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| **Name:** |
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| **Group:** |
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| **Pathology Question:** |
| What is external resorption and what are its causes in orthodontics? |
| **Report:** |
| External resorption is a pathological consequence that can occur from orthodontic therapy and results in permanent loss of tooth structure around the root apex. This type of resorption begins on the external surface of the root and travels internally. External resorption occurs in different degrees with the most severe being when the external surface of the root has resorbed 4 mm or more. The most common forms of diagnosis include panoramic or periapical radiography with periapical radiographs being more reliable than panoramic radiographs. While not the only thing responsible for external resorption, orthodontic treatment is usually a main cause. Some risk factors for external resorption include patient related factors such as genetics, age, chronic alcoholism, and alveolar bone density. The orthodontic related risk factors include magnitude of applied force, the treatment duration, and the method of force application. The actual cause of external resorption due to orthodontics stem from continuous, compressive forces that are too heavy. Additionally, the intrusion of teeth normally causes more resorption than the extrusion of teeth. These factors combined with longer durations of treatment make orthodontics a major trigger for external resorption.  Since external resorption is most often of iatrogenic cause there are numerous ways to manage and help prevent it. For an orthodontic patient, the first way would be to use light, intermittent forces rather than heavy, continuous forces. Additionally, it is important to take radiographs every six to twelve months for possible early detection of resorption. If it is detected, orthodontic treatment should be adjusted and a two to three month pause along with placement of a passive arch wire should be administered in order to prevent anymore resorption. Finally, proper oral hygiene should be highlighted since patients with external resorption are at a higher risk for periodontitis. |
| **References:** |
| Topkara, Ahu et al. 2012. Apical root resorption caused by orthodontic forces: A brief review and a long-term observation. *European journal of dentistry.* 6 (4):445-53.  White, Stuart C. And Pharoah, Michael J. Oral Radiology: Principles and Interpretation. Sixth edition. Mosby Elsevier, 2009, pp 318. |