

Short Communication

Accessory branch of canalis sinuosus mimicking external root resorption: A diagnostic dilemma

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Abstract

The aim of this study was to recognize the importance of canalis sinuosus in Endodontics. A 60-year-old male patient reported with the chief complaint of pain and swelling in upper front tooth region for 2 weeks with a history of trauma 21 years back. Clinical examination revealed fractured tooth 21 (maxillary left central incisor) with an associated sinus tract. Radiographic examination revealed diffuse periapical radiolucency in relation to tooth 21 and external resorptive defect in apical third of the root of tooth 11 (maxillary right central incisor). Cone-beam computed tomography advised to plan surgical treatment for the same disclosed the presence of an anatomic variation of canalis sinuosus. The location and course of this canal illuded as a resorptive defect, which is a very rare occurrence. This led to a change in diagnosis with relation to tooth 11 and treatment plan was formulated accordingly.

Keywords: Anatomic variation; anterior superior alveolar nerve; canalis sinuosus; cone-beam computed tomography; root resorption

INTRODUCTION

Numerous unnamed accessory foramina have been described in the jaws, especially in the anterior palate,^[1] lateral to the lingual foramina and lingual aspect of the mandible.^[2] The size and morphology of these foramina are extremely variable due to which they can be misinterpreted as apical pathosis.

The most prominent anatomical structure within the premaxillary region is the nasopalatine canal.^[3] It carries the nasopalatine nerves and vessels, which supply the anterior teeth and the adjacent soft tissues. This region is also traversed by a lesser known but often present bony canal called canalis sinuosus (CS).^[4] This canal branches from the lateral face of infraorbital canal, close to its midline;^[5] runs forward and downward to the inferior wall of the orbit,

medially bent to the anterior wall of the maxillary sinus, follows the lower margin of the nasal aperture, and opens next to the nasal septum in front of the incisive canal.^[6] CS contains the anterior superior alveolar (ASA) nerve and corresponding vessels.^[7]

Limited knowledge among the practitioners, insufficient literature in the textbooks, and failure of conventional radiography to properly display these anatomical configurations may cause them to remain unnoticed.

This report describes a rare case of superimposition wherein the opening of an accessory canal was mimicking a resorptive defect in the apical third of the root of tooth 11.

CASE REPORT

A 60-year-old male patient presented to the department of conservative dentistry and endodontics with pain and intermittent episodes of swelling in upper front tooth region for 2 weeks. The patient had a history of trauma

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Date of submission : 26.11.2016

Review completed : 15.11.2017

Date of acceptance : 20.11.2017

Access this article online

Quick Response Code:



Website:
www.jcd.org.in

DOI:
10.4103/JCD.JCD_375_16

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How to cite this article: Shah PN, Arora AV, Kapoor SV. Accessory branch of canalis sinuosus mimicking external root resorption: A diagnostic dilemma. J Conserv Dent 2017;20:479-81.

in the same region 21 years back. Extraoral examination showed no remarkable findings. Intraoral examination revealed sinus tract associated with fractured tooth 21 [Figure 1a and b].

Pulp vitality tests were negative for the teeth 11 and 21. Intraoral periapical (IOPA) radiograph revealed diffuse periapical radiolucency in relation to tooth 21. A well-defined radiolucency in relation to the root of tooth 11 was apparent on the IOPA radiograph which was suggestive of resorption [Figure 1c]. Another IOPA radiograph was taken with a different horizontal angulation [Figure 1d], which hinted towards the presence of an external root resorption defect since the site of lesion moved with the change in horizontal angulation.

Cone-beam computed tomography (CBCT) scan was advocated to plan the management of resorptive defect on tooth 11 (scan parameters: field of view – 8 cm × 4 cm, kVp – 120, mA – 5, effective exposure time – 7 s).

In the CBCT scan, no resorptive defect was evident with relation to tooth 11. However, a well-corticated bony canal, located palatal to the root of tooth 11, was observed. Similar structure was also observed on the distopalatal aspect of the root of tooth 21, but its cortical border was not well delineated [Figure 1e-m].

It was inferred that the opening of this accessory canal behind the palatal aspect of tooth 11 superimposed on the root surface and was earlier interpreted as a resorption

