

Rezultatul

În urma studiilor efectuate noi am cules informație primară privind această afecțiune. Au fost examinați 156 de pacienți dintre care 38 coincid criteriilor K.E. (3 și mai multe elemente carioase. După grupele de vîrsta evidențiem: I-grupa pînă la 16 ani dintre care pacienți cu afecțiuni de profil general-7, pac.sănătoși -4, femeile gravide -2; II-grupa 16-24 ani-pac.cu afect. de profil general-4, pac. Sănătoși- 3, femeile gravide-8; III-grupa 24-32 de ani- pac.cu afect. de profil general-3, pac. Sănătoși-6, femeile gravide- 1.

Această patologie este prezentă nu numai la copiii de la 3 ani și pacienți cu afecțiuni legate de profil general, dar și la pacienți practic sănătoși: tineri pînă la vîrsta de 30 de ani, mai ales se evidențiază la femeile gravide și care alăptează. Cel mai mare procent dintre acești pacienți îl constituie copii care cu multe dificultăți(cu greu) se supun tratamentului, după care urmează femeile gravide. Frecvența îmbolăvirii dintre sexul masculin și feminin este mare cel mai mare procent îl constituie totuși sexul feminin 63%.

Indicii TER în toate grupele de vîrsta și din foile de observație variaza destul de intens. În același timp nici unul din pacienții cu C.E. n-au depășit indicele de 5.5. Indicele mediu fiind 7.

Analizînd rezultatele, conceptual a fost găsită legitatea scăderii acidorezistenței smalțului, care ne permite să propunem existența mecanismului a cariei explozive legată de starea generală a organismului. Noi am ajuns la această presupunere a legității ob-

servînd schimbările TER demonstrate pe parcursul observațiilor.

Modificările structural- fiziologice a rezistenței smalțului ce depind de numeroși factori exo- și endogeni permit să explice legătura cariei dentare inclusiv cariei explozive în dependență de numeroasele situații a organismului pe parcursul vieții.

Concluzie:

- Sursele din literatură inclusiv și explorările clinice demonstrează că, caria explozivă este o afecțiune clinică reală.
- Caria explozivă apare împreună cu afecțiunile de profil general, dar în unele cazuri și la pacienți practic sănătoși.
- Caria explozivă este însoțită de scăderea rezistenței structural-funcționale ale smalțului manifestată prin TER. Fenomenul este în curs de cercetare.

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TOOLS AND METHODS OF PREPARING A POST-CANAL FOR RESTORATION OF THE ENDODONTICALLY TREATED TEETH WITH SHATTERED CROWN

Summary

Restoration of the teeth with the massive losses of dental hard tissues after endodontic treatment is an actual problem of dentistry. Restorations represent considerable difficulties, because:

1. We deal with significant destructions of crowns owing to pathological process / mechanical trauma;
2. After endodontic treatments diameter of the main root canal increases approximately twice.
3. The appearance at the last ten years of non-metallic posts and dental restoration materials of the last generation (*double-cured flowable composite or double-cured/ triple-cured glassionomer cements*), create the condition for development of modern clinical decisions of the maximum biocompatibility. Corresponding technologies demand:
 1. Use of special tools, procedures and methods in preparing of dowel space — so-called “*post space*” or “*post-canal*”;
 2. A concrete definition of the purposes, aggravating factors, indications and contra-indications, recommendations and techniques.

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Rezumat

INSTRUMENTE SI METODE DE PREPARARE A UNUI POST-CANAL PENTRU RESTAURAREA ENDODONTICA A DINȚILOR CU DISTRUCȚII CORONARE MASIVE

Articolul relatează despre metode și procedee, avantaje și dezavantaje, importanța reabilitării dinților cu pierderi masive de țesuturi dentare dure după un tratament endodontic.

Relevance of the topic:

Dentists often meet in their practice patients with problematic, endodontic treated teeth, whose crown has damaged moderately, subtotal or total.

1) Available subtotal or total defect of the crown may be the result of carious lesions, trauma, non-carious processes.

The choice of method of restoration is indicated, often with the use of composite materials, but the sustainability of solid tissues to mechanical stress after devitalisation significantly reduced — and in such case successfully resolve this clinical situation is quite impossible without special equipment and techniques.

