

Pink Spot – Literature Review and Case Report

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Background: Pink spots in teeth were first described by Mummery in 1920, and were related to resorption. Resorption is a pathologic process that often eludes the clinician with its varied etiologic factors and diverse clinical presentations. Resorption can be generally classified as internal and external resorption. Internal resorption has been described as a rare occurrence as compared to external resorption. **Case report:** This article describes a pink spot that was diagnosed as a progressing resorption process. Early diagnosis enabled a successful management of the lesion. **Conclusion:** Early diagnosis and treatment of an internal resorption, clinically seen as a pink spot, in a primary central incisor may prevent its fast progress and subsequent loss.

Key words: internal resorption, vascular, intra-coronal resorption, primary teeth

INTRODUCTION

Internal resorption is a pathological process starting in the pulp, when the pulp chamber, the root canal or both expand by resorption of the surrounding dentin. Although the cause of this condition is unknown, precipitating factors such as trauma, direct and indirect pulp capping, pulpotomy, orthodontic treatment, enamel invagination and pulp polyps have been reported to initiate it.¹⁻³ Internal inflammatory resorption can be transient or progressive.⁴⁻⁵ It has been hypothesized that internal resorption once initiated can progress only if the dentinal tubules have an unexpected course from an area of necrotic tissue to an area of vital pulp tissue.^{5,6} This perhaps explains why it is reported as a rather rare occurrence as compared to external root resorption.⁷ Most cases of internal resorption are asymptomatic and are often detected as an incidental radiographic finding.⁸⁻¹⁰ Frequently it is observed in the cervical region but may occur in all areas of the pulp.⁹ If the resorption occurs in the coronal portion, the tooth may demonstrate a pinkish hue because of the hyperplastic, vascular pulp tissue filling the resorbed area.^{10,11} Mummery¹² discussed “pink spots” in teeth but mentioned that such “internal granulomas” were of rare occurrence.

The resorption can progress and cause perforation and/or spontaneous fracture of the crown. However, not in all cases reported in the literature the affected tooth was lost due to resorption. A spontaneous cessation of the resorption process and deposition of hard

tissue has been described in number of reports.¹³ Resorption associated with dental trauma can occur within a few weeks or months after the event.¹⁴ In this case intra-pulpal hemorrhage can develop, leading to the formation of blood clots. These are then organized and replaced by granular tissue which compresses the dentin wall of the pulp chamber or of the root canal. With activation of non-differentiated mesenchymal cells of the pulpal tissue they differentiate into odontoclasts, the cells responsible for resorption of the hard tooth structure.

Internal resorption appears radiographically as a uniform, round to oval radiolucent lesion.¹

Histopathologically, the pulp tissue in the area of destruction is vascular and exhibits an increased cellularity and collagenization.^{15,16}

Three possibilities for the treatment of internal resorption are discussed in the literature: follow-up, pulpectomy or extraction. When the process is progressive but not to the extent of perforation, root canal therapy is usually recommended as an effective treatment, and should begin as soon as possible to limit lesion progression.^{8,9,11}

This case presents an alternative treatment of internal resorption seen clinically as a pink-spot from both the labial and palatal surfaces of a right maxillary primary central incisor.

Case report

A 2 years old Israeli girl was referred from a private pediatric dental office to the Pediatric Dental Clinic of the Hadassah School of Dental Medicine, Jerusalem, Israel. The patient’s parents reported no history of oral trauma, infection or associated symptoms, and she had been in good general health since birth. Her mother informed “she had noticed a pink stain on one of her upper front teeth a few months earlier.” According to the referring pediatric dentist and to the mother the stain had increased in size since it was first noticed. The main reason for the parents’ concern was esthetics. Intraoral examination revealed a pink intrinsic stain slightly incisal to the center of the crown of tooth #51, the stain was reflected both from the labial and palatal surfaces (figures. 1 and 2). The crown was intact besides the incisal edge that was not even. No carious lesions were observed clinically. Radiographic examination showed a

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round radiolucent zone of approximately 1 mm in diameter at the center of the tooth crown with no observable connection to the pulp chamber)figure 3).

The roots of both maxillary centrals were still incomplete.

Differential diagnosis considered were: internal resorption due to trauma, idiopathic intra-coronal resorption, progressive pre-eruptive intra-coronal resorption or coronal hematoma (the latter was ruled out due to the progression of the lesion).

The treatment decided upon was based on the most probable diagnosis: internal resorption due to trauma.

Under combined sedation of Midazolam (P.O) and nitrous oxide, a local anesthetic was administered (1.8cc of 2% lidocaine with epinephrine 1:100,000 by infiltration) and the teeth were isolated with a rubber dam. The lesion was accessed via the buccal surface with a 330 tungsten-carbide bur. Pulpal bleeding was controlled by irrigation with sterile saline and the site was covered with calcium hydroxide (Sultan Healthcare, Inc. USA). The cavity was sealed with IRM (Dentsply, USA), Vitrebond (3M Espe, USA) and Z-100 Composite (3M Espe, USA).

