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*Makhlynets N.P.***Mucogingival Surgery as a Necessary Element of Complex Treatment of Patients with Shallow Vestibule Suffering from Generalized Periodontitis**Ivano-Frankivsk National Medical University,
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Abstract: shallow mouth vestibule and connective tissue bands in the region of vestibule of the mouth are one of the etiological factors in the development of generalized periodontitis. Today one of the modern methods of complex treatment of periodontal tissue with shallow vestibule of mouth is the use of surgical correction of pathological structure of the vestibule of the mouth. There are a number of operations for mucogingival plastic, but not always the use of these techniques of vestibule plastic gives the desired therapeutic effect. The study aims to improve the efficiency of complex treatment of patients with generalized periodontitis with the shallow vestibule of the mouth by improving the methods of vestibule plastic and using the means of the healing quercetin in the postoperative period. 60 patients with generalized periodontitis with shallow vestibule of the mouth were examined and treated. All patients were divided into 2 groups. Patients of the first group (30 people) had their vestibule plastic done according to Hrudyanov A.I. (2006). Patients of the second group (30 people) had their vestibule plastic done developed by us in which a number of technological moments were improved. As an important element of intervention is the placement and fixation by stitches of free mucous grafts taken from the palate, and inserted into the area of horizontal sections near the premolars. Patients with generalized periodontitis of both groups in the postoperative period were prescribed the healing quercetin. The results of research show that our proposed use of vestibule plastic using free mucous transplants, in treatment of patients with generalized periodontitis with shallow mouth vestibule provides significant performance improvement of clinical treatment. The most important outcome of our vestibule plastic operations is the reproduction of normal depth of the vestibule of the mouth, elimination of the chronic injury in the vestibule area of the mouth, normalization of blood supply to the periodontal tissues, restore the structure of mucosa of periodontal tissues at the cellular level, normalization of functioning of fibroblasts of vestibule mucous membrane of the mouth. Complex treatment of patients with generalized periodontitis with shallow vestibule of the mouth when applying vestibule plastic using free mucous grafts and the means of healing quercetin in postoperative demonstrates significantly higher treatment efficiency compared to using vestibule plastic where operating wound is healing by secondary intention, in clinical and laboratory parameters, cytological, morphological features vestibule mucous membrane of the mouth and radiographic, ultrasound characteristics of jaw bones in the early and late periods after treatment.

Key words: *generalized periodontitis, shallow vestibule of the mouth, complex treatment, quercetin.*

Shallow vestibule of the mouth (SVM) is quite frequent pathology structure of the mucosa of the mouth vestibule (VM) [1, 2, 5, 6, 9]. SVM is a major etiological factors in the development of periodontal diseases, due to the influence of the depth of the vestibule of the mouth (DVM) on the formation of gum recessions, the development of inflammation with subsequent breach of the tooth-gingival attachment, the advent of mobility of teeth and premature loss of them [5, 9, 10, 11]. Correction of SVM has a special place in the scar deformations of VM after reconstructive operations conducted in the jaws by intraoral access [10, 14]. Vestibule plastic is also actual in severe atrophy of alveolar processes against the background of periodontal diseases [1, 2, 13].

Vestibule plastic is often the first step before the scrappy operations in periodontal tissues. The main indications for surgical correction of mouth vestibule is the depth of the vestibule not less than 5 mm [5, 6, 9, 13]. According to many scientists the aim of vestibule plastic is to eliminate the mechanical trauma and ischemization of the marginal periodontal tissues, which is caused by muscle strands of labial, mental, buccal, facial muscles [1, 2, 6, 9, 14]. This surgery eliminates traumatic factor for periodontal tissue from the side of the SVM, improves blood

flow in the area of newly vestibule and gums, prevents development of destructive processes in periodontal. However, according to most researchers, periodontal surgery does not always achieve the desired result, particularly in a remote postoperative period [1, 5, 9, 11, 13].

Objective: to improve the efficiency of vestibule plastic among the patients with GP with SVM by surgical and pharmacological effects on periodontal tissues.

Materials and methods of investigation

The study involved 60 patients with GP with SVM. To assess periodontal status and for diagnosis, there was used the classification of periodontal diseases by Danylevskyy M.F. (2008) [3]. The DVM was determined according to our means. All patients were divided into 2 groups. Patients of the first group (30 people) had their vestibule plastic done according to Hrudyanov A.I.(2006). Patients of the 2 nd group (30 people) had their vestibule plastic done developed by us in which a number of technological moments were improved. As an important element of intervention is the placement and fixation by stitches of mucous free grafts taken from the palate, and inserted into the area of horizontal sections near the premolars [4].

