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ОСОБЕННОСТИ ДИАГНОСТИКИ РЕЗОРБЦИИ КОРНЯ

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DIAGNOSTIC FEATURES OF ROOT RESORPTION

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Резюме. Резорбция корня - это процесс, связанный с физиологическим или патологическим состоянием, который приводит к потере дентина, цемента или кости вследствие стимуляции остеокластов. Описывается этиология, распространенность, особенности клинической картины разных форм резорбции корня.

Ключевые слова: резорбция корня, диагностика.

Resume. Root resorption is a process associated with either physiological or pathological conditions that cause stimulation of osteoclasts. This article describes the etiology, prevalence, clinical features of different forms of root resorption.

Keywords: root resorption, diagnosis.

Relevance. Root resorption is a process associated with either physiological or pathological conditions, resulting in lossing dentine, cementum or bone due to stimulation of osteoclast action. Generally, it is classified as external and internal type.

Root resorption may occur after various injuries such as mechanical, chemical, thermal or caused by bacterial infection. In other word, this process can appear as a dental procedure following complication or affect the expected medical or aesthetic results for dentist and patient. It also may lead to dystrophy of pulp and endodontic challenge if it is not diagnosed and treated correctly. Furthermore, tooth discoloration, shortening of root, fractures in thin root wall or short root, tooth mobility, lesion in alveolar bone, and tooth loss are all the most common consequences of root resorption. Once detected, it should be treated as soon as possible to limit its progression in order to have better prognosis.

Majority of cases remain asymptomatic and are often incidentally detected in radiographs. Clinical signs may vary according to the location. Early diagnosis is difficult by conventional X-Ray but accurate diagnosis is essential for an appropriate treatment plan.

Knowledge of pathogenesis, main risk factors in root resorption, early diagnosis will give the idea for prognosis and treatment.

Aim: to give guide that can help to determine correct diagnosis, predict outcomes and choose correct treatment plan.

Tasks:

1. To define the concept of root resorption, risk factors.
2. To distinguish different types of root resorption.
3. To determine the role of CBCT in diagnosis root resorption.

Materials and methods. This study is a review of international scientific articles and guidelines from Pubmed, Elsevier.

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Results and their discussion. According to the articles, the process of root resorption includes two phases: injury and stimulation. The phase “injury” is related to nonmineralized tissue covering the internal or external surfaces of the root. Infection and trauma seems to be the most advocated reasons for attraction of inflammatory mediators and stimulatory phase. The unmineralized outermost precementum and innermost predentine root surfaces prevent resorption from occurring [1].

The most recent classification (Patel and Saberi, 2018) is by location in relation to root surface:

1. Internal root resorption (inflammatory and replacement).
2. External root resorption (external, inflammatory, cervical, surface and transitional apical breakdown) [2].

All risk factors root resorption can be divided in a three main groups: host factors, dental intervention and other reasons [1, 2, 3, 4, 5]. Host factors are age over 20, local dental factors, genetic predisposition. Among dental intervention long usage of orthodontic appliances, poor necroctomy in endodontic treatment take place. Other reasons are dental trauma or bacterial dental infection, systemic disorders, idiopathic, etc.

Internal root resorption (IRR) is a particular category of pulp disease characterized lossing of dentine by action of clastic cells which pulpal blood brings to inflamed foci. Two types of IRR are described:

- Inflammatory resorption - the resorptive process of the intraradicular dentin, associated with presence of granulation tissues in the resorbed area.
- Replacement resorption cause defects in the dentin adjacent to the root canal, with deposition of bonelike tissue, results in an irregular enlargement of the pulp with partially or fully obliterated pulp chamber [3].

The occurrence of internal resorption has been estimated to be between 0.01-55% in inflamed pulp. New studies concluded internal resorption was frequently detected in pulpitis and pulp necrosis. Internal resorption is usually asymptomatic. Pain may occur depending on the pulpal condition of perforation or apical abscess formation. In the coronal part of the canal, "pink spot" can be observed (turns grey/dark). The response to vitality tests, thermal and electrical, is positive until resulting in a perforation [3, 4].

External root resorption (ERR) pathogenesis is part of eliminating hyaline zone by osteoclastic activity in imbalance situation of pressure and compression. Different severity may present, it can be self-limiting (surface resorption) or lead to shortening of the root. It can affect apical or cervical zone. The radiologic appearance of ECR can vary from a round, uniformly radiolucent lesion with well-defined smooth symmetrical borders to a multiloculated lesion with a mottled appearance [5].

Conventional radiographic techniques reveal limited information on the true extent and nature of the resorptive lesion. The use of CBCT (extraoral 3-dimensional imaging technique) was very helpful in diagnosing the exact size and location of resorption. Respective to CBCT it is possible to diagnose root resorption in the early stages and start conservative methods of treatment [6]. In addition new material such as MTA, Calcium silicate combined with thermoplastic filling (warm gutta-percha) and equipment (optical aids, ultrasonic improvement of chemical debridement) have made great progress in case management and prognosis of treatment.

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Conclusions:

1 Thorough clinical examination is important for better interpretation of data.

2 For favorable prognosis in root resorption CBCT has high accuracy beside the dental history of patient.

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