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| **Name:** |
| Anna Langworthy |
| **Group:** |
| 9A-1 |
| **Basic Science Question:** |
| What is the anatomy of the periodontium? |
| **Report:** |
| Periodontium is defined as the supporting structures of the tooth. These structures consist of gingiva (dentogingivial junction), alveolar bone, periodontal ligament, and root cementum. Each component of the periodontium has a special function and together determine the integrity of the tooth.  Gingiva is made up of gingival, sulcular, and junctional epithelium. These tissues prevent the exposure of deeper periodontal tissues to the oral environment. Deep to the epithelium, the connective tissue lays to provide structural support. Connective tissue contains inflammatory cell infiltrate of leukocytes and T-lymphocytes and supplies the epithelial layer with an extensive vascular plexus. Together the epithelium and connective tissue maintain a healthy periodontium.  Alveolar bone contains the sockets for teeth. The layers of alveolar bone, superficial to deep, consist of the outer cortical plates, cancellous bone, and alveolus. The alveolus is the bone lining the tooth socket and provides attachment for the periodontal ligament fiber bundles. The alveolar bone must continuously respond to periodontal disease and masticatory or orthodontic forces by remodeling through resorption and bone formation. The distinction between alveolar bone and bone from other anatomical sites in the body is that it turns over very rapidly and is lost in the absence of a tooth.  The periodontal ligament is made up of connective tissue fibers located between the alveolar bone socket and the root of the tooth. Its main function is to support the teeth from masticatory forces, supply sensory reception, and act as a cell reservoir for cell repair and regeneration. The periodontal ligament space contains cementoblasts, fibroblasts, and osteoblasts, that are involved in the formation of cementum, periodontal ligament itself, and alveolar bone. The width of the periodontal ligament will also decrease in thickness as an individual ages.  Cementum is the outer coating of the tooth root. Its primary function is to serve as an attachment area for the periodontal ligament fibers. Specifically, the sharpey fibers, which are located on each end of the periodontal ligament fiber, embed into the cementum and intertwine the two. Together the cementum and periodontal ligaments anchor the tooth but also prevents fusion of the root to the alveolar bone (ankylosis). |
| **References:** |
| Nanci, Antonio, and Dieter D. Bosshardt. “Structure of Periodontal Tissues in Health and Disease\*.” *Periodontology 2000*, vol. 40, no. 1, 2006, pp. 11–28., doi:10.1111/j.1600-0757.2005.00141.x.  “The Periodontium in Health .” *Foundations of Periodontics for the Dental Hygienist*, by Jill S. Gehrig and Donald E. Willmann, Wolters Kluwer, 2015, Ch 1, 2, 5. |