

PAIN AFTER ENDODONTIC DENTAL TREATMENT: PREVENTION AND TREATMENT

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ABSTRACT

A frequent and most unpleasant complication of endodontic dental treatment for the patient is pain after root canal filling. Therefore, an obligatory element of assessing the immediate results of treatment, as A. Zh. Petrikas points out, should be the identification of postoperative pain. Many authors recognize that the determining factors in the development of post-sealing pain are the methods used for preparing root canals, the nature of their drug treatment, the level of canal filling and the material of root fillings. There are many studies in this area, but they are not comprehensive.

Key words: endodontics, pulp, periodontal, therapeutic and preventive measures.

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БОЛИ ПОСЛЕ ЭНДОДОНТИЧЕСКОГО ЛЕЧЕНИЯ ЗУБОВ: ПРОФИЛАКТИКА И ЛЕЧЕНИЕ

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АННОТАЦИЯ

Частым и наиболее неприятным для больного осложнением эндодонтического лечения зубов является боль после пломбирования корневых каналов. Поэтому обязательным элементом оценки ближайших результатов лечения, как указывает А. Ж. Петрикас, должно выявление послеоперационной боли. Многие авторы признают, что определяющими факторами в развитии постпломбировочной боли являются используемые способы препарирования корневых каналов, характер их медикаментозной обработки, уровень пломбирования каналов и материал корневых пломб. Исследований в этой области много, но они не носят комплексного характера.

Ключевые слова: эндодонтия, пульпа, парадонт, лечебно-профилактические мероприятия.

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THE RELEVANCE

The analysis of the literature sources shows that in all studies on this topic, the traditional statistical analysis of the assessment of the influence of causal factors of post-sealing pain is used. At the same time, the mutual influence of factors and their interaction are not taken into account. Therefore, from our point of view, since today there are no definitive effects of possible causal factors on the development of post-sealing pain, it is difficult to predict its occurrence[1,4].

To prevent and combat post-sealing pain, doctors use different methods available in each case. There are contradictory data on their effectiveness in the literature. In this regard, we considered it necessary to conduct an in-depth study of the causes of post-sealing pain, evaluate the effectiveness of its prevention and treatment, and develop a method of forecasting. For the first time, two methods of clinical identification and evaluation of the characteristics of post-sealing pain were compared: using a questionnaire and in a conversation with a patient [3,6].

To assess the strength of the factors influencing the development of the global economy, we used multivariate cluster analysis and showed that it is the most accurate and informative in comparison with the traditional variation-statistical analysis used by researchers. The leading factors that cause the appearance of post-traumatic pain are the level of filling of the root canals of the tooth and their number [2,7].

For the first time, an algorithm has been developed for predicting post-sealing pain and its prevention in patients undergoing endodontic dental treatment.

It was determined that, taking into account the results of individual prediction of post-endodontic pain, it is possible to use a single injection of an antibiotic for its prevention, and to combat pain in the first 3 days, the use of magneto-laser therapy is most effective, with longer pain -fluoridation[5,8].

THE PURPOSE

The purpose improving the effectiveness of forecasting, prevention and treatment of pain that occurs after endodontic dental treatment.

MATERIALS AND METHODS

Instrumental treatment of root canals was carried out by two methods - "step-back" and "crown-down". When dissecting channels using the "step-back" technique, K-rimers, K- and H-files were used. When dissecting using the "crown-down" technique, full-rotating tools - profiles were used.

A micromotor with a rotation speed of 250-400 rpm was used. The working length of the root canal was determined by the method of apex locators. The final position of the master pin was monitored radiologically.

The channel system was filled with Endometason, Evgedent, Gutgaser Plus, Seal-apex silers and standard gutta-percha pins.

Pulpitis was treated by vital and devital pulpectomy.

- Use of an antibiotic to prevent post-sealing pain

To test the hypothesis about the possibility of prevention of post-sealing pain by injection of an antibiotic into the transitional fold, a practical study in which 53 volunteers participated: 19

men and 34 women aged 18-57 years. Patients were randomly assigned to three groups. At the same time, in the first group ("A"), all patients were injected - there were 15 people, in the second group "B" (18 people) such injections were not done. And in the third group ("B"), injections were given only to those patients who, according to the results of predicting post-sealing pain, had a risk of its development exceeding 50%. As an antibiotic, we used lincomycin in the form of an injection of a 30% solution in an amount of 1 ml into the transitional fold in the area of the causal tooth before its treatment (group "A") or immediately after X-ray quality control of root canal filling and prediction of the risk of post-sealing pain (group "B").

- The use of physiotherapy for the removal of post-sealing pain

To assess the effect of physiotherapy, we conducted another study involving 42 patients with severe post-sealing pain (14 men and 28 women) using the ASB-2 device. A current of 0.5 to 2 μ A was used. A laser device with a magnetic nozzle "Uzor - 2K", with a wavelength of 1300 nm, and an LED laser device from Geosoft (Russia) with a wavelength of 830 nm were also used.

