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## MULTIDISCIPLINARY MANAGEMENT OF INTERNAL ROOT RESORPTION WITH PERIODONTAL PERFORATION: A CASE REPORT

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### ABSTRACT

The purpose of this case report is to present the endodontic surgical treatment of a right maxillary central incisor with internal resorption that has perforation to periodontal tissues. A seventeen-year-old male patient, with no systemic disease, applied to Inonu University, Faculty of Dentistry endodontic clinic with the complaint of aesthetic dissatisfaction in his maxillary right central incisor tooth. After clinical and radiographic examination, it was determined that root canal treatment was started before. In addition, the presence of internal resorption in the root canal and the periapical lesion was detected. A diagnosis of chronic apical periodontitis was made. In the first session, there was excessive bleeding in the root canal. Endodontic surgery was planned. The full-thickness mucoperiosteal flap was elevated. Granulation tissue was removed and bleeding was controlled. The perforation area and the root canal were sealed using a biocompatible material.

**Keywords:** *Biocompatible materials, oral surgery, root canal therapy, root resorption, teeth injuries*

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## **PERİODONTAL PERFORASYONA SAHİP BİR İNTERNAL KÖK REZORPSİYONUNUN MULTİDİSİPLİNER TEDAVİSİ: BİR OLGU BİLDİRİMİ**

### **ÖZ**

Bu olgu bildiriminin amacı, periodontal dokulara açıldığı belirlenen bir internal rezorpsiyona sahip bir sağ üst santral kesici dişin endodontik cerrahi tedavisinin sunulmasıdır. On yedi yaşında, herhangi bir sistemik hastalığı olmayan erkek hasta sağ üst santral kesici dişindeki estetik yetersizlik şikâyeti ile İnönü Üniversitesi Diş Hekimliği Fakültesi Endodonti Kliniğine başvurdu. Klinik ve radyografik muayene sonrasında dişe daha önce kök kanal tedavisi başlandığı tespit edildi. Ayrıca kök kanalında internal rezorpsiyon ve periapikal lezyon varlığı tespit edildi. Kronik apikal periodontitis teşhisi kondu. İlk seansta kök kanalında aşırı bir kanama mevcuttu. Endodontik cerrahi planlandı. Tam kalınlıklı mucoperiosteal flep kaldırıldı. Granülasyon dokusu uzaklaştırıldı ve kanama kontrol altına alındı. Perforasyon alanı ve kök kanalı biyoyumlu bir material kullanılarak kapatıldı.

**Anahtar Kelimeler:** *Biyoyumlu materyaller, dişlerde yaralanmalar, kök kanal tedavisi, kök rezorpsiyonu, oral cerrahi*

### **INTRODUCTION**

Internal resorption is “an inflammatory process initiated within the pulp space with loss of dentin and possible invasion of the cementum” according to the American Association of Endodontics <sup>1</sup>. Teeth with internal resorption are often associated with chronic pulpitis and are usually diagnosed by routine radiographs <sup>2</sup>. Etiologically, for internal resorption to happen, granulation tissue must form within the pulp, and the odontoblast layer and predentin must be lost or damaged. The reason for the loss of the predentin close to the granulation tissue has not been definitively stated.

Trauma can be a cause and experimentally, internal resorption was established by applying diathermy <sup>3</sup>.

An adequate sealing of the root canal is aimed by physicians with root canal therapy. Because of the irregular structure of internal resorption its hermetic, three-dimensional obturation can be compelling. Additionally, choosing a suitable sealing material is important to prevent reinfection. Using warm gutta-percha is helpful if there isn't perforation to the periodontal area. In the presence of perforation, mineral trioxide aggregate (MTA) is a main preferred material in resorption cases<sup>2</sup>.

The treatment of root canals with internal resorption can be challenging for clinicians. In this case report, the endodontic surgical treatment of a right maxillary central incisor with internal resorption that has perforation to periodontal tissues was presented.

