Periapical Lesion Involving a Mandibular Incisor Tooth

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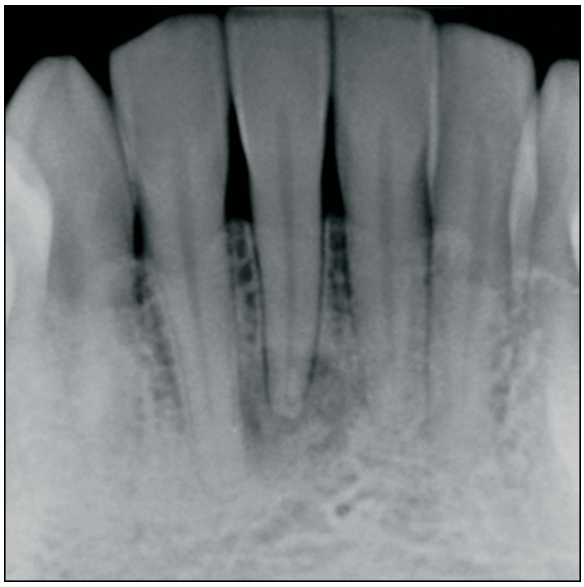
Online Case: *www.dentalcare.com/en-us/professional-education/case-challenges/case-challenge-073*



The following Case Challenge is provided in conjunction with the UT Health San Antonio School of Dentistry faculty.

A 43-year-old African American female presents with a periapical lesion involving a mandibular incisor tooth.

After you have finished reviewing the available diagnostic information, make the diagnosis.

Diagnostic Information

History of Present Illness

The patient is a 43-year-old African American female who recently moved to the area and presented for a new patient dental examination. The patient completed non-surgical periodontal therapy 4 years ago and has been on routine maintenance care. She has no specific dental complaints at this time.

Medical History

- Pertinent medical history: excellent health; hernia repair as child; childbirth: two healthy girls without complications
- Medications: none
- Adverse drug reactions: none
- Pertinent family history: maternal - breast cancer; paternal - hypertension, prostate cancer; siblings: older sister with breast cancer
- Social history: does not use tobacco products; social alcohol use; denies recreational drug use

Clinical/Radiographic Findings

Extraoral examination was unremarkable. No cervical lymphadenopathy or masses were noted. Intraoral examination revealed no mucosal lesions and an intact dentition without dental caries. Periodontal assessment revealed marginal inflammation with 4-5 mm maximum probing depths and bleeding on probing in the posterior sextants. Oral hygiene was good to fair with interproximal soft plaque accumulation. A full mouth radiographic series was obtained and revealed a circumscribed round radiolucency with central opacities at the apex of tooth #25 (Figure 1). The periodontal ligament appeared intact. The patient was unaware of this lesion and tooth #25 was asymptomatic. Teeth #23-27 tested vital to cold. There was normal tooth mobility and no tooth displacement. Probing depths around tooth #25 were 2-3 mm without bleeding. The overlying mucosa appeared normal with no facial or lingual cortical expansion. When informed of the lesion, the patient was very concerned about malignancy and requested a biopsy be performed.

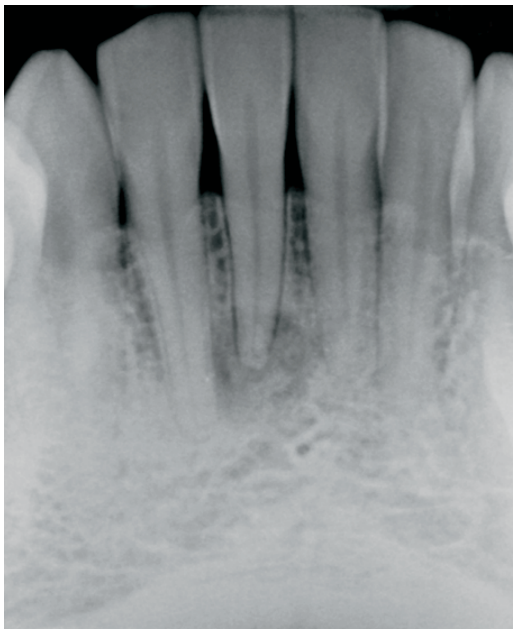


Figure 1. Periapical radiograph showing circumscribed periapical radiolucency with central opacities involving tooth #25.

Histopathologic Findings

The biopsy showed a moderately cellular intramedullary spindled fibrous stromal proliferation containing irregular trabeculae and globules of woven cemento-osseous extracellular matrix material (Figures 2 and 3). The lesion displayed poorly defined margins and seemed to blend into the adjacent normal bone. Focal osteoblastic lining cells, osteoid, and osteoclasts were noted. There was no associated inflammation.

