

Management of a Case of Internal Root Resorption: Case Report

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Abstract: *Internal root resorption is a pathological process, sequel of a chronic pulp inflammation. The aim of this case report is to describe the interdisciplinary treatment plan that was applied in a case of perforating internal root resorption. A 24-year-old patient presented to the clinic with complains that her front right incisor got slightly intruded two years after orthodontic treatment. The root canal system was accessed. A large zone of internal resorption with two perforating points (vestibularly and proximally) was observed in the cervical region of the incisor. The root canal was temporary filled with calcium hydroxide. The root was permanently filled with gutta-percha and a sealer till the level of the resorption area. A flap was elevated and the two perforated sites were visualized and filled with BioDentine. A composite veneer was placed in order to restore the esthetics. The success of the treatment of internal root resorption depends on the early diagnosis and initiation of endodontic treatment. In cases of perforating internal resorption a multidisciplinary approach, including endodontic treatment, surgical reconstruction of the root perforation and in some cases orthodontic extrusion should be applied.*

Keywords: internal rootresorption

1. Introduction

Internal root resorption is a pathological process, sequel of a chronic pulp inflammation. It leads to loss of dentin, cement or even bone due to elastic cell activity. A layer of odontoblasts and predentin covers dentin and protects it [7]. Different ethiological factors could lead to damage of that layer and then odontoclasts may start resorbing dentin. Traumas, incipient or recurrent caries, heat generated during operative treatment, cracks, orthodontic treatment and idiopathic dystrophic pulpal changes are cited as ethiological factors for internal root resorption [8]. The cells responsible for the internal root resorption are multinucleated giant cells called odontoclasts. According to some recent theories dendritic cells are precursors who could convert into odontoclasts that move to the sites of irritation by proinflammatory cytokines and then start the resorbing process [12]. Those cells colonize the unprotected dentin. If there is no continuing irritation this process could end spontaneously and then no treatment is needed. If there is a stimulation factor present and the blood supply is sufficient they start and continue resorbing it [3, 7, 11].

The **aim** of this case report is to describe the interdisciplinary treatment plan that was applied in a case of perforating internal root resorption.

2. Case Report

A 24-year-old patient presented to the clinic with complains that her front right incisor got slightly intruded two years after orthodontic treatment (fig. 1). There were no caries lesions or restorations on the tooth and there was no data for acute trauma. On clinical examination the tooth had a slight pinkish hue in the cervical region. There was observed slight tenderness on axial percussion and mild mobility. The marginal gingiva was swollen and there was found a periodontal pocket 4mm deep on the vestibular tooth surface

on probing. The pulp test response was at 35 μ A. Radiolucency in the cervical region was observed on the conventional radiographic examination using parallel technique (fig. 2). After retraction of the gingiva a small vestibular perforation with granulation tissue was seen (fig. 3).



Figure 1: Initial view of patient dentition



Figure 2: Preliminary X-ray examination

Verbal and written consents were taken from the patient. After the placement of a rubber dam the root canal system was accessed. The pulp was partially vital. A large zone of internal resorption was observed in the cervical region of the

incisor. There were two points in which the resorption perforated – one on the vestibular surface of the root (the one that was diagnosed during the preliminary exam) and one on the distal root surface (fig. 4). Working length was determined and canal instrumentation was performed till file F2 (Pro Taper Universal, Mailefer). Irrigation was performed with 2,5% sodium hypochloride.



Figure 3: A view of a vestibular perforation

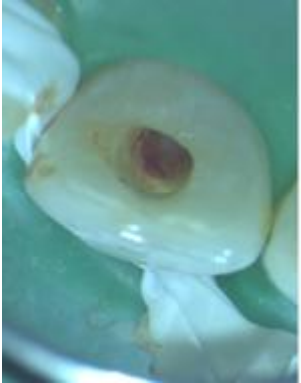


Figure 4: View of the perforation from the pulp chamber

Permanent seal of the root canal was not performed because of continuous exudation and bleeding. The root canal was filled with calcium hydroxide and the access cavity was closed with glass-ionomer cement. The calcium hydroxide was changed after three weeks. There was still little exudation from the perforation sites so calcium hydroxide temporary filling was placed again into the root canal. The root was permanently filled with gutta-percha and a sealer till the level of the resorption area (fig. 5), after enlargement of the root canal till F3 (ProTaper Universal). A fiber post was placed and the endodontic access cavity was restored with composite material. A flap was elevated and the two perforated sites were visualized (fig. 6).