Patients with GP with SVM of both groups in the postoperative period were prescribed the medication healing quercetin [7, 8, 12] (registration certificate №UA / 0119/01/01) 1 g, 1 time a day gel application, which is previously applied to individual teeth-gingival sealed end, for 5 days [5].

For the purpose of comparative characteristics of performed methods of surgical correction of DVM the assessment of DVM was carried out for the presence of scar deformities in the mucosa of the VM, the assessment of periodontal tissues(index of bleeding by Myulleman -San (BI), index of the hygiene by Vermilyon Green (HI), periodontal-alveolo- marginal index (PAMI)) before the treatment, at 3 months, 6 months and 12 months; ultrasound examination of jaw bone tissues before the treatment, after 6 months, 12 months after surgery and status of regional blood flow among patients with GP with SVM (assessment of qualitative and quantitative characteristics of rheographic curves of alveolar jaw bone) before vestibule plastic, after 1 month, 3mis, 6 months, 12 months after vestibule plastic.

The results of the study

As a result, the research found that patients with GP with SVM were characterized by marked changes in periodontal tissues, which grew with increasing degree of the disease. The main sets of symptoms of GP with DVM were the DVM less than 5 mm, connective tissue bands in the area of canines and premolars were identified in 78.3% of patients; symptomatic gingivitis - in 71.7% of patients; in 83.6% of patients with GP of II stage of development with SVM found traumatic occlusion in the area of the front group of teeth; 74.2% of patients diagnosed with teeth-clusters. Clinical demonstrations of GP with SVM were relevant to the extent of the disease. Depending on the degree of GP the indexed assessment of the state of periodontal tissues deteriorated according the results of oral hygiene indices, periodontal index, bleeding index. PMA index among the patients with SVM and GP unreliably differed on the extent of development of the disease ($p > 0.05$).

The results of investigation of regional circulation of the tissues of the mouth vestibule showed the presence of blood circulation deficit and reduce the trophic tissue, which was indicated by the increase in vascular tone index (VTI), peripheral resistance index (PRI) and reduce of extensive blood flow index (IEC) rheographic index (RI) ($p < 0,05$). Patients with GP with SVM were revealed morphological and functional changes in the

structure of the mucous membrane of the gums, which manifested in edema, plethora and stasis of blood vessels, polymorphous cell infiltration in the lamina propria mucosa, changes in the structure of fibroblasts. X-ray picture and results of ultrasound examination within the both groups of patients before the surgery showed the presence of pathological changes in periodontal tissues, lowering the compact plate alveolar bone and jaw bone demineralization. According to the results of clinical studies patients with GP with SVM of both groups for 6 months after treatment showed the positive dynamic of index estimation periodontal tissues. However, compared to the indicators of periodontal tissues among patients with GP before the treatment the index values among the second group patients were better compared to the patients of the first group ($p < 0,05$). 3 months after the surgery there was no significant difference between the state of two groups patients. After 6 months 27 (90%) patients of the first group and 29 (97%) patients of the second group had their DVM 5-10 mm, 4 patients (13.3%) of the first group were observed and found scar deformation of soft tissues in the mouth vestibule of the section of premolars. After 12 months the index characteristics of periodontal tissue worsened, but still were significantly better among the patients of second group than among the patients of group one ($p < 0,05$).

By a comparative analysis of the results of histopathological study between patients of both groups patients of the first group remained lympho plasma infiltration, hemorrhage in the lamina propria of the mucous membrane of the gums. Patients of the second group revealed normal structure of epithelial plate, restoring the integrity of the complex connective tissue of the lamina propria mucosa, ordering bundles of collagen fibers. Fibroblasts from the connective tissue of the gums - active: large nucleus in the cytoplasm, numerous tank granular endoplasmic reticulum, mitochondria, a small number of vacuoles.

Holding vestibule plastic, developed by us and complemented by quercetin in the postoperative period, contributed to a significant positive dynamics of rheographic indicators, both in early and in the long term after treatment, compared with results in other groups of patients, which indicates a steady improvement of regional blood flow in the periodontal tissues. 26 (86.8%) patients of the first group and 29 (97%) patients of the second in a month after vestibule plastic noted a gradual increase in amplitude rheogram, they acquired the right forms. All patients of the second group after 6 months - showed almost normalized blood circulation ($p < 0,05$). In the dynamics 12 months later, there were recorded the increase of amplitude of the rheographic curves, the top of the wave was more pointed, anacrotic curve faster rose to the top, dictrotic peak was more pronounced and was closer to the middle third of dictrotic phase of the waves.

