SCHOLASTIC:
Journal of Natural and Medical Education
Volume 2 Issue 2, Year 2023 ISSN: 2835-303X
https://univerpubl.com/index.php/scholastic

Methods of Atraumatic Treatment of Caries in Children

Umarova Odinakhan Numonovna
Faculty of Dentistry Department of Children's Dentistry at the Andijan State Medical Institute

Article Information

Received: December 14, 2022
Accepted: January 13, 2023
Published: February 15, 2023

Keywords: *atraumatic methods, child, dental caries, dentine, primary teeth, therapeutics, minimally invasive dentistry.*

ABSTRACT

Currently, the treatment of temporary teeth is one of the most urgent problems in pediatric therapeutic dentistry. As you know, children have a labile psycho-emotional status, and visiting a dentist is stressful for a child's body. The problem is to provide adequate painless treatment without the use of sedatives and analgesics.

The atraumatic filling technique (ART) is based on the properties of glass ionomer cements, the most significant of which are the release of fluoride ions, chemical adhesion to the enamel and dentin of the tooth, and ease of application. The method of atraumatic filling involves the treatment of carious cavities manually, without the use of a drill and injection anesthesia, which are the main stress factors.

Relevance

Currently, the relevance of the treatment of dental caries in children of early and preschool age is due to the high prevalence and intensity of the disease, accompanied by a large number of complications and an increase in the need for dental care among children. The treatment of caries in children of early and preschool age is associated with a number of problems caused not only by the anatomical and physiological characteristics of milk teeth, but also by the complexity of performing many manipulations. Fear of a drill, the need to comply with the doctor's requirements is the main reasons for refusing dental treatment [2, 3, 4].

However, modern techniques for the preparation of hard dental tissues, which include the atraumatic method, allow the use of less invasive interventions in children [2, 5].

Atraumatic restorative treatment (ART)[1] is a method for cleaning out tooth decay (dental caries) from teeth using only hand instruments (dental hatchet and spoon-excavator) and placing a filling. It does not use rotary dental instruments (dental drills) to prepare the tooth and can be performed in settings with no access to dental equipment. No drilling or local anaesthetic injections are required. ART is considered a conservative approach, not only because it removes the decayed tissue with hand instruments, avoiding removing more tissue necessary which preserves as much tooth structure as possible, but also because it avoids pulp irritation and minimises patient discomfort. ART can be used for small, medium and deep cavities (where decay has not reached the tooth nerve dental pulp)[1] caused by dental caries.

In shallow/medium-sized cavities (lesions), the decayed tissue removal is carried out until the soft tissue (demineralised dentine) is completely removed and harder tissue is reached (firm dentine). In deeper cavities (lesions that reach more than 2/3 of dentine thickness on a radiograph), the removal of the decay must be carried out more carefully in order to avoid

reaching the tooth's pulp (dental nerve). Soft tissue should be left on the cavity floor. The decision on how much decay to remove (whether to carry out the decay removal to firm dentine or stop when soft dentine has been reached) depends on the depth of the cavity (a filling needs to have a minimum thickness of material to remain strong);[2] and the possibility of reaching the tooth's pulp (the nerve is exposed sometimes when deep cavities are accessed with rotary burs or vigorously with hand instruments, compromising the tooth's vitality).

Dental radiographs need to be taken to evaluate the depth of the cavity and extension of decay. If too deep and close to the pulp, only the soft decayed tissue is removed from the cavity floor to avoid the risk of pulp exposure.

ART is suitable for both primary (baby teeth) and permanent dentition (adult teeth) and has a large evidence base[specify] supporting it.

Although ART was initially developed in response to the needs of populations with less access to dental care, it had similar outcomes to more invasive treatments (local anaesthetic and drilling the tooth with dental bur). This means that it is suitable for use in any type of setting (from deprived communities to dental clinics) and it has been widely adopted into mainstream care. Due to its "atraumatic approach", it has also been proven to be beneficial for patients with dental anxiety or learning disabilities, even where there is adequate dental care, as neither drilling nor local anaesthetics are required.[citation needed]

During the International Caries Consensus Collaboration (ICCC) meeting held in Leuven in 2015, ART was recommended by an international group of experts in cariology, restorative and paediatric dentistry as an option to treat decayed primary and permanent teeth with decay where restorative options were indicated, such as cavities that were difficult to clean using only toothbrushes and fluoride toothpaste.[4][2]

The Atraumatic Restorative Therapy (A.R.T.) method is the most gentle approach to the treatment of dental caries, which consists in removing the hard tissues of the tooth damaged by caries manually using special tools and then filling these areas with cements and does not require local anesthesia. [2, 5].

Modern filling materials come to the aid of this method, among which a large group is made up of new glass ionomer cements (GIC), which are quickly introduced into practice, and which have found their wide application in pediatric dentistry.

