

Latrogenic dentistry due to undetected root resorption observed with CBCT after many attempted treatments: a case report

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Abstract

Invasive cervical root resorption (ICR) is an uncommon external root resorption which initiates at the cervical aspect of the tooth. ICR is a rare entity with an estimated frequency of less than 0.1% and could be misdiagnosed as cervical root caries. This can result in inappropriate management of the lesion with continuing resorption and eventual loss of tooth. This case highlights the need to increase the awareness of this uncommon clinical entity and the role of cone beam CT in its diagnosis and treatment planning. This case report involves a case of cervical root resorption which was initially misdiagnosed and managed as gingivitis, root sensitivity, pulpitis and trauma from occlusion. It was later diagnosed with cone beam CT and the lesion microsurgically removed and restored with resin filling material. The cone beam CT could contribute in avoiding any practice of iatrogenic dentistry is emphasized, as effective management can only be carried out if the exact location and nature of the lesion is understood.

Aim and objective of the article

A clinical case is presented to demonstrate the importance of CT scanning and its necessity. To be able to reach a definitive diagnosis with 3D imaging during treatment planning in spite of misleading chief complaint.

Introduction

Cervical external resorption also called as invasive cervical resorption is a clinical term used to describe a relatively uncommon, insidious and often aggressive form of external tooth resorption, which may occur in any tooth of permanent dentition [1-14]. Invasive cervical resorption is defined as 'a localized resorptive process that commences on the surface of root below the epithelial attachment and the coronal aspect of the supporting alveolar process, namely the zone of the connective tissue attachment [2]. Radiographic features of lesions vary from well-delineated to irregularly bordered mottled radiolucencies, and these can be confused with dental caries. A characteristic radiopaque line generally separates the image of the lesion from that of the root canal, because the pulp remains protected by a thin layer of predentin until late in the process. Histopathologically, the lesions contain fibrovascular tissue with resorbing clastic cells adjacent to the dentin surface. More advanced lesions display fibro-osseous characteristics with deposition of ectopic bonelike calcifications both within the resorbing tissue and directly on the dentin surface [2].

A 61 year non smoking female with history of heart problem with controlled medication. Chief complaint "An irritating discomfort on a tooth in the left lower jaw" that requires examination for either a filling or root sensitivity. The patient was examined with a panoramic (Figure 1) radiograph achieved and followed with peri-apical (Figure 2) and also no definitive diagnosis was made and hence further investigations lead to the definitive diagnosis.

Case report

A 61-year-old non smoking female with no medical history with a Chief complaint of an irritating pain on left lower quadrant (FDI # 35) that requires examination for her localized chronic discomfort. During the evaluation of panoramic radiograph (Figure 1), no anatomic or etiologic factor for her chief complaint was detected hence, a periapical radiograph (Figure 2) was taken and the result of which



Figure 1. Initial panoramic radiograph.

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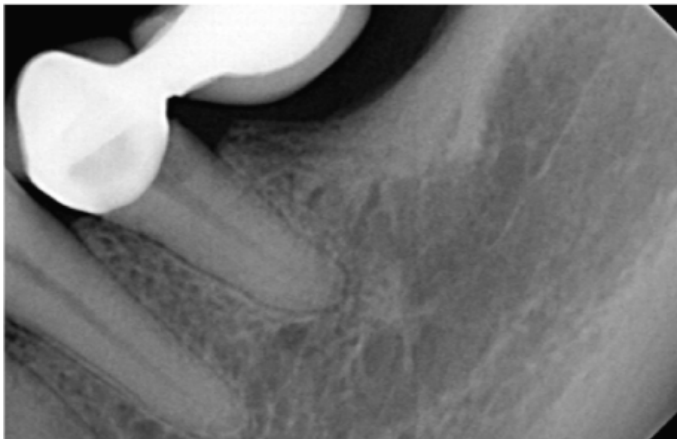


Figure 2. Initial periapical radiograph.



Figure 3. Biolase laser used for LLL (Low level Laser Therapy).

were also inconclusive. Provisional diagnosis was root sensitivity and patient induced mild periodontal marginal gingivitis due to gingival irritation. Prophylaxis cleaning and scaling was performed. The patient returned with the same chief complaint and a Palliative treatment with desensitizer fluoride gel (Appendix 1) also was performed and given to the patient for 2 weeks home application. The patient returned with the same chief complaint and the next provisional diagnosis was muscular in nature and hence low level laser therapy (LLL) 1200J /300 seconds therapy (Figure 3) (Appendix 2) was performed for 2 sessions with 3 day intervals with no effective results.

The patient returned with the same chief complaint and the patient was then referred to an endodontist and root canal treatment on #35 performed. The chief complaint remained as it is. The chief complaint was not resolved and the missing tooth in #36 was planned for an implant (Appendix 3) with the rationale that if we were to balance the force distribution the load on tooth #35 could be controlled and the chronic irritating stimulus disappear. The bridge was sectioned and 3

single fixed restorations were advised with an implant supported fixed partial denture in #36 area.

The patient was inquired about the findings in order to know whether she had any sensorial disturbance in the region of the LLQ. She presented no sensorial bilateral disturbance in the regions supplied by the mental nerve. In the panoramic radiograph, the right and left mental foramen (MF) were observable and not relevant to the chief complain, as a normal expected radiolucent area between the left mandibular premolars (Figure 1). For accurate implant placement A CBCT (Appendix 4) images were evaluated in axial, coronal and transversal reformations (Figure 4), using 1.00 mm slice thickness for implant placement on #36. The image corresponding to the LLQ was clearly demonstrating a depression in the root area above the crestal bone level in the assessed CBCT slices. The measurement of the ICR lesion height and width (3.6/2.0 mm, respectively) was measured using “distance” tool of the software in the most representative CBCT transversal slice (Figure 5).