According to the results of ultrasound examination in 6 months after the surgery 27 patients (90%) of the first group and 29 patients (96.6%) of the second showed the decreased the mean transit time of ultrasound, indicating the positive processes of bone mineralization. 12 months after vestibule plastic time of the ultrasonic waves has not changed, indicating the stabilization of processes of bone mineralization and active processes of jaw bone mineralization of the patients of second group. When X-ray, 6 months after the surgery among 27 patients (90%) of the first group and all patients of the second group showed a stabilization process that was manifested in increasing height, compression and clear definition of compact plate of alveolar bone of the jaw.

Conclusions

1. On the basis of the study it was found that developed surgical technique using free mucous grafts is the optimal method for the pathology of the tissue of the vestibule of the mouth.

2. After vestibule plastic surgeries using free mucous grafts improves the blood flow in the area of newly vestibule and gums, prevents the development of destructive processes in periodontal, morpho-functional state of the mucous membrane

of the mouth vestibule is normalized.

4. Positive dynamics of osteometric and radiologic parameters caused by improving the microcirculation of periodontal soft tissues and metabolism of jaw bone tissue.

Prospects for further researches

Remote results of the proposed method of complex treatment of patients with generalized periodontal and shallow mouth vestibule will be studied.

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Махлинець Н.П.

Мукогінгівальна пластика як необхідний елемент комплексного лікування хворих на генералізований пародонти із мілким присінком рота

Резюме: мілкий присінок рота та сполучнотканинні тяжі в ділянці присінка рота є одними з етіологічних чинників у розвитку генералізованого пародонтиту. На сьогоднішній день одним із сучасних методів комплексного лікування захворювань тканин пародонту із мілким присінком рота є застосування хірургічної корекції патології будови присінка рота. Існує ціла низка операцій для мукогінгівальної пластики, однак не завжди використання цих методик вестибулопластик дає бажаний терапевтичний ефект. Метою дослідження є підвищення ефективності комплексного лікування хворих на генералізований пародонтит із мілким присінком рота за допомогою вдосконалення методики вестибулопластики та використання ранозагоюючого середника кверцетин у післяопераційному періоді.

Обстежено та проліковано 60 хворих на генералізований пародонтит із мілким присінком рота. Усі хворі були розподілені на 2 групи. Хворим I групи (30 осіб) проводили вестибулопластику за Грудяновим А. І. (2006 р.). Хворим II групи (30 осіб) проводили розроблену нами вестибулопластику, в якій покращено ряд технологічних моментів, де важливим елементом втручання є поміщення та фіксація швами вільних мукозних трансплантатів, взятих з піднебіння, в ділянку горизонтальних розрізів біля премоларів. Хворим на генералізований пародонтит обох груп у післяопераційному періоді призначали ранозагоюючий препарат кверцетин.

Отримані результати дослідження доводять, що використання запропонованої нами вестибулопластики із застосуванням вільних мукозних трансплантатів, у комплексному лікуванні хворих на генералізований пародонтит із мілким присінком рота забезпечує

достовірне покращення клінічних показників ефективності проведеного лікування. Найбільш важливими нашими результатами застосування вестибулопластичних операцій є відновлення нормальної глибини присінка рота, усунення хронічної травми в ділянці присінка рота, нормалізація кровопостачання тканин пародонта, відновлення структури слизової оболонки тканин пародонта на клітинному рівні, нормалізація функціонування фібробластів слизової оболонки присінка рота.

Комплексне лікування хворих на генералізований пародонтит із мілким присінком рота при застосуванні вестибулопластики з використанням вільних мукозних трансплантатів та ранозагоюючого середника кверцетин у післяопераційному періоді демонструє достовірно вищу ефективність лікування у порівнянні з використанням вестибулопластик, де операційна рана загоюється вторинним натягом, за клініко-лабораторними показниками, цитологічними, морфологічними особливостями слизової оболонки присінка рота та рентгенологічними, ехоостеометричними характеристиками щелепових кісток у ранні та віддалені терміни після лікування.

Ключові слова: генералізований пародонтит, мілкий присінок рота, комплексне лікування, кверцетин.

Махлинець Н.П.