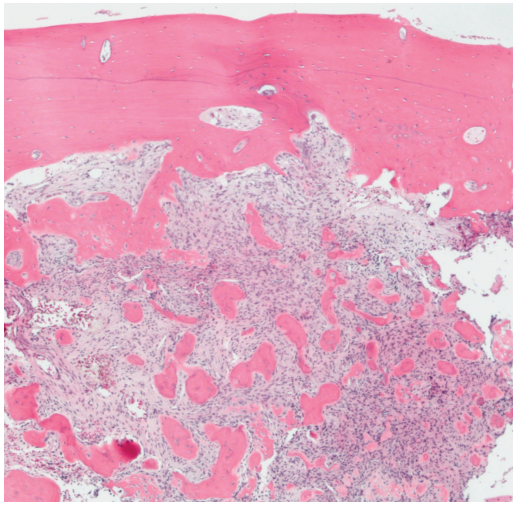


Figure 2. Low-power histologic image showing cortical bone with intramedullary fibro-osseous lesion blending into adjacent normal bone.

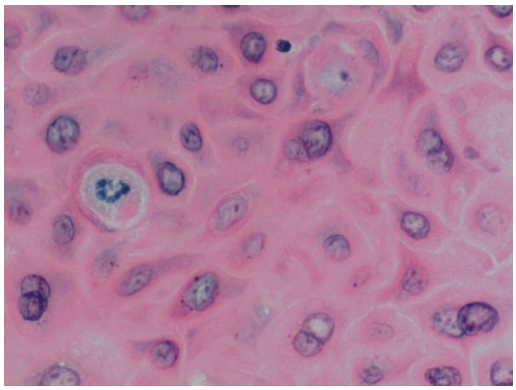
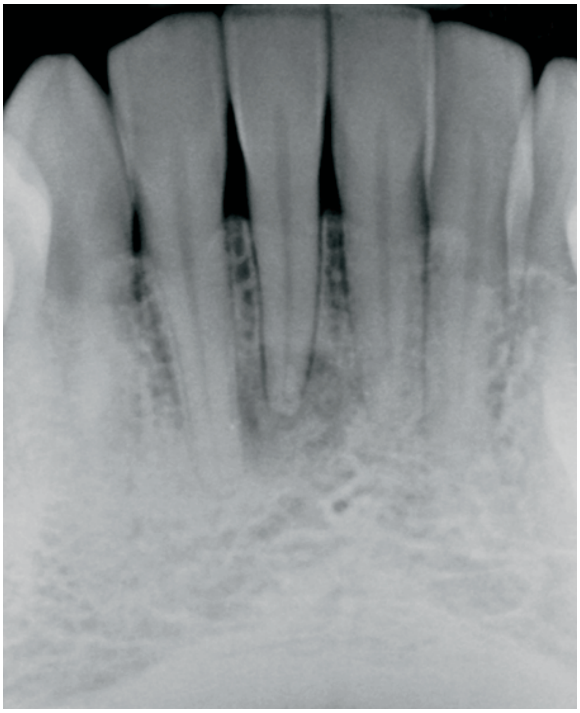


Figure 3. High-power histologic image of bland spindled fibrous stromal proliferation containing irregular trabeculae and globules of cemento-ossous extracellular matrix material.

Select Diagnosis

Can you make the diagnosis

A 43-year-old African American female presents with a periapical lesion involving a mandibular incisor tooth. After you have finished reviewing the available diagnostic information, make the diagnosis.



Select the Correct Diagnosis

A. Ossifying fibroma
B. Cementoblastoma
C. Periapical cemento-osseous dysplasia
D. Osteoma

Ossifying fibroma

Choice A. Sorry, this is not the correct diagnosis.

Ossifying fibroma (OF)[1-4] is a relatively uncommon benign fibro-osseous neoplasm with a predilection for the jaws and craniofacial skeleton. Some consider OFs that develop in the jaws to represent a mesenchymal odontogenic tumor of periodontal ligament origin. OF occurs across a wide age range with a peak incidence in young adults. There is a strong female gender predilection. Lesions of the jaws are most common in the mandibular premolar-molar region. OF usually presents as a solitary, slow growing, asymptomatic mass lesion. There is the potential for significant growth with tooth displacement, root resorption, cortical expansion, bowing of the inferior border of the mandible, and facial asymmetry. Radiographs demonstrate a well circumscribed round unilocular radiolucency with a variable radiopaque component depending on the amount of calcified matrix produced by the tumor. A peripheral corticated border may be present. Histopathologic examination reveals a well delineated intramedullary fibrous stromal proliferation containing trabeculae of woven to lamellar bone and globules of cemento-osseous calcified extracellular matrix material. Osteoblastic lining cells and osteoid are typically seen. The lesion is delineated from the surrounding normal bone and may have a capsule. Small OFs can be treated by enucleation and curettage. The lesion tends to separate cleanly from the adjacent bone. Larger lesions may require surgical resection and reconstruction. The prognosis is good and recurrence is rare. The juvenile active type of ossifying fibroma may display rapid destructive growth and has the potential for recurrence.[4] OF does not appear to have a significant risk for malignant transformation.