CBCT is a modern technology, which allows the evaluation of maxillofacial structures in three dimensions (sagittal, axial and coronal). CBCT has many advantages such as absence of superimposition of structures in obtained slices, acquisition of a 3-D reconstruction, as well as use of lower radiation doses in comparison to medical CT [15-24]. MF location, size, shape and its possible variations can be properly assessed by CBCT [24].

At the time of the implant surgery the ICR lesion was attended to, the lesion was cleaned and restored with a Composite Resin restoration

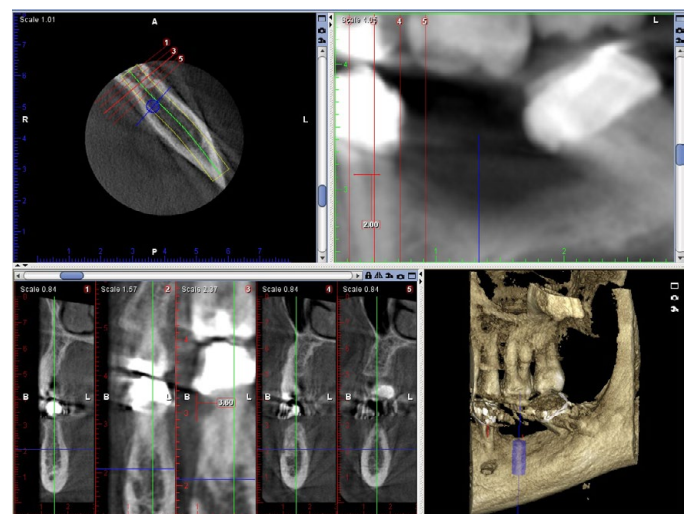


Figure 4. CBCT images.



Figure 5. OPG taking at the time of implant surgery.

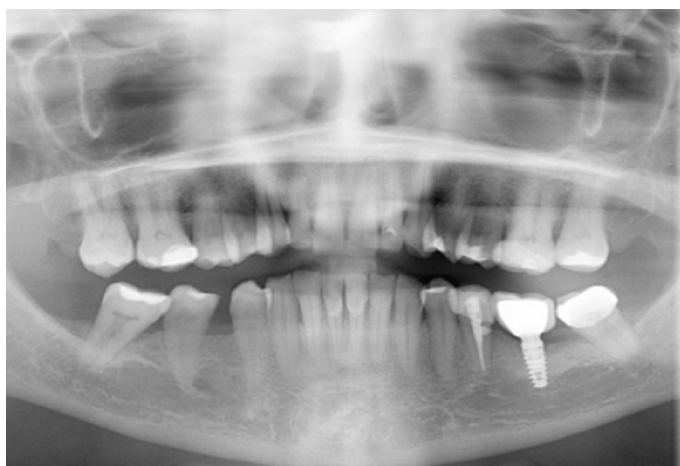


Figure 6. A 3 year follow up OPG.

(Appendix 5) while maintaining absolute moisture control. An OPG (Figure 5) was taken at the time of lesion restoration demonstrating adequate seal of the ICR lesion with the Resin restoration. A Three year follow up panoramic radiograph (Figure 6) was taken which demonstrated successful cassation of the Invasive cervical resorption, an Increase in the surrounding bone level and a symptom free patient.

Differential diagnosis in time line and the treatment performed accordingly

Mild gingivitis: scaling and polishing (30/10/2012), root sensitivity: fluoride gel application (07/11/2012), muscular fatigue: Low level laser therapy(5 sessions over a period from (10/11/2012-25/11/2012), partial pulpal necrosis: root canal treatment (28/11/2012), trauma from occlusion: single crowns on each tooth and implant placement on edentulous area(25/12/2012), ICR: Composite Resin restoration (25/12/2012).

Conclusion

Early detection of a lesion is essential for successful management of Invasive Cervical Resorption. For patients with an ICR lesion with no apparent identifiable etiologic factor to achieve appropriate diagnosis and management CBCT appears to be a promising diagnostic tool.

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Appendix

Appendix 1

Fluoride gel: SULTAN Health Care
1301 Smile Way
York, PA 17404
Call: 800-637-8582
Call: 201-871-1232
Fax: 201-871-0321
Email: customer.service@sultanhc.com

Appendix 2

Biolase:
4 Cromwell
Irvine, CA 92618, U.S.A
Tel: 888-4-BIOLASE (888-424-6527)
Fax: 949-273-6677

Appendix 3

Implant:
Implant system – Myriad plus
Dimensions – D3.8 x L9.5
Equinox Medical Technologies B.V.
de Stuwdam 25 3815 KM Amersfoort the Netherlands
Tel.: 31 33 4793661
Fax: 31 33 4790468
Email: info@equinoxmed.com

Appendix 4

CBCT

Anode voltage	60-90 kV
Anode current	1–14 mA
Focal spot	0.5 mm, fixed anode
Image detector	Flat panel
Image acquisition	Single 200 degree rotation
Scan time	7.5–27 s
Reconstruction time	2–25 s

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