Some authors consider that all endodontically treated teeth is recommended to recover through the use of the fixture to be placed inside the root canal (*anchor posts*, *root inlays*, *pin teeth*, etc.). They help to improve the resistance of dentin of the root to the action of physical factors, locking crown part, to form a stump and restore the crown.

From our point of view, reconstruction to wholeness crown part using cylindrical or cone-shaped intracanal posts is necessary for making at moderate or considerable (subtotal) coronal destruction, when all (or minimum — two) walls of the crown are kept more than on 2 mm above gum level.

Total destruction of the coronal part, when the walls of the tooth crown retained less than 2 mm above the gum level (*or in some clinical situations when free edges of walls of a crown are at level of a gum or plunge under a gum on 1-2 mm*), we recommend to use reconstruction using anchor posts with head resting part, root inlays, pin teeth.

However, if it necessary prosthetics (or when free edges of residual walls of a crown are under a gum), it is necessary to make gingivectomy (to create convenient conditions for treatment of cervical part of root) — before proceeding with the preparation of hard tissues of destroyed tooth. Correction of the gingival margin, coagulation of papillae, and the opening of gingival sulcus spend in a traditional way or by using *tissue trimmer* — turbine tool with a ceramic head. When working by this boron must first turn off the water at the tip. Then, referring to the ceramic head of boron edge of the gums, hold its correction across the diameter of the cervix. It results in coagulation of the epithelium and the gums become smooth contour,

which subsequently allows us to obtain a clearer impression of the imprint of the neck of tooth.

In some recent surveys, considering the restoration of endodontically treated teeth, the use of fiber-optic posts presented as a correct, real alternative to metal and ceramic posts.

Depending on type of the main part of post and method of its fixation are used different, various instruments and methods of preparing post-canal. The following are the rules for the preparation of post-canal for the posts of various configurations, as well as a clinical case of fiber-optic posts.

It is generally accepted that the placement of the post must ensure retention to the coronal restoration without a further weakening of the tooth. There is an opinion that placing the post does not provide any clinically significant effect of strengthening the roots. Rather, the specific contribution of FRC technology in the clinical outcome of restored posted endodontically treated teeth can be seen in a reliable decrease in the frequency of root fractures, since established a rather rigid posts.

The purpose of the dentist for a relatively conservative treatment or prosthetic rehabilitation of endodontically treated teeth by means of posts (*fiber*, *zirconium*, *metallic*), except that it must achieve full cleanness from organic and inorganic contents of the root canal system, is a conservative, minimally invasive treatment and is to prevent unnecessary removal of healthy root dentin via calibrated cutters.

Based on this scientific background it is obvious that future developments in the technique of restoring endodontically treated teeth with fiber-based posts should be aimed at maximizing preservation of tooth structure in the residual part of the crown as well intraradicularly, when preparing the dowel space.

In the light of clinical experience and microscopic observations, the instrumentation is logically seems more favourable that reconstruction of endocoronal complex was realized by the endodontist, fine knowing anatomy of the root canal and standardization of preparation conicity. This allows, in addition, the reduction of working time and smaller probability of orthograde reinfiltration, especially if the reconstruction is carried out at the same visit as the root canal filling, with the optimal isolation of the operative field.

The traditional procedure for preparation of dowel space for a post, which provides for removal of gutta-percha from the coronal and middle thirds of root canal of the endodontically treated tooth, it seems possible to combine with setting posts in a single visit in the case of absence of the pathological change on X-ray (*root canal filling defects in apical third*, *signs of minor periapical pathology*), percussion (*painfulness*) and in probing the tooth canal orifice (*softened root filler and/ or its unpleasant scent*).

However, at the slightest suspicion, before installing the dowel canal must be newly and qualitative sealed with gutta-percha, and the actual installation (II visits) to defer for 2-3 days after re-sealing.

Then, using X-rays, a knowledge of the working canal length and our own experience, is valued results of sealing, and is defined desired size of the dowel (*the area of friction and holding ability increases with enlarging the diameter of working part*).

Mechanical load is better distributed on greater area on internal surface of the root canal, so the length of the dowel space should be possible equal or, at least once, not less than the lengths of the crown.