Please re-evaluate the information about this case.

Cementoblastoma

Choice B. Sorry, this is not the correct diagnosis.

Cementoblastoma (CB)[1,5-7] is an uncommon benign mesenchymal neoplasm of periodontal ligament or osseous origin. It occurs most often in adolescents and young adults with equal gender predilection. The mandibular molar/premolar region is the most common site and most frequently involves the permanent mandibular first molar tooth. CB often presents with pain and swelling that can be mistaken for an odontogenic infection. Aggressive growth with cortical erosion, tooth displacement, and incorporation of adjacent teeth may be seen. Radiographs demonstrate a circumscribed radiopaque mass with radiolucent rim. The lesion is attached to and partially obliterates the roots of the involved tooth which is usually vital. Histopathologic examination reveals dense sheets and trabeculae of cemento-osseous matrix material with vascular fibrous stroma. Radiating spicules of matrix are present at the edge of the lesion. The matrix is lined by plump reactive cementoblasts which may pile-up and bridge bone trabeculae. Scattered osteoclast-type giant cells are also present. There is a thin fibrous capsule and rim of reactive woven bone. Treatment usually requires extraction of the involved tooth and enucleation and curettage of the lesion. There is the potential for recurrence, so continued follow-up is appropriate. The prognosis is good.

Please re-evaluate the information about this case.

Periapical cemento-osseous dysplasia

Choice C. Congratulations! You are correct.

Periapical cemento-osseous dysplasia (PCOD)[1,8-11] is a relatively common non-neoplastic, benign fibro-osseous lesion of the jaws. This condition most frequently occurs in middle age black females and involves the periapical region of the mandibular anterior teeth. The lesions are asymptomatic and are often discovered incidentally on radiographic examination. PCOD initially presents as a solitary, or more often, multiple small apical radiolucent lesion(s) which can be mistaken for pulpoperiapical disease. As calcified matrix is produced, PCOD evolves into a mixed radiolucent / radiopaque lesion and eventually into a sclerotic mass with a peripheral radiolucent rim. The periodontal ligament space usually remains intact. PCOD has limited growth potential and does not tend to erode or expand the boney cortex. Adjacent lesions may become confluent. The involved teeth are usually vital. Histologic features include a spindle fibrous stromal proliferation containing trabeculae, globules, and sheets of cemento-osseous extracellular matrix material. PCOD usually requires only a clinical/radiographic diagnosis and no treatment is required. Unnecessary endodontic therapy, tooth extraction, biopsy, or surgical removal should be avoided. The prognosis is excellent.

Osteoma

Choice D. Sorry, this is not the correct diagnosis.

Osteoma[1,12-14] is a benign bone forming tumor that most often develops in the craniofacial bones. The nose and paranasal sinuses, skull, and jaws are the most frequently affected sites. Lesions described as osteoma may represent a benign neoplasm, reactive exostosis, or developmental hamartomatous process. Osteomas of the jaws most commonly present as a solitary asymptomatic, very slow growing nodular mass of the mandibular body or condyle. Most lesions are seen in adults. Osteomas may arise from the periosteal (peripheral) or endosteal (central) surfaces of the affected bone. Radiographs demonstrate a circumscribed dense radiopaque mass. Histologically, osteomas are composed of dense lamellar bone (compact osteoma). Some lesions may have a central area of trabecular bone (cancellous/spongy osteoma). Small asymptomatic osteomas may not require treatment. Larger or symptomatic lesions are managed with conservative excision. Continued follow-up is recommended. There appears to be no risk for malignant transformation. Significantly, multiple osteomas have been associated with Gardner syndrome which is a genetic condition leading to the development of numerous intestinal polyps with a very high rate of progression to colon cancer.[14]

Please re-evaluate the information about this case.

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Since joining the faculty in 2002, Dr. Huber has been teaching both pre-doctoral and graduate dental students at the UTHSCA School of Dentistry. In 2014, he was awarded the UTHSCSA Presidential Teaching Excellence Award. He is a Past President of the American Academy of Oral Medicine. Dr. Huber has spoken before many local, state, and national professional organizations. He has published over 70 journal articles, book chapters, and online postings.

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