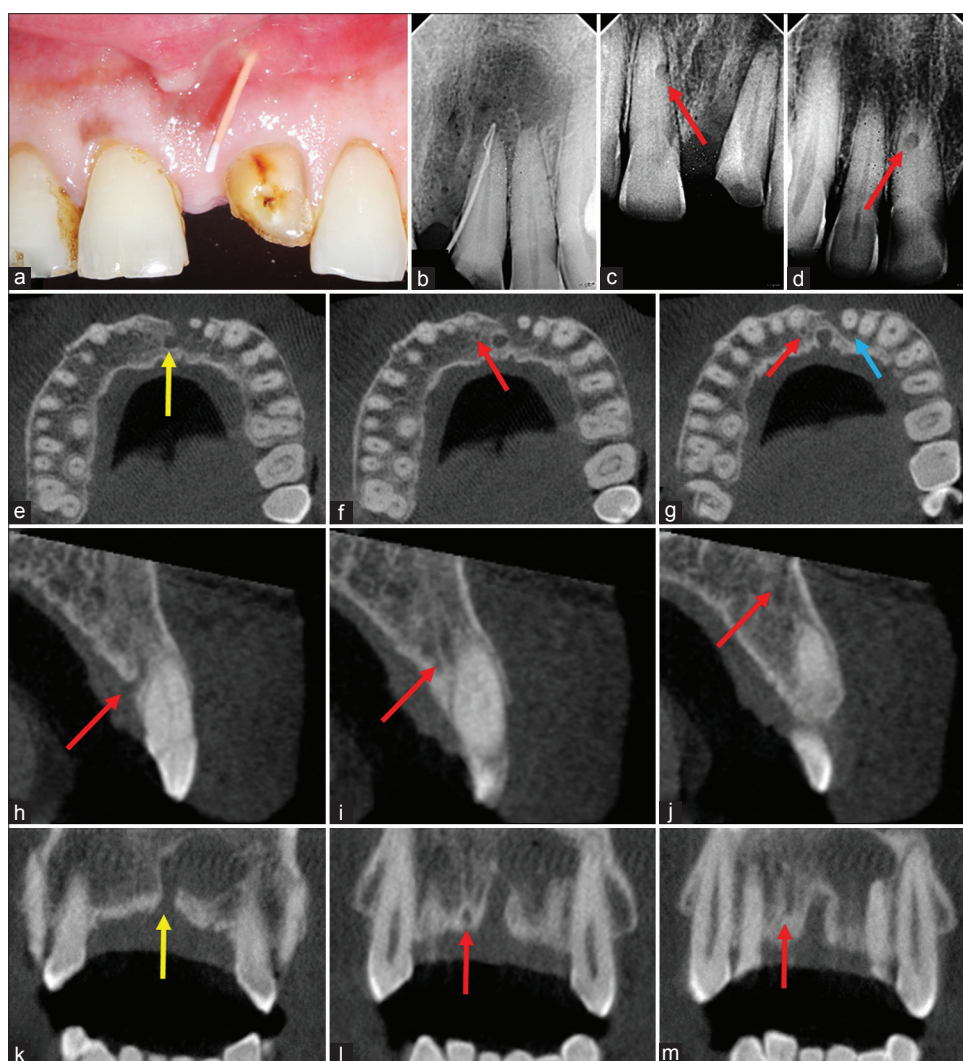


Figure 1: (a) Clinical assessment of sinus tract with relation to tooth 21, (b) radiographic image of sinus tract tracing, (c) radiographic image taken with a straight horizontal angulation suggestive of a resorptive defect with relation to tooth 11 (red arrow), (d) radiographic image taken with a distal horizontal angulation suggestive of an external resorptive defect, present on the palatal side of tooth 11 (red arrow), (e-g) axial sections showing the presence of nasopalatine canal (yellow arrow), accessory canal in relation to tooth 11 (red arrows) and tooth 21 (blue arrow), (h-j) sagittal sections of the anterior maxilla showing the presence of accessory canal with relation to tooth 11 (red arrows), (k-m) coronal sections of the anterior maxillary region showing the presence of nasopalatine canal (yellow arrow) and accessory canal in relation to tooth 11 (red arrows)

defect. Based on the previous literature reporting similar anatomic structure, this accessory canal can be identified as an “accessory branch of CS.”^[8] Hence, the final diagnosis was concluded as pulpal necrosis for tooth 11 and chronic periapical abscess for tooth 21 and root canal treatment was planned for both the teeth.

DISCUSSION

The clinical implications of accessory canals and foramina are often overlooked in clinical procedures. The presence of these anatomical variations can be discovered preoperatively on imaging and has a direct influence on the planning and success of the treatment. Frederic Wood Jones was the first who described an accessory bony canal carrying ASA nerve and vessels. Owing to its double-curved course, the term CS was coined by him.^[4]

In the present case, a wide accessory canal was observed extending from the floor of nasal cavity to a foramen located mesiopalatal to the tooth 11 with a diameter of 2.1 mm. The exit profile and orientation of the accessory canal led to a circular radiolucency superimposed on the root of tooth 11 on the IOPA.

Although CS has been identified previously on IOPA,^[9] it is difficult to locate it on conventional radiography as evident in the present case with respect to tooth 21. This could be due to small diameter of the canal, porous cortical layers, and variable course. CBCT is advantageous in such case scenarios as it clearly delineates these delicate findings.^[10]

The present case is a rare occurrence where superimposition of the anatomic variation of CS mimicked the apical resorptive defect with relation to tooth 11. A misdiagnosis in this case could have led to unnecessary surgical intervention of the tooth.

CONCLUSION

This case reinforces the fact that anatomical variations can be misleading and require a detailed evaluation to fulfill

the treatment needs. In what appeared to be a simple diagnosis, a CBCT advised for treatment planning leads to an accurate diagnosis and discovering the unexpected.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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