Methods of preparing the post-canal in the recovery of the crown of the tooth with the use of intracanal dowels provides for the execution of several technological steps.

Surely, that the dentist must have a variety of tools for passing and extension of root canals.

2) Removal of the overhanging edges of dentin and enamel is convenient to conduct the spheroidal boron. Preparation of the cervical part is executed using carbide spherical, pear-shaped and / or torpedo-boron.

3) For the cleaning and extension of the tooth canal orifice during endodontic treatment are using spherical tungsten carbide bur and dental probe.

It should be noted that after sealing the root canal dentists usually practiced by blowing air-water spray from the orifice of the root canal sealer residue, and then impose an insulating filling that is sometimes made of zinc-phosphate cement.

From the orifice of the root canal this material (*especially 5-7-10-year-old*) is extremely difficult to remove without sawing spheroidal carbide boron. That saves you from perforating, it's prudence, knowledge of anatomical features of the respective tooth and the orientation of a straw-yellow colour, characteristic of abovementioned cement.

Then the probe find the root canal orifice, with semicircle moves we make sure there is no presence of any residue of the zinc-phosphate cement, which would impede further passing of endodontic instruments into the root canal. Also carefully try, as far as possible, to penetrate partially the root canal with probe and to release his coronal third from the sealer.

3) For the initial passing and enlarging of the root canal in the ostial and middle parts is performed using endodontic K-type instruments. If root canal is sealed with gutta-percha, the evacuation of the required amount of root fillings is realized without difficulty.

In the process of the primary passing are removed gutta-percha and endohermetic from the lumen of the root canal. If since the moment of sealing passed less than 24 hours, you can manage to evacuate the gutta-percha not in the form of chips and to the specified level, and uproot the whole pin.

In the time of earlier retreatment of the root canal sealed with hardening cement and without gutta-percha, is necessary to use the special solutions (*e.g., Endosolv E, Endosolv R*).

K-reamers or K-files are used in strict sequence, beginning with size .20 and finishing with .30 — .40.

The depth of their introduction into the root canal is beforehand fixed with stop disks with such calcula-

tion so as between the tip of the post and physiological apical aperture would remain not less than 4-5 mm of the root filling.

4) Then, is conducted repeated passing and shaping of a root canal with Gates Glidden, Largo, or similar tool.

With their help remove the required amount of endodontic cement, gutta-percha and (or) the dentin tissue. Working length of the drill also is recorded with endstopper.

Dowel space is sequentially treated with (recommended by the manufacturer) the number and type of instrument. For example, we can consistently use for a post with diameter:

* Ø 1mm — Largo № 3, Largo № 4.

* Ø 1,25 mm — Largo № 3, Largo № 4 and Largo № 5.

* Ø 1,5 mm — Largo № 3, Largo № 4, Largo № 5 and Largo № 6.

Encountered in some of the articles and instructions for using a variety of post tumbler design recommendation to begin immediately the root canal instrumentation with reamers / penetration drill etc. / we find like very unfortunate advice, because: a) it violated the principles of its machining, then leads to a strain on the root canal walls and the overheating of the hard tissues; b) after previous endodontic treatment, the destruction of the some crown walls and relief smoothing of the of the pulp cavity's bottom do ostial topography mysterious, and direction of the root canal — unknown (*Godon's phenomenon*), that requires the special attention and caution.

Filling material is removed from the root canal, short of 2,0-3,0 mm before the apical constriction, and retain a portion of the root filling to create the gutta-percha "cushion" in the apical region. The diameter of the selected post must be equal (or less) with the third of mesio-distal size of the root, in which it is installed, and the length of its intracanal segment should not exceed two-thirds the length of the root canal. The length of the remainder segment should not exceed one third of the post's length.

The absence of residual endodontic cement and (or) gutta-percha on the walls of root canal is a fundamental purpose, which should be pursuing a professional, to achieve better adherence of modern enamelodental adhesive systems to root canal walls, before cementing the post.

According to some authors, eugenol-containing endodontic cements adversely affect the polymerization of dentinal adhesive, which reduces the effectiveness of the latter. Other researchers argue that to avoid this problem, simply remove the dentin thickness of less than 50 microns (*according to the degree of penetration of the material for endodontic filling inside the dentinal tubules and lateral root canals*).