Figure 5: Control X-ray of the filled root canal

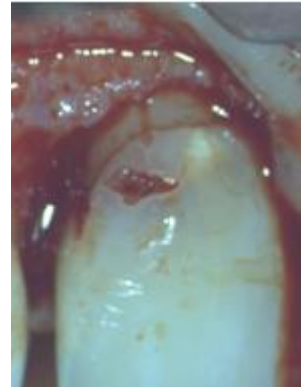


Figure 6: View of the vestibular and proximal perforation after flap elevation

The perforations were curetted and enlarged (fig. 7). They were treated with 90% aqueous solution of trichloroacetic acid. The perforations were filled with BioDentine and the flap was repositioned and sutured (fig. 8 and fig. 9). The patient was prescribed analgesics and antibiotics for seven days after surgery. One week after the operation the sutures were removed. Then a composite veneer was placed in order to restore the height of the crown of the tooth (fig. 10).



Figure 7: Connection of the two perforations after removal of granulating tissue

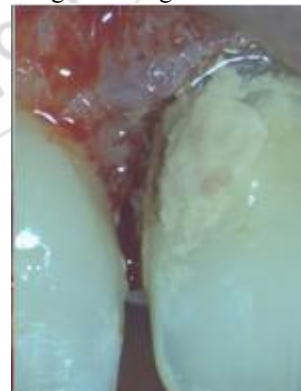


Figure 8: Restoration of the defect with BioDentine



Figure 9: Repositioned flap



Figure 10: Final esthetic restoration

3. Discussion

Root resorption is a serious dental complication, which when not diagnosed and treated in time might lead to tooth loss. The resorption process in the presented case involved the cervical region of the tooth. The patient gave data that she has had an orthodontic treatment two years ago. There is data in the literature that orthodontic treatment causes degenerative changes in teeth with completed apical formation [4]. This usually leads to apical and rarely cervical resorption [10, 15]. In the presented case we had internal resorption which is usually a result of trauma, caries, pulp capping, extreme heat, cracks [1, 13, 14]. We had none of the mentioned etiological factors, typical for internal root resorption.

The patient presented with a symptom that is typical for internal resorption localized in the coronal region – pinkish hue in the cervical region – the so called ‘pink spot’. However this symptom is typical for the invasive cervical resorption too [9]. Internal root resorption could be mistaken with the cervical root resorption on the X-ray exam too. They could be differentiated by change of the angle of the X-ray. In cases with internal resorption usually no bone changes are detected except when the defect is perforating.

The prognosis of teeth with internal root resorption depends on the size of the lesion. The treatment includes root canal therapy that leads to interruption of the resorptive process because of the removal of the clastic cells. When the size of the defect is small the chemomechanical root canal treatment is usually sufficient. Most of the authors recommend 2.5% solution of sodium hypochlorite [1, 2, 13],

although some have used higher concentrations [9, 14]. Granulating tissue cannot always be removed completely when the size of the resorbed area is too big. Then the bleeding and exudation cannot be stopped. Temporary application of calcium hydroxide for approximately one week is recommended in these cases [5].

If the internal resorption is perforating and the defect is under the bone some authors recommend the placement of calcium hydroxide for a longer period [15], or the use of MTA [6, 13, 14].

We have placed a post in the root canal and filled the resorptive defect with composite material in order to strengthen the remaining dental tissues, according to the recommendations of some authors [1, 5].

4. Conclusion

The success of the treatment of internal root resorption depends on the early diagnosis and initiation of endodontic treatment. In cases of perforating internal resorption a multidisciplinary approach, including endodontic treatment, surgical reconstruction of the root perforation and in some cases orthodontic extrusion should be applied.

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