teeth and dental rows was performed, the type of bite, dental formula, anomalies in the position of individual teeth, the presence of tooth-alveolar deformations, increased wear of the teeth, wedge-shaped defects, hard tissue defects, the character of the closing of the dental rows (occlusion), the assessment of occlusal contacts, determination of the type of resorption of the alveolar bone, attachment and expression of frenulum’s of the lips and tongue, buccal-alveolar folds, depth of the vestibule of the cavity. The data of the patient's examination were entered into the developed examination card of the dental patient and recorded in the medical record of the dental patient, form No. 043/o.

The study was conducted in compliance with the basic principles of the Guidelines for Good Clinical Practice (1996), the Council of Europe Convention on Human Rights and Biomedicine (1997), the Helsinki Declaration of the World Medical Association on the Ethical Principles of Medical Research Involving Humans (1964-2000), and the Order of the Ministry of Health of Ukraine (1964-2000) and Order of the Ministry of Health of Ukraine No. 281 dated November 1, 2000, approved by the Bioethics Commission of Bukovinian State Medical University (protocol No. 25 dated November 13, 2019).

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

Results and Discussion.

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 (Figure 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 %).

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).

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.

<table>
<thead>
<tr>
<th>Pathological state</th>
<th>n – 81</th>
<th>abs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traumatic occlusion %</td>
<td>95.74</td>
<td>78</td>
</tr>
<tr>
<td>Anomalies in the location of individual teeth %</td>
<td>73.52</td>
<td>59</td>
</tr>
<tr>
<td>Pathology of the vestibule of the oral cavity %</td>
<td>46.71</td>
<td>37</td>
</tr>
<tr>
<td>Massive buccal frenums %</td>
<td>19.75</td>
<td>16</td>
</tr>
<tr>
<td>Short frenum of the lower lip %</td>
<td>11.13</td>
<td>9</td>
</tr>
<tr>
<td>Short frenum of the upper lip %</td>
<td>9.81</td>
<td>8</td>
</tr>
<tr>
<td>Short lingual frenum %</td>
<td>6.17</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 1. Pathological conditions that interfere with splinting (M±m).

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

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 (Figure 3).

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 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 (Figures 4-6).

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, 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 [6,7,10].

Conclusion.

1. 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.
2. The placement of the reinforcing element of the adhesive splint was recommended depending on the type of bite, bone resorption level and level of personal hygiene.

3. At the orthognathic bite and deep incisal overlap the splint was placed on the lingual side. In the case of straight bite, distal and mesial occlusion and bone resorption up to ¼ of the interalveolar bone height it was placed on the vestibular side.

**Prospects for further research.**

Taking into account the research conducted by us on the state of the oral cavity of patients with periodontal tissue diseases, a mandatory stage is the consultation of related specialists (periodontologist, dental surgeon, orthopedist, orthodontist) and their appropriate treatment. After all, complex treatment before splinting of movable teeth is the key to a successful result.

**REFERENCES**


тяжести. При формировании групп пациентов учитывались следующие критерии: вид прикуса, отсутствие очагов хронической инфекции в организме, отсутствие множественных поражений твердых тканей зубов, глубина пародонтального кармана. При обследовании обращали внимание на форму зубной дуги, наклон коронок зубов во фронтальном учаске, расположение отдельных зубов, прикус, состояние преддверия полости рта (места прикрепления переходной складки, глубину, наличие рецессии десен).

Среди патологических состояний, которые мешают проведению шинирования, были выявлены: травматическая окклюзия (95,7%), аномалии расположения отдельных зубов, веерообразное расхождение зубов, скученность зубов (73,5%), патология преддверия полости рта (46,7%), III степень подвижности зубов. Указанные патологические состояния нуждались в предварительной ортодонтической подготовке или хирургическом лечении.

Преобладающими среди жалоб при заболеваниях тканей пародонта были кровоточивость десен при чистке зубов - 82,7 %, подвижность зубов различной степени - 80,2 %, неприятный запах изо рта - 40,7 %, кровоточивость зубов при приеме пищи - 30,8 %. Не соблюдали гигиену полости рта - 45,6 % обследованных. Патология прикрепления переходной складки полости рта выявлена у 46,7% лиц, то есть почти у половины обследованных. Аномалии положения отдельных зубов выявлены у 73,5 % обследованных. Травматическая окклюзия была выявлена у 95,7 % обследованных.

Ключевые слова: заболевания тканей пародонта, глубина преддверия полости рта, аномальное положение зубов, травматическая окклюзия, кровоточивость десен, подвижность зубов.