Parents were informed about the goals of the upcoming research and gave their voluntary consent to the participation of children in it. The clinical examination included a survey, clarification of the patient's complaints, anamnesis of life and anamnesis of the disease. Particular attention was paid to the presence or absence of general somatic pathology, dietary habits and individual oral hygiene. An objective examination included examination of the skin, mucous membranes and dentition. With the help of probing, the state of hard tissues of the teeth, the marginal fit of fillings, the depth of carious cavities, the density and sensitivity of dentin were assessed. After the examination, the children were diagnosed with medium caries. In rare cases, patients complained of minor soreness during meals, probing and percussion were painless.

The patients were divided into 2 groups. Group I included 20 children who underwent preparation of hard dental tissues using the traditional technique (using a drill). Group II included 80 people who were treated for dental caries using an atraumatic technique. In turn, the II group was divided into 2 subgroups. Subgroup I included 38 children whose carious cavities were filled with Akvion ART glass ionomer cement. In the II subgroup - 42 children, filling "Akvion ART", modified with silver fluoride. In total, 120 teeth were sealed for medium caries, of which 51 were filled with Akvion ART glass ionomer cement (I subgroup) and 69 with

Akvion ART material modified with silver fluoride (II subgroup).

During the period of sanitation of the oral cavity in both groups, the behavior of children during the preparation of carious dental tissues for medium caries was evaluated: using the traditional method (using a drill) - in 20 children and atraumatic preparation using the ART method - 80 children.

The child's behavior was assessed according to three D. Z. Wright criteria:

1) Good: the child is sociable, trusts the doctor, sits well and opens his mouth.
2) Satisfactory: the child makes contact, sits well and opens his mouth himself, but is afraid, cries. Treatment requires persuasion.
3) Unsatisfactory: the child does not make contact well, does not sit well and opens his mouth, the help of parents and junior medical personnel is required for full treatment.

In children of group II with a diagnosis of moderate caries, the quality of fillings made of glass ionomer cement "Akvion ART" - subgroup I and "Akvion ART" modified with silver fluoride - subgroup II was assessed at 6 months, 1 year and 2 years after fillings were applied. After 3, 6 and 12 months after treatment, during control examinations of patients, a qualitative assessment of the results of sealing was carried out according to the following criteria: the anatomical shape of the seal and the assessment of the marginal fit. The condition of the filling material in the oral cavity was assessed using a dental mirror or visually.

Violation of the state and quality can be associated with properties such as solubility, shrinkage and fluidity. There are the following stages of determining the state of the seal according to C. Ryge (1998) - A (Alfa), B (Bravo), C (Charlie) A. The seal perfectly retains its anatomical shape; B- The shape of the filling is changed, the dentin or lining is not changed; C- Loss of material, with exposure of dentine or lining. To determine the marginal fit of the filling material, we used the method of visual examination and probing. The development of the pathological process was evidenced by the tactile sensation of the transition from the filling to the tooth and vice versa. Marginal adaptation was assessed according to the system of clinical criteria C. Ryge (1998), which offered four categories: A — Alfa, B — Bravo, C — Charlie, D — Delta. A - the absence of a visually determined defect along the “tooth-filling” border, or the presence of a minor defect, during instrumental examination of which the probe only “clings” or smoothly passes from the filling to the tooth. B - the presence of a clear gap between the walls of the tooth and the filling, which does not extend deeper than the enamel-dentin border. C - the spread of the defect to the dentin or the base of the filling. D - mobility, spalling and loss of the filling.

Results and their discussion In group I (traditional preparation) in the majority of children (70%) already on the first visit, the behavior was unsatisfactory. Good behavior was registered in only 10% of children, satisfactory - in 20%. As a result of a clinical study, the marginal fit of fillings made of Akvion ART glass ionomer cement modified with silver fluoride was not observed after 6, 12 and 24 months.

Bibliography:

1. Schwendicke F, Frencken JE, Innes N (13 September 2018). Caries excavation : evolution of treating cavitated caries lesions. Basel.
2. Schwendicke F, Frencken JE, Bjørndal L, Maltz M, Manton DJ, Ricketts D, et al. (May 2016). "Managing Carious Lesions: Consensus Recommendations on Carious Tissue Removal" (PDF). Advances in Dental Research. 28 (2): 58–67.

3. Frencken JE, Leal SC, Navarro MF (October 2012). "Twenty-five-year atraumatic restorative treatment (ART) approach: a comprehensive overview". Clinical Oral Investigations. 16 (5): 1337–46.
4. Innes NP, Frencken JE, Bjørndal L, Maltz M, Manton DJ, Ricketts D, et al. (May 2016). "Managing Carious Lesions: Consensus Recommendations on Terminology". Advances in Dental Research. 28 (2): 49–57.
5. McIntyre J (April 1994). "Minimal intervention dentistry". Annals of the Royal Australasian College of Dental Surgeons. 12: 72–9.
6. Maslak E. E., Rozhdestvenskaya N. V., Fursik D. I. et al. // Institute of Dentistry. - 2005. - V. 3, No. 28. - S. 82-85.
7. Mohammad D. D., Klimova N. N. Increasing the effectiveness of the treatment of caries of milk teeth in children aged 1–5 years / X Regional Conf. young. research Volgograd region - Volgograd, 2005. - S. 107-108.