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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии
საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и http://www.nlm.nih.gov/bsd/uniform_requirements.html В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректур авторам не высылаются, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned
Requirements are not Assigned to be Reviewed.**

ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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THE INFLUENCE OF THE ORTHODONTIC TREATMENT ON THE DEVELOPMENT OF THE TEMPOROMANDIBULAR JOINT DISORDER – LITERATURE REVIEW

Kvaratskhelia S, Nemsadze T.

Ivane Javakishvili Tbilisi State University.

Abstract.

Introduction: TMJ is highly prevalent stomatognathic disease affecting all age groups. Frequently, malocclusion can be the reason of the development of TMJ disorders. However, in addition to this, in the course of orthodontic treatment there may be some complaints about the pain and discomfort in temporomandibular joint, which is caused by orthodontic appliances that aimed to change the condition of malocclusion and mandibles. TMJ disorders are characterized with more complexity in case disorders are chronic or persistent.

Orthodontic treatment has a potential role for the possible recovery as a consequence of correction of malocclusion. Pre-orthodontic preparation frequently is a necessary stage of orthodontic treatment. Orthodontists and general dentists must be aware of the multifactorial etiology of TMD and should accept recommendations about controlling the process before or after any dental or orthodontic interventions.

Aim: The aim of this literature review is to show the effect of the orthodontic treatment in the development of temporomandibular joint disorders. The research may be an important factor for orthodontic patients for better assessment in order to avoid the post treatment complications.

Materials and methods: In the electronic database of PubMed, Google Scholar, Web of Science and Scopus using the key words the studies held before 2022 were searched and analyzed in addition to the data from the books related to temporomandibular joint and complications of orthodontic treatment.

Results and Discussion: Orthodontic treatment in combined treatment of TMJ disorders has a potential role for the possible recovery. For the successful recovery it is essential for clinicians to be informed about TMJ clinical signs and symptoms, have appropriate knowledge about all possible treatment means and detailed assessment of TMJ myofunctional condition before and after the orthodontic treatment.

As a result of the correct control of the treatment process amongst the patients with the signs of TMJ dysfunction, the structure of temporomandibular joint is adapted to a new functional position that improves clinical condition in the surroundings.

Conclusion: On the basis of this research and experience, it must be emphasized one more time that TMJ diagnosis must be a crucial criterion at a pre-orthodontic preparation stage in order to assess the treatment quality and avoid the post treatment complications.

Key words. Orthodontic treatment, TMJ pathologies, osteoarthritis, facial pain, orthodontic appliances

Introduction.

Temporomandibular joint disorders are highly prevalent dental diseases affecting all age groups [1].

Occlusion is the alignment of the skull and jaws [2,3], and temporomandibular joint is the only joint [4], which has a strong connection to the upper respiratory tract and occlusion.

Temporomandibular joint takes part in all physiological processes and to a certain extent affects various vital functions [5]. The altered physiology of above-mentioned joint causes pathologies that can affect the whole body [4]. Specifically, it influences body posture, spine and muscular system [2,3]. It has a negative effect on muscles of mastication, surrounding bony and soft tissue structures [6], oral communication and can cause facial asymmetry [7] that decreases patients' self-esteem and the level of life [8].

The main components of temporomandibular joint are the disc, the mandibular condyle, and the glenoid fossa [8]. In the above-mentioned area, existed disorder is characterized by displacement of the disc that causes the condyles to slip back to the disc [9] and accordingly, the destruction of the disc, erosion of the condyle bone and extensive sclerosis [7].

Osteoarthritis is considered as the most prevalent disease, which progresses slowly and influences the whole joint including articular cartilage, subchondral bone, ligaments, synovium and surrounding muscles [10], as for osteoarthrosis, it is considered as relatively painless, TMJ degenerative disease [7].

TMJ disorders are highly prevalent. Juvenile idiopathic arthritis (JIA) is identified among 40-96% cases that potentially leads to the devastating changes in form and function of the joint [11].

While having osteoarthritis, degenerative changes in the articular cartilage may occur and as a result of progressive process the elasticity of the cartilage changes and compressive strength occurs [7,10].

TMJ disorders can be caused by biomechanical, inflammatory, metabolic, neuromuscular and bio-psychological factors [9]. However, the main reasons of TMJ disorders are occlusal and neurogenic disorders [9].

Some kinds of malocclusion could be the reason of the development of TMJ disorders [12]. Despite many studies, mutually exclusive considerations regarding the correlation between malocclusion and temporomandibular joint diseases still exist. The studies are being held continuously and the number of researches is increasing [13].

However, TMJ related symptoms are frequently found in adolescent and adult orthodontic patients [14]. In some cases, orthodontic treatment could be the reason of the pain and discomfort in TMJ [15,16], that can be caused by the negative effect on stomatognathic function as the consequence of the influence of the intermaxillary elastics while having occlusal interferences [12]. Above-mentioned is verified by the changes in masticatory and temporal muscles according to electromyography research data compared to control group [17].

