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CASE REPORT

Case Report: Root resorption caused after pulp death of adjacent primary molar [version 1; peer review: 2 approved]

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Abstract

Necrotic decayed primary molars with necrotic pulp tissues may show periapical involvement and root resorption. In this case report, a pediatric patient with a very common chief complain and clinical picture of necrotic badly decayed molar, introduced a very interesting case when radiographic investigation was performed, which showed that root resorption of the adjacent healthy molar occurred. The current report is, to the best of our knowledge, the first to report such finding in primary dentition.

Keywords

Root resorption, Necrotic tooth, Pulpectomy

Open Peer Review

Approval Status

	1	2
version 1		
03 Aug 2018	view	view
1. Mariem O. Wassel , Ain Shams University, Cairo, Egypt		
2. Zafer C. Cehreli , Hacettepe University, Ankara, Turkey		
Any reports and responses or comments on the article can be found at the end of the article.		

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Introduction

Root resorption is the physiologic or pathologic loss of dentin and/or cementum and/or bone¹.

Primary teeth can go through either type, but other than resorption during the shedding process resorption is considered pathologic. Inflammatory root resorption is not a rare finding in the pediatric community, with spread of infection from a carious tooth as a main cause^{2,3}. In the present case, the interesting finding is that root resorption did not only occur in the carious, necrotic tooth but also occurred in the adjacent vital tooth.

Case report

A seven and half year-old boy visited the outpatient clinic of Pediatric Dentistry Department, Faculty of Dentistry, Cairo University in June 2015 with a chief complaint of pain on the lower right molar area. The patient's mother stated that the pain was at times throbbing in nature, and child is not able to chew on this side.

Clinical examination showed a badly decayed, lower second primary molar with related localized intraoral abscess, where the lower first primary molar was intact. The patient had poor oral hygiene; he had not received any professional dental care, and was very apprehensive.

Radiographic examination revealed root resorption and bone rarefaction related to lower second primary molar. The interesting finding was a considerable amount of root resorption of the distal root of the adjacent lower first primary molar (Figure 1A).

The case was managed by performing pulpectomy⁴ to the lower second primary molar, with root canals filled with calcium hydroxide paste with iodoform (Metapex, Meta Biomed, Republic of Korea). The tooth was then restored with high viscosity glass ionomer (GC Fuji IX GP capsule, GC corporation, Tokyo, Japan) (Figure 1B). The lower first primary molar was not touched and instead monitored. No antibiotics or analgesics was prescribed.

Unfortunately, the patient's mother did not want follow-up appointments in person, however, she was contacted on the phone, after 2 weeks, 3 months and 6 months, and she said everything was fine and there was no swelling or pain.

At about 8 months from the treatment appointment, the patient's mother visited the outpatient clinic with the patient for other reasons, and decided to pass by the Pediatric Dentistry Department for patient follow-up. Clinical examination showed no signs or symptoms, occlusal restoration was intact, and radiographic examination revealed arrested root resorption, on both molars, and an increase in the density of bone although this was not at a normal level yet (Figure 1C).

Table 1 shows the patient's timeline of symptoms, treatment and follow-up.

Figure 1. Radiographic examination. A) Pre-operative radiograph: Bone rarefaction and root resorption in first and second primary molars; B) Post-operative radiograph: Pulpectomy treatment in lower second primary molar; C) 8 months post-operative: cessation of root resorption.

Discussion

Caries-related inflammatory root resorption is caused when bacteria from infected pulp stimulate resorptive cells, thus removal of infected pulp is necessary for cessation of the condition⁵.

Table 1. Case timeline.

Time	Event	
0	Patient visited clinic, history, clinical and radiographic examination	Abscess related to lower right second primary molar, and root resorption in distal root of adjacent first primary molar
0	Pulpectomy procedure	
+ 2 weeks	1 st Follow up (Phone inquiry)	No pain, no swelling (symptom free)
+ 3 months	2 nd follow up (Phone inquiry)	No pain, no swelling (symptom free)
+ 6 months	3 rd follow up (Phone inquiry)	No pain, no swelling (symptom free)
+ 8 months	4 th follow up (clinical and radiographic assessment)	No pain, no swelling (symptom free). Arrested root resorption, Improvement of bone density.

The only previously reported similar case was a periapical lesion adjacent to a tooth with failing root canal therapy, where healing did not occur till extraction of the adjacent tooth⁶.

In the current case, the treatment choice for the lower second primary molar was obvious and clear. The problem with the adjacent tooth, which was intact but suffered from root resorption, is that it is not clear by signs, symptoms and investigation whether the root resorption is just caused (due to proximity) by resorptive cells stimulated from bacteria from the necrotic pulp chamber of lower second primary molar, or if bacteria or bacterial toxins have spread to the lower first primary molar, causing retrograde infection, which would have necessitated pulp therapy to the first primary molar as well.

We have chosen the more conservative treatment plan, which involved the pulpectomy of lower second primary molar and follow-up for the lower first primary molar, which turned out to be appropriate, where mother reported.

Patient perspective

The patient's mother was pleased with the more conservative treatment performed, as the child was very apprehensive, and she preferred the least clinical procedure possible. She and the

child were satisfied with the results as clinical symptoms subsided after treatment.

Conclusion

Although a rare finding, one should consider the possibility of root resorption caused by periapical infection of adjacent tooth, when no other symptoms are present, as the least invasive treatment and follow-up should be tried first.

Consent

Written informed consent for publication of the clinical details and images was obtained from the patient's mother.

Data availability

All data underlying the results are available as part of the article and no additional source data are required.

Competing interests

No competing interests were disclosed.

Grant information

The author(s) declared that no grants were involved in supporting this work.

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This paper reports a very rare occurrence of the spreading of periapical infection to a healthy primary molar root. The non-vital tooth causing the infection was treated endodontically without any intervention to the vital neighboring primary molar. After 8 months, arrest of the resorption was evident along with improved periapical healing.

Minor comments:

1. Please discuss the effect of coronal restoration on the prognosis of endodontic treatment.
2. Please discuss the fate of extruded root canal medicament.

Is the background of the case's history and progression described in sufficient detail?

Yes

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?

Yes

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?

Yes

Is the case presented with sufficient detail to be useful for other practitioners?

Yes

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of

expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 08 August 2018

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Mariem O. Wassel

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1. The title can be changed to "primary molar root resorption after pulp death of an adjacent primary molar" to clarify that root resorption occurred to an adjacent primary tooth not a permanent one.
2. Start the abstract with decayed primary molars, delete "necrotic"
3. Indicate in abstract the age of the child and that resorption occurred in an adjacent primary molar
4. Replace root resorption by inflammatory root resorption in key words
5. Give hint about child's medical history
6. Write the details of pulpectomy (single or 2 visits), irrigation used
7. Why is SSC not fitted?
8. In ref 6 cited text (page 3, first paragraph), please specify whether this was a primary or permanent tooth
9. In conclusion, please start a new sentence from "when no other symptoms are present....." and delete "as" in the same sentence

Is the background of the case's history and progression described in sufficient detail?

Partly

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?

Yes

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?

Yes

Is the case presented with sufficient detail to be useful for other practitioners?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: pediatric dentistry

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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