Мукогингивальная пластика как необходимый элемент комплексного лечения больных с генерализованным пародонтитом и мелким преддверием рта

Резюме: мелкое преддверие рта и соединительнотканые тяжи в области преддверия рта являются одними из этиологических факторов в развитии генерализованного пародонтита. На сегодняшний день одним из современных методов комплексного лечения заболеваний тканей пародонта с мелким преддверием рта является применение хирургической коррекции патологии строения преддверия рта. Существует целый ряд операций для мукогингивальной пластики, однако не всегда использование этих методик вестибулопластики дает терапевтический эффект. Целью исследования является повышение эффективности комплексного лечения больных с генерализованным пародонтитом и мелким преддверием рта с помощью совершенствования методики вестибулопластики и использования ранозаживляющего препарата кверцетин в

послеоперационном периоде. Обследовали и пролечили 60 больных генерализованным пародонтитом с мелким преддверием рта. Все больные были разделены на 2 группы. Больным I группы (30 человек) проводили вестибулопластику по Грудянову А. И. (2006). Больным II группы (30 человек) проводили разработанную нами вестибулопластику, в которой улучшен ряд технологических моментов, где важным элементом вмешательства помещения и фиксация швами свободных мукозных трансплантатов, взятых с твердого неба, в область горизонтальных разрезов у премоляров. Больным с генерализованным пародонтитом обеих групп в послеоперационном периоде назначали ранозаживляющий препарат кверцетин. Полученные результаты исследования доказывают, что использование предложенной нами вестибулопластики с применением свободных мукозных трансплантатов, в комплексном лечении больных с генерализованным пародонтитом и мелким преддверием рта обеспечивает достоверное улучшение клинических показателей эффективности проводимого лечения. Наиболее важными нашими результатами применения вестибулопластичных операций является восстановление нормальной глубины преддверия рта, устранение хронической травмы в области преддверия рта, нормализация кровоснабжения тканей пародонта, восстановление структуры слизистой оболочки тканей пародонта на клеточном уровне, нормализация функционирования фибробластов слизистой оболочки преддверия рта. Комплексное лечение больных с генерализованным пародонтитом и мелким преддверием рта при применении вестибулопластики с использованием свободных мукозных трансплантатов и ранозаживляющего препарата кверцетин в послеоперационном периоде демонстрирует достоверно более высокую эффективность лечения по сравнению с использованием вестибулопластики, где операционная рана заживает вторичным натяжением, по клинико-лабораторным показателям, цитологическими, морфологическими особенностями слизистой оболочки преддверия рта и рентгенологическим, ехоостеометричними характеристиками челюстных костей после лечения.

Ключевые слова: генерализованный пародонтит, мелкое преддверие рта, комплексное лечение, кверцетин.

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The Effectiveness of Platelet-Rich Plasma (PRP) Administration in Professional Football Players' Muscle Injuries

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Abstract. Searching for new safe and effective approaches for the restoration of the damaged muscle of professional athletes, particularly football players is an urgent task of Sports Medicine. Recent studies has shown that administration of platelet-rich plasma in this pathology treatment may be more effective than standard treatment.

Aim. To study the effect of platelet-rich plasma therapy (PRP therapy) on professional football players' recovery after different degree muscle injuries.

Materials and methods. Harvest Smart PRP2 (USA) automated system was used to obtain PRP concentrate. Six professional football players with different muscle injuries received PRP-treatment. Muscle damage and recovery was assessed by examining the history, complaints, palpation and MRI scan not later than the day after the injury. 3 ml of the PRP product was introduced by one or two injections (depending on the area of damage) directly to the place of muscle damage, determined by means of palpation and MRI scan.

Results and discussion. The results of the control MRI scanning showed almost complete regression of edema and hematoma at the site of injury in patients with PRP administration. At the same time, swelling and bruising in the control group remained. Reduction in time to complete rehabilitation of functional recovery in group after PRP treatment comparing to the control group was 7 to 10 days depend-

ing on the type and extent of the damaged muscle damage.

Conclusions. According to obtained data, PRP administration reduced the recovery time by 30 % compared to "historical control" results. MRI analysis proved the observed acceleration in recovery time. So, PRP usage is safe and efficient approach to reduce the recovery time after I – III degree muscle injuries.

Key words: platelet-rich plasma, muscle injuries, growth factors, sportsmen rehabilitation.

Introduction. According to some authors' data [Achkasov E. et al., 2013], muscle injuries are considered to be 31 % of all injuries and 27 % of players disability reasons. The priority of sports medicine is to reduce recovery time after the injury and to achieve effective sportsmen rehabilitation. At the same time, effective pathogenetic treatment methods, providing regeneration and fast resumption of sport activity has not yet been developed [K. Kotenko, Eremin, 2013; Kon E. et al., 2009; Wright-Carpenter T. et al., 2004]. Searching for new safe and effective approaches for the restoration of the damaged muscle of professional athletes, particularly football players is an urgent task of Sports Medicine. Recent studies [Hall M., 2009; Mishra