The mechanical effects of orthodontics may cause muscular and articular adaptation on the cervical spine [18].

According to some researches, craniocervical dysfunction [18] and orthognathic surgery [6] may serve as a contributing factor in case of TMJ diseases.

In some cases, dysfunction of TMJ can be the result of general systemic pathologies [5,19].

TMJ disorders are characterized with more complexity in case disorders are chronic or persistent [20].

In case of some patients, TMJ can be asymptomatic and can be revealed by random radiological findings of temporomandibular joint [10]. However, in most cases, above-mentioned disorder is demonstrated by clicking, pain in the joint area, headache, facial and neck pain, and limitation in the mandibular movements [6].

Pain is the most common symptom in the temporomandibular joint caused by the spasm in the soft tissues surrounding the joint and masticatory muscles, which has a protective aim [10].

Complete diagnosis plays a significant role in the treatment of TMJ disorders. Research is based on clinical studies as well as visualization [10]. MRI is considered as the gold standard in dentistry to diagnose disc morphology and position in case of temporomandibular joint disorder [10]. In addition, in the course of TMJ research it is crucial to determine muscular components of dynamic, anatomical and functional state of mandible with electromyographic research [21].

The main aim of TMJ disorder treatment is elimination or reduction of pain intensity, improvement in mouth opening, reestablishment of the normal mandibular movement, decrease of clicking and improvement of patients' quality of life [10,22].

Treatment frequently requires complex approach that includes mutual involvement of physiotherapist, rheumatologist, gnathologist, orthodontist, maxillofacial surgeon and prosthodontist in order to study the condition of chronic pain, to diagnose and control the process [20]. Sometimes pharmacotherapy is also indicated [10,23].

Combined treatment may cause maximum improvement of patients' condition [22]. There are several methods of TMJ disorder treatment, which can be divided as three major categories: conservative treatment, less invasive surgical procedures and surgical procedures [10].

As a result of combined treatment of TMJ disorders, it is possible disc repositioning to promote condylar growth and correct mandibular deformity among juvenile patients [24].

For TMJ patients surgical-orthodontic treatment is the protocol of combined treatment [25]. In the recent decades, orthodontics-first approach (OFA) has been performed, consisting of pre-orthodontic treatment, orthognathic surgery and postoperative orthodontics [6]. Postoperatively joint space can be increased, caused by disk repositioning, and promotes the formation of new bone in the upper and backward parts of condyle [25].

At the stage of pre-orthodontic preparation amongst the patients with the signs of TMJ dysfunction, after using several devices, the structure of temporomandibular joint is changed and adapted to a new functional position that is confirmed by electromyographic studies [17].

In order to achieve disc repositioning post-operative functional splints can be used, which effectively promoted the growth of

condyle and correction of teeth deformation [25]. It is crucial to implement disc repositioning as fast as possible [26].

Orthodontic functional appliances, as a rule is the most effective amongst retrognathic mandible patients meaning type II malocclusion, promoting the growth of condyle. However, there are cases when after splint treatment relapse was noted [26].

Some scientists consider that occlusive splints are less effective in the treatment of temporomandibular joint [22], however, the main mechanism of repositioning splints is the reduction of the movement of the front disc of temporomandibular joint [27] and it is considered as one of the most effective therapies while occurring disc movement for the treatment of temporomandibular joint disorders [28].

There are some researches approving positive and negative effects of orthodontic treatment on temporomandibular joint [29]. According to numerous researches, orthodontic treatment may improve the signs of TMJ damages and symptoms, however statistically there are important differences [12].

Despite the fact that there is no strong correlation between orthodontic treatment and TMJ development confirmed by scientific researches, it is hard to imagine science expect orthodontic therapy, which significantly changes the condition of patients' malocclusion and affects on masticatory functions [18].

According to several researchers, using orthodontic appliances for the treatment of patients with class II and III malocclusion is not considered as a risk factor for TMJ [30], however there are some recommendations that need to be followed in order to increase the efficiency of orthodontic treatment for skeletal class II malocclusion [16].

Protraction facemask (PFM) is the common method in the treatment of class III malocclusion patients, as a functional appliance that causes lower jaw displacement to the downwards and backwards with possible TMJ clinical signs [31]. However, in compliance with some researches early treatment with face masks leads to the positive improvements for skeletal and dental effects in the short terms [32].

Orthodontic treatment has a possible role in the treatment of TMJ [33]. Patient management is the key factor for the high-quality treatment and predictable outcomes [34]. That's why clinicians must be informed about TMJ clinical signs and symptoms [20], have appropriate knowledge and ability to follow the treatment protocol and strategies [35]. TMJ myofunctional condition is important diagnostic criterion in everyday orthodontic practice in order to assess the quality of treatment. Pre-orthodontic preparation frequently is a necessary stage of orthodontic treatment [17].

Thus, TMJ health has been considered in the orthodontic treatment for a long time [14]. It is important to thoroughly examine joint function and morphology before the beginning of the orthodontic or dental treatment [10]. Undiagnosed joint may cause unexpected problems with the entire masticatory system, including joints, muscles and unstable occlusion.