The patient was symptom-free when she returned six months later and every six months up to 2 years follow-up post treatment. Radiographic findings demonstrated a formation of a stable 1mm wide dentin bridge with continuation of development of the roots (figures 4 and 5).

Fig 1: View of the lesion from the labial surface



Fig 2: View of the lesion from the palatal surface



Fig 3: Radiographic image of lesion at tooth #51



Fig 4: Radiographic image demonstrating a formation of dentin bridge at 6 months follow-up

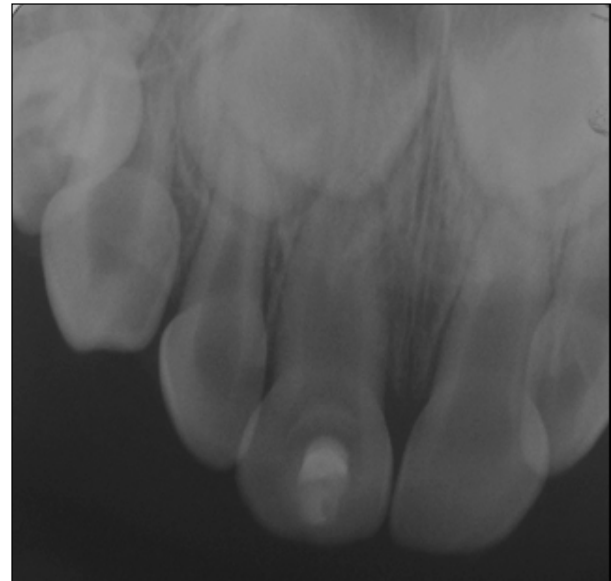
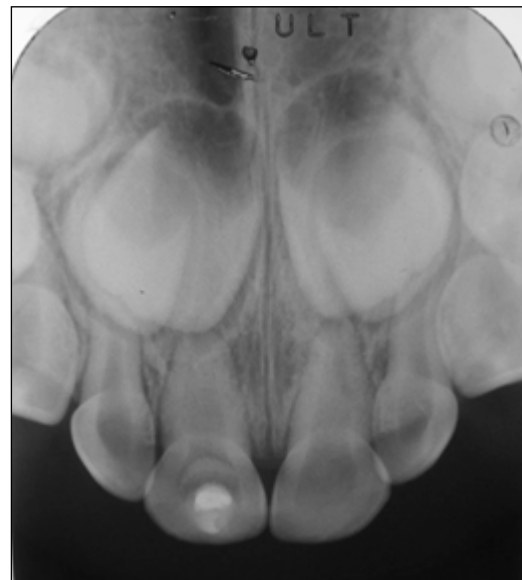


Fig 5: Radiographic image at 2 years follow-up



DISCUSSION

This report describes a central primary incisor with idiopathic internal resorption which was discovered by the patient's parents. The resorption was treated by a calcium hydroxide partial pulpotomy.

In a comprehensive search of the electronic databases and the pediatric dentistry literature we have not found any report of a similar case. Partial pulpotomy has been used by Ram and Holan¹⁷ for treating a primary incisor with pulp exposure due to trauma, but no case of internal resorption has been described. The rationale for choosing this treatment was to refrain from doing a pulpectomy or a cervical pulpotomy, aiming to conserve the advantages of a partial pulpotomy, as follows:

1-allowing the preservation of a usually vital coronal pulp tissue, thus enabling a greater potential for healing¹⁸

2- continuation of apposition of dentin in the cervical area (this will not happen when a cervical pulpotomy is performed, because a larger portion of pulp tissue is removed)

Calcium hydroxide is believed to lead to internal resorption when used for pulpotomy in primary teeth with carious exposure¹⁹. This is probably due to an inflammatory response present in the radicular pulp. Cvek^{20,21} demonstrated inflammatory changes reaching the depth of 2 mm in monkeys' incisors following mechanical exposure of the pulp. Based on this finding, Cvek suggested the partial pulpotomy technique, in which the excision of 1-2 mm of the pulp tissue adjacent to the exposure site results in removing the infected part of the pulp, allowing the application of the calcium hydroxide on the healthy tissue.

The cellular mechanisms involved in the formation of a dentin bridge were discussed in several studies²²⁻²⁵. Almost all of the dentin bridges formed after deposition of calcium hydroxide in direct contact with the pulp tissue demonstrate

“tunnel defects”²⁵. There is some evidence that these “tunnel defects” diminish in size or obliterate over time. This might result in a tighter seal over the bridge that prevents bacteria from entering the healthy pulp tissue. The use of MTA instead of calcium hydroxide may allow a lower penetration²⁶, but has the disadvantage of inner staining of the crown²⁷ – a fact that should be taken into consideration when performing such a procedure in anterior teeth. There is a need for a longer follow-up clinically and radiographically and more cases to determine the success of such a procedure.

CONCLUSION

The present report describes a case where the progression of internal resorption was successfully sustained due to early diagnosis and appropriate treatment.

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