## CASE REPORT

A 17-years-old male patient was referred to Inonu University Faculty of Dentistry, Department of Endodontics complaining of aesthetic dissatisfaction in his maxillary right central incisor tooth. The patient reported a history of trauma involving the maxillary anterior region about eight years ago. Clinic and radiographic examination revealed that root canal treatment has already been started in another clinic, but the treatment has not been finished. In addition, there was no temporary filling in the endodontic access cavity. The patient reported that he did not go to another appointment. A periapical radiograph showed a wide periapical lesion and internal resorption in the apical and middle third of the root. The tooth was diagnosed with chronic apical periodontitis (Figure 1).



**Figure 1:** Before Treatment

The working length was determined with an apex locator (VDW.GOLD RECIPROC Endo motor with integrated apex locator) and periapical radiography. Root canal cleaned and shaped with minimal instrumentation and % 2 chlorhexidine used for irrigation.

Because of the excessive exudate and bleeding at the first appointment, it was decided to perform endodontic surgery to control bleeding and to provide adequate sealing in the resorptive area.

A week later, in the second appointment, the tooth was asymptomatic. A full-thickness mucoperiosteal flap was elevated to reach the resorption site. Granulation tissue was removed and bleeding was controlled (Figure 2).



**Figure 2:** During Surgery, exposure of resorption area

The perforation area and the root canal were filled with Mineral Trioxide Aggregate (MTA) (ProRoot, Dentsply / Tulsa Dental Specialties) and the endodontic access cavity was sealed with temporary restoration



**Figure 3:** During Surgery, after application of MTA



**Figure 5:** After Permanent Restoration



**Figure 4:** After Surgery



**Figure 6:** After 6 Months Follow-up

(Figure 3-4). In the post-operative appointment, the sutures were removed and permanent restoration was performed.

The follow-up appointments after two weeks (Figure 5) and six months (Figure 6) the percussion and the palpation tests were negative, the patient has no complaining and the size of the periapical lesion was decreased according to the clinical and radiographic examination.

## DISCUSSION

A perforation is a mechanical or pathologic link through the root canal and periodontal tissue<sup>1</sup>. Inability to obtain a dry root canal because of continuous bleeding suggests that the internal resorption is perforated<sup>3</sup>. Is the presence of perforation can cause to over-filling of the root canal towards the periodontal tissues or to prevent complete obturation of the perforation area<sup>4</sup>. In such a risky situation, a surgical approach is recommended to perform the proper treatment<sup>5</sup>. In this case, we performed a surgical approach because of continuous bleeding and the size of the perforation.

Many different factors have affected the prognosis in perforations, such as the location of the perforation, its size, and bacterial contamination. The material used in perforation repair is one of these factors<sup>6</sup>. Besides this, the physician has to ensure good hemostasis during perforation repair. However, this cannot be achieved in all cases<sup>7</sup>. MTA is a cement-like substance and it is used as a repair material<sup>1</sup>. MTA consists of tricalcium silicate, tricalcium oxide, tricalcium aluminate, and silicate oxide<sup>8</sup>. These trioxides and other hydrophilic particles are set in the presence of moisture. Since MTA is hydrophilic, it is recommended to be used in perforated areas<sup>9</sup>.

Another important issue in perforations is the reaction of the surrounding tissues to the repair material. MTA is a biocompatible material. In addition, it stimulates the formation of hard tissue<sup>10</sup> and the adhesion of osteoblastic cells to the root surface<sup>4</sup>. In this case, MTA was used as recommended<sup>3</sup>. Although MTA is accepted as an ideal material to use for repairing the perforations, more studies with long-term follow-up are needed.

Early detection of internal resorption is important for treatment prognosis<sup>5</sup>. Internal resorption might go unnoticed till the lesion has widened thoroughly. In such cases perforation to the periodontal area

is inevitable<sup>2</sup>. In this case, we presented, the follow-up and treatment of a maxillary right central incisor tooth after trauma was neglected by the patient. The destructive nature of internal resorption is obvious. In this case, as a result of this nature, we see a tooth that was destroyed by extensive resorption. This case report refers to the possible relationship between trauma and internal root resorption. The importance of clinical and radiographic follow-ups after trauma is emphasized once again.

## CONCLUSION

Due to the lack of information about the origin and destructive nature of resorption, physicians should follow current studies suggesting new treatment approaches.

## Conflicts of Interest

The authors has no conflicts of interest to article.

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