Knowledge of TMD and TMJ ensures better results for occlusal correction at the end of the orthodontic treatment [29]. The future of TMJ in connection with orthodontics is based

on prevention, screening and improvements of the knowledge. Hence, orthodontists will not treat the patients with risk factors or determines the risks and finish the treatment thoroughly [29].

Orthodontists and general dentists must be aware of the multifactorial etiology of TMD and should control it before or after any dental or orthodontic interventions [36].

Aim.

The aim of this literature review is to show the effect of the orthodontic treatment in the development of temporomandibular joint disorders.

The research may be an important factor for orthodontic patients for better assessment in order to avoid the post treatment complications.

Materials and Methods.

In the electronic database of PubMed, Google Scholar, Web of Science and Scopus using the key words (orthodontic treatment, TMJ, pathologies, osteoarthritis, facial pain, orthodontic appliances) the studies held before 2022 were searched and analyzed in addition to the data from the books related to temporomandibular joint and complications of orthodontic treatment.

Results and Discussion.

As a result of orthodontic treatment, there may be some complaints about the pain and discomfort in temporomandibular joint, which is caused by orthodontic appliances that aimed to change the condition of malocclusion and mandibles.

It is frequent to use intermaxillary elastics for the treatment of some anomalies. In addition, Protraction facemask (PFM) is the common method in the treatment of class III malocclusion patients, as a functional appliance that causes lower jaw displacement to the downwards and backwards. The risk in this treatment includes the movement of condyle backwards and joint disc forwards that can cause TMJ clinical signs.

However, some kinds of malocclusion may be the reason of the development of TMJ disorders. Hence, orthodontic treatment in combined treatment of TMJ disorders has a potential role for the possible recovery. For the successful recovery it is essential clinicists to be informed about TMJ clinical signs and symptoms, have appropriate knowledge about all possible treatment means and assessment of TMJ myofunctional condition before and after the orthodontic treatment.

Accordingly, amongst the patients with TMJ dysfunction, as a result of the orthodontic treatment the structure of temporomandibular joint is adapted at a new functional position.

Conclusion.

On the basis of this research and experience, it must be emphasized one more time that TMJ diagnosis must be a crucial criterion at a pre-orthodontic preparation stage in order to assess the treatment quality and avoid the post treatment complications.

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РЕЗЮМЕ

Влияние ортодонтического лечения на развитие патологии височно-нижнечелюстного сустава - обзор литературы.

Кварацхелия СА, Немсадзе ТД.

Тбилисский государственный университет им. И. Джавихишвили, Грузия.

Введение:

Височно-нижнечелюстной сустав является очень распространенным стоматологическим заболеванием и поражает все возрастные группы. Аномалии зубочелюстной системы во многих случаях могут быть причиной развития патологии ВНЧС, но в то же время в результате воздействия ортодонтических механических сил при ортодонтическом лечении могут возникать изменения в височно-нижнечелюстном суставе в виде боли или дискомфорта, что обусловлено изменением состояния зубных рядов и воздействием на жевательную структуру. Патологии ВНЧС характеризуются еще более сложным течением, когда патология приобретает хронический или перманентный характер.

Ортодонтическое лечение играет потенциальную роль в возможном излечении ВНЧС путем исправления окклюзионных аномалий. Преортодонтическая подготовка часто является необходимым этапом ортодонтического лечения. Ортодонты и стоматологи в целом должны знать о многофакторной этиологии ВНЧС и получать рекомендации по ведению пациентов до и после любого стоматологического или ортодонтического вмешательства.

Цель: Обзор литературы был посвящен влиянию ортодонтического лечения на развитие патологии височно-нижнечелюстного сустава. Это исследование может стать для ортодонтов важной отправной точкой для более тщательной оценки пациента во избежание осложнений после ортодонтического лечения.

Материалы и методы: Проведен поиск и анализ

электронных баз данных Pubmed, Google Scholar, Web of Science, Scopus с использованием ключевых слов статей, опубликованных до 2022 г., дополнен литературными данными, касающимися височно-нижнечелюстного сустава и осложнений ортодонтического лечения.

Результаты и обсуждение: При комбинированном лечении патологий ВНЧС ортодонтическое лечение играет потенциальную роль в возможном излечении. Обучение клиницистов клиническим признакам и симптомам ВНЧС, знание всех возможных методов лечения и детальная оценка миофункционального состояния височно-нижнечелюстного сустава до и после ортодонтического лечения необходимы для успешного лечения.

При правильном ведении лечебного процесса у пациентов с признаками дисфункции ВНЧС в результате ортодонтического лечения происходит адаптация структуры височно-нижнечелюстного сустава к новому функциональному положению, что улучшает клиническое состояние в указанной области.

Заключение: На основании указанных исследований и опыта следует еще раз подчеркнуть, что диагностика ВНЧС должна быть важным критерием в период предварительной ортодонтической подготовки и оценки качества ортодонтического лечения во избежание постлечебных осложнений.