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| **Name:** |
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| **Pathology Question:** |
| What are reasonable differential diagnosis of a periapical radiolucency? |
| **Report:** |
| A periapical radiolucency is defined as a radiographic change which is often associated with inflammatory bone lesions around the apex of the tooth (Grønkjær et al. 2016). While radiographs are the are the first indication of a radiolucency within the periapical region, it is difficult to diagnosis this radiographic finding without additional tests. A differential diagnosis list for a periapical radiolucency includes periapical abscess, periapical cyst, periapical granuloma, central giant cell granuloma, ameloblastoma, and periapical cemento-osseous dysplasia. Clinicians must determine pulp vitality, inspect the tooth for caries, determine periodontal health and may even need to biopsy the lesion in order to make a definitive diagnosis.  A periapical abscess occurs in a non-vital tooth, where toxic metabolites from the necrotic pulp exit through the apex of the tooth and cause an inflammatory reaction in the PDL and surrounding bone. Typically, a person with a periodontal abscess will present with severe, sharp pain, tooth mobility, swelling and tenderness with percussion. Initially, this lesion may not be visible radiographically, but if allowed to persist the lesion will become a larger radiolucency (White and Pharoah, 2009, p. 326-329). A periapical granuloma forms when the body attempts to heal itself from apical periodontitis or abscess. The body will recruit lymphocytes, plasma cells, and histiocytes to the affected area, which results in the formation of granular tissue. A periapical granuloma will appear as more circumscribed on the radiograph than a periapical abscess (White and Pharoah, 2009, p. 326-329). A periapical cyst is similar to a granuloma expect that during formation of granulation tissue, some epithelial rest of Malassez become entrapped. If these cells proliferate a cyst will form. Radiographically both lesions look similar, but a periapical cyst may have a sclerotic or corticated boarder. Additionally, if the lesion is greater than 1cm, it is typically a cyst (White and Pharoah, 2009, p. 326-329).  The following conditions are examples of a periapical radiolucency that can occur with a vital tooth. Central giant cell granuloma is thought to be a reactive lesion to an idiopathic stimulus. Histologically these lesions contain fibroblasts, multinucleated giant cells and macrophages. The radiolucent lesions typically show wispy, ill-defined trabeculae and are most often seen in adolescents and young adults. Typically, a patient will present with a painless, swelling as the first clinical sign (White and Pharoah, 2009, p. 442-444). An ameloblastoma is an odontogenic epithelial tumor that has an aggressive yet benign growth pattern. Ameloblastoma typically form in the molar region of the mandible and maxilla. These tumors grow slowly at first, but if left untreated can reach large sizes. Typically, these tumors are discovered during routine dental examinations. Radiographically, these lesions can vary from completely radiolucent to mixed with some bony septa, which may resemble a honeycomb pattern (White and Pharoah, 2009, p. 373-375). Periapical cemento-osseous dysplasia is a localized change in normal bone metabolism, where normal cancellous bone is replaced by fibrous and cementum like material. This condition is most commonly associated with black, middle aged, females. Radiographically the appearance of this lesion will change over time. Initially, the lesion will appear radiolucent as the cancellous bone is mainly replaced with fibrous tissue; however, as the lesion ages it will become more radiopaque (White and Pharoah, 2009, p. 432-437).  |
| **References:** |
| Grønkjær, L. L., Holmstrup, P., Schou, S., Schwartz, K., Kongstad, J., Jepsen, P., & Vilstrup, H. (2016). Presence and consequence of tooth periapical radiolucency in patients with cirrhosis. *Hepatic medicine: evidence and research*, *8*, 97-103.White, S. C., & Pharoah, M. J. (2009). Oral radiology: principles and interpretation, 6th ed. Mosby. |