Clinical research methods

Comprehensive examination of patients consisted of clinical and X-ray examinations. Observations were carried out during and after treatment: according to the terms of observation - in the near future - 1-6 days and in the long term: 6 months, 1-4 years.

Examination of patients with pulpitis and periodontitis was carried out according to a single scheme, including a survey, clinical and paraclinical diagnostic methods; the results were recorded in the medical history.

RESULTS

We conducted a comparative study of the frequency of detection of post-sealing pain depending on the gender of the patient - in men and women. It follows from the table that, depending on gender, there was a difference in the number of patients who had pain present or absent after endodontic treatment. In particular, in men, pain was detected 1.47 times less often than in women ($p > 0.05$). Thus, in men, the pain symptom was observed in 35.9%, and in women - in 45.1% of cases.

When comparing single-channel teeth, pain was detected 1.2 times less often than in multi-channel teeth ($p < 0.05$). In percentage terms, this ratio was 33.8% to 46.8%, respectively.

When comparing teeth cured in one and several sessions, in the latter case, pain after filling was 2.2 times more common than with a single-session method of treatment ($p < 0.01$). Thus, during treatment in one session, the pain symptom was observed in 33.7% of cases, and with multi-session treatment - in 52.9% of cases.

In a comparative analysis of the data, depending on the quality of the filling "before the apex" and "for the apex", it turned out that when filling "for the apex", pain after filling occurs 4.6 times more often ($p < 0.01$). In percentage terms, this ratio was 67.2% to 30.7%, respectively. When assessing the frequency of post-sealing pain using a questionnaire method, this difference in filling "before the apex" and "beyond the apex" turned out to be statistically significant ($p < 0.05$).

When treating root canals with the classical "step-back" technique, pain was detected 3.49 times more often than when treated with the "crown-down" technique ($p < 0.01$). In percentage terms, this is 53.7% to 24.8%, respectively.

When filling the root canals "up to the apex", post-sealing pain was more often detected when filling with Evgedent (23.3%), less often (by 2.5%) - when filling with Endometasone and Guttasiler Plus (by 1.1%). The minimum number of cases of pain after filling after using Sealapex, which was 5.7% less than when using Evgedent.

When filling the root canals "not up to the apex", post-sealing pain was more often detected with Evgedent filling (11.7%), less often with Guttasiler Plus filling (by 4.3%) and Endometasone (by 8.2%). There was no pain after sealing "Seal-apex".

When filling root canals "for apex", post-sealing pain was more often detected with Seal-apex filling (17.6%), less often with Endometasone filling (2.3%) and Evgedent (4.3%). The minimum number of cases of pain after filling was observed when using Guttasiler Plus - 6.5% less than when using Seal-apex.

CONCLUSIONS

According to the results of a multifactorial analysis of variance, of all the studied causes, the factor of the level of root canal filling has

the greatest influence on the appearance of post-sealing pain. At the same time, over-sealing and under-sealing of the root canal are equally unfavorable. In second place is the number of root canals in the tooth. Their interaction determines the appearance of pain by 48.53%.

For the prevention of post-sealing pain, high-quality filling of the root canals of the teeth is necessary. The methods of choice for pain management are local injections of broad-spectrum antibiotics and physiotherapeutic methods used strictly individually.

CONFLICT OF INTERESTS

The authors declare the absence of obvious and potential conflicts of interest related to the publication of this article.

SOURCES OF FUNDING

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AVAILABILITY OF DATA AND MATERIALS

All data generated or analysed during this study are included in this published article.

AUTHORS' CONTRIBUTIONS

All authors contributed to the design and interpretation of the study and to further drafts. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All applicable international, national, and/or institutional guidelines for the care and use of animals were followed.

CONSENT FOR PUBLICATION

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КОНФЛИКТ ИНТЕРЕСОВ

Авторы заявляют, что данная работа, её тема, предмет и содержание не затрагивают конкурирующих интересов.

ИСТОЧНИКИ ФИНАНСИРОВАНИЯ

Авторы заявляют об отсутствии финансирования при проведении исследования.

ДОСТУПНОСТЬ ДАННЫХ И МАТЕРИАЛОВ

Все данные, полученные или проанализированные в ходе этого исследования, включены в настоящую опубликованную статью.

ВКЛАД ОТДЕЛЬНЫХ АВТОРОВ

Все авторы внесли свой вклад в подготовку исследования и толкование его результатов, а также в подготовку последующих редакций. Все авторы прочитали и одобрили итоговый вариант рукописи.

ЭТИЧЕСКОЕ ОДОБРЕНИЕ И СОГЛАСИЕ НА УЧАСТИЕ

Были соблюдены все применимые международные, национальные и/или институциональные руководящие принципы по уходу за животными и их использованию.

СОГЛАСИЕ НА ПУБЛИКАЦИЮ

Не применимо.

ПРИМЕЧАНИЕ ИЗДАТЕЛЯ

Журнал *"Интегративная стоматология и челюстно-лицевая хирургия"* сохраняет нейтралитет в отношении юрисдикционных претензий по опубликованным картам и заявлениям институциональной принадлежности.

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