Form of processed root canal on cross section should approach to round or oval, but the parameters must correspond to the size of the selected standard metallic or nonmetallic posts.

5) There is also unanimity in recognizing that the amount of remanent dental structure plays a key role in the load carrying ability of restored endodontically treated teeth. Preparation of post-canal meant for cone-based fiber-optic post with the resting head part, subject to availability of sufficient thickness of hard tissues in the cervical part of the root canal provides for the establishment on the root surface (in the place provided for his contact with the head part of the dowel) flat root supporting (shock-absorbing) platform with a rim, — *ferrule*, — which is formed with a special tool — *the tap, end mill or root facer*. Ferrula must deepen into the dentin by 1.5-2 mm, which is unanimously indicated as a favourable factor for long-term clinical success of restored devitalised teeth. Such treatment provides a stable foundation for the crown post, determines the maximum resistance to the transmitted loads and allows us to produce posts design, which more accurately takes dowel space and to a lesser extent has wedging action on the walls of the root canal.

6) the creation of the final configuration of the post-canal is conducted by dilator-calibrator corresponding to the size. The depth of its introduction is checked by stop disk or special restrictive muff, while the doctor is focused on the bottom of the supporting platform.

7) Fitting a post in the post-canal is carried out after pre-washing and drying of the canal. Post must enter into the prepared space on the scheduled depth, tightly adjoining to the walls. The bottom surface of the head part is firmly in contact with the bottom of the supporting platform.

8) Creation of additional wall roughness of post-canal is carried out using a special tool with a diamond coating of the working part. The tool is introduced in the post-canal, then it rotates, holding a working part of the instrument to the walls of the post-canal.

9) In conclusion, post-canal purified, treated with phosphoric acid, washed and dried. Then it is proceeded to the fixation of the dowel and to the restoration of coronal tooth structure. Locating post with adhesive systems and composite materials as follows. Primer or bond (*EBS Multi, 3M ESPE; Optibond, Kerr; Super Bond*) is applied in a thin layer and is processed in accordance with the instruction. Used for fixation of dual-cure composite (eg, *RxCem / „Dental Life Science“ /, High QBond SE / Diadent /, LuxaCore Z-Dual / „DMG“*), or triple-cured glassionomer cements («*VITREMER*»).

For ensuring high adhesion recommend further restoration carried out using a photopolymerizable composites.

Clinical case.

Patient N., aged 55, went to hospital preventive dentistry to prepare mouth for prosthetic treatment. Tooth 23 is earlier treated, devitalised; on the radiograph: a root canal is sealed qualitative all over, and destructive changes in the periapical tissues are absent.

When undertaking the treatment we removed old seal using spheroidal carbide bur for turbine handpiece. Then cavity of the teeth was cleared from infected dentin and gutta-percha remnants endohermetic with spheroidal carbide boron for the angular handpiece. Post-canal was prepared by passing and consistent expansion of coronal and middle parts of the root canal with K-reamers and Largo № 3, then the expander «Ikadent», corresponding to the diameter of matched post, carried out an exact calibration of the dowel space. With the root facer «Ikadent» creates a flat root support area.

Isolation of the operative field is made with cotton swab.

We used in the presented case of the restoration of the stump of a tooth fiber-optic post with a passive fixation of the company «Ikadent» (*Russia*) and dual-cure resin cement «RxCem» («*Dental Life Science*»). Modelling of the crown of a tooth is made using cement «RxForce» («*Dental Life Science*»).

Conclusions:

1. According to our clinical experience, the use of the above mentioned tool kit in preparation of teeth in a certain sequence is characterized by its ergonomics, versatility, and clinical efficacy, allowing simplify and improve the quality of creating endodontic access, carry out processing of the coronal and middle part of root canals during endodontic treatment, as well as to realize preparing for the introduction and fixation of intracanal posts, thereby reducing the time spent and maximizing good results functionally and aesthetically.
2. The tool kit can be used in clinical practice as experienced or novice dentists, students or medical residents.
3. Implementation of this set in the learning process might allow the simplification and unification of endodontic procedures for teaching the section “Restoring of endodontically treated teeth” on the 4 courses.
4. All this testifies to the ergonomics and the prospects for further development of an appropriate toolkit and techniques for dental practices.

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