

Mehregan Peyvasteh
PATHOLOGICAL RESORPTION OF THE TOOTH

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Resume. Localized lesions of root resorption can be present in natural teeth, mainly in the apical and mid-region of the root. The etiology of both internal and external root resorption remains unclear, and may occur in the absence of either local or systemic factors.

Keywords: internal resorption, external resorption, odontoclast.

Relevance. Tooth resorption can be characterized as a disease destroying the dental hard tissue. It is well known that most dentists recognize the diagnosis “internal resorption” or “external resorption”. Pathological root resorption is rare, its etiology and pathogenesis are only partially understood. It was therefore interesting to study literature reviews on the pathological resorption of the tooth root.

Purpose of the study: To investigate the available literature data on the current state of the problem of pathological resorption of the tooth root.

Research tasks:

1. Based on current literature data to establish the basic etiological causes of pathological resorption of teeth.
2. Based on current literature data to establish the basic clinical manifestations of pathological resorption of teeth.
3. Based on the data of contemporary literature to learn how to carry out a differential diagnosis and treatment of pathological resorption of the tooth.

Materials and methods. In the study all available sources of literature have been analyzed. Such issues were examined as a physiological resorption of the tooth root, cells resorbing hard tissues and regulation of osteoclast and odontoclast activity, etiology and pathogenesis of inflammatory resorption of the tooth, histological features of resorption, clinical and radiological features, diagnosis and differential diagnosis of inflammatory resorption and treatment of inflammatory resorption of the tooth root.

Results and its discussion. Resorption is a condition associated with a pathologic process resulting in a loss of dental hard tissue by odontoclasts. There are two main different kinds of pathological resorption of the teeth, external and internal.

Internal resorption or internal granuloma of pulp is an unusual condition of a tooth when the dentin and pulpal walls begin to resorb centrally within the root canal. Internal inflammatory root resorption is a relatively rare resorption that begins in the root canal and destroys surrounding dental hard tissues. Internal root resorption is caused by transformation of normal pulp tissue into granulomatous tissues with giant cells, which resorb dentin. Odontoclastic multinuclear cells are responsible for the resorption, which can grow

to perforate the root if untreated.

The initiating factor in internal root resorption is thought to be trauma or chronic pulpal inflammation, but other etiological factors have also been suggested. The predisposing factors to internal root resorption as suggested in the literature include trauma, pulpitis, pulpotomy, cracked tooth, tooth transplantation, restorative procedures, invagination, orthodontic treatment and even a Herpes zoster viral infection. However, internal inflammatory root resorption is rare, its etiology and pathogenesis are only partially understood, and there is considerable confusion between internal and cervical invasive resorption, which is often incorrectly diagnosed as internal resorption.

In its classical form, internal root resorption is easy to diagnose. Internal root resorption is usually symptom free and the first evidence of the lesion may be the appearance of a pink-hued area on the crown of the tooth. However, when the resorption is actively progressing, the tooth is at least partially vital and may present symptoms typical of pulpitis, but in cases of perforation, a sinus tract usually forms.

The correct treatment for internal resorption is root canal therapy (which is not effective in external resorption), and chemical debirdemen using a combination of sodium hypochlorite, calcium hydroxide and MTA. The prognosis for treatment of small lesions of internal root resorption is very good. If, however, the tooth structure is greatly weakened and perforation has occurred, the prognosis is poor and tooth extraction must be considered. Sodium hypochlorite, ultrasonic instrumentation and calcium hydroxide are the cornerstones of treatment of internal inflammatory root resorption. Mineral trioxide aggregate is being increasingly used as a root canal filling material, particularly in cases of perforation.

External resorption is a condition of a tooth where the root surface is lost. This can be caused by chronic inflammation, cysts, tumors, trauma, reimplantation of a tooth, bleaching procedures, or sometimes the cause is unknown. There are two main types of external resorption, cervical external resorption and external resorption of the tooth root.

External cervical resorption is a clinical term used to describe a relatively uncommon and aggressive form of external tooth resorption which may occur in any tooth in the permanent dentition. Characterized by its cervical location and invasive nature, this resorptive process can lead to severe loss of tooth structure. Resorption of coronal dentin and enamel often creates a clinically obvious pinkish color in the tooth crown as highly vascular resorptive tissue becomes visible through thin residual enamel. Frequently, cervical resorption lesions are confused with and misdiagnosed as caries or internal resorption. As a result, inappropriate treatment is often initiated.

Cervical resorption can occur following injury to the root surface at or just below the epithelial cervical attachment apparatus. Clastic cells colonize the damaged area and begin resorbing the tooth. The damage can be caused by physical or chemical means. Physical injury to non-endodontically and endodontically treated teeth typically includes all forms of tooth trauma, surgical procedures, orthodontic treatment, bruxism, and periodontal root planning and scaling. Chemical injury can occur from agents used within the

root canal system, such as internal bleaching solutions. Research suggests that a combination of 30% H₂O₂ and heat can damage the cementum layer through the dentinal tubules.

As in most cases of external resorption, cervical resorption is usually painless and goes unnoticed by the patient unless pulpal or periodontal infection is present. In some cases, a deep resorptive cavity can result in sensitivity to temperature changes because of proximity to the pulp. Tests for pulpal vitality are indicated to determine the pulpal status prior to initiating treatment. In most cases, cervical resorption is detected during routine radiographic or clinical examination, however there may also be a complete absence of clinical signs that would aid in diagnosis. If the lesion is located marginally, a pink coronal discoloration may be evident. The pink discoloration is caused by deep red, underlying granulomatous tissue showing through thin translucent enamel. This tissue bleeds freely on probing. By probing the resorption cavity walls with an explorer, hard, mineralized tissue will be felt accompanied by a sharp, scraping sound. A resorptive defect harbouring a very touch-sensitive granulation tissue can be detected easily by running the sharp, curved end of the explorer below the level of cementum-enamel junction. The treatment of the resorptive defect is open-flap restoration. The tissue residing inside the defect is usually very easy to remove as it appears detached. As mentioned before, the pulp tissue is unaffected by this resorptive process and therefore, root canal therapy is not needed.

External root resorption is a type of pathology initiated in the periodontium and affecting the external surfaces of a tooth which is caused by an injury to the external root surface with an inflammatory component. Root resorption is typically detected clinically via routine radiographs. Internal resorption is most commonly discovered in the cervical region of the tooth as round well defined radiolucency lesion. It can associated by any symptoms of pulpitis, trauma and deep caries lesion. There are several types of external root resorption with the most common being external inflammatory root resorption. It may arise as a sequela of traumatic injury, orthodontic tooth movement, or chronic infection of the pulp or periodontal structures. External inflammatory root resorption is considered a major resorptive condition without symptoms. The treatment goal in the external apical root resorption is to remove or destroy bacteria to allow healing to take place in the periradicular space

Conclusions:

1. Resorption is an uncommon pathology of the hard tooth tissues, which destroys the tooth structure.
2. The diagnosis of resorption require use of advanced diagnostic techniques. It is often very difficult to distinguish external from internal root resorption, so misdiagnosis and incorrect treatment can result.
3. The prognosis of the treatment of tooth resorption is good unless the tooth has been weakened too much by the resorption.

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