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| **Name:** |
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| 2B-5 |
| **Basic Science Question:** |
| What is a post and core? |
| **Report:** |
| When an endodontically treated tooth has had extensive loss of tooth structure, a post may be placed within the root canal. The post’s function is to retain a core, which is the filling material of the crown (Bastista, 2019). Post and core treatment is often done after a root canal has been completed. Post and core treatments are completed when there is inadequate coronal tooth structure remaining to support the core. It should be noted that a tooth does not require a post and core unless there is an extensive amount of tooth structure lost (Cheung, 2005). In molars with extensive loss of coronal tooth structure, the post should be placed in the root that is largest and straightest, to avoid weakening the root. Since the premolar teeth have smaller pulp chambers and less tooth structure, and have tapered and curved roots, care needs to be taken when doing a post and core as to not perforate the root. When a large amount of the tooth structure of an anterior tooth has been lost, a post may be needed to retain the core so the tooth can withstand functional forces (Cheung, 2005). When it comes to consideration of various post materials, post material properties should mimic those of dentin. Posts can be custom fabricated or pre-fabricated. Cast gold alloy has been used for decades as a custom fabricated option. Some advantages to this material are that it has similar thermal expansion and elasticity to enamel. It can also withstand compressive forces. Titanium posts have low fracture strength, but are the least corrosive. Ceramic posts have elastic strength and are good for esthetic purposes, but studies have shown they have poor resin bonding ability. Prefabricated posts have been introduced, with a major advantage being that fewer visits of the patient are required, since it can be adjusted and inserted in one visit. Selection of materials should be based on considerations of strength, elasticity, retention, esthetics, and biocompatibility (Cheung, 2005). When choosing core material, important considerations include compressive and flexural strength, biocompatibility, bonding ability, stability, and thermal expansion similar to that of tooth structure. Common core materials are gold, amalgam, glass ionomer cement, and composite resin. Each material provides varying advantages and disadvantages in terms of esthetics, time, expansion and shrinkage, and tensile and compressive strengths (Cheung, 2005).  |
| **References:** |
| Cheung, W. (2005). A review of the Management of Endodontically Treated Teeth. *The Journal of the American Dental Association, 136*(5). Batista, V. E. S., Bitencourt, S. B., Bastos, N. A., Pelizzer, E. P., Goiato, M. C., Santos, D. M. (2019). Influence on the ferrule effect on the failure of fiber-reinforced composite post- and- core restorations: A systematic review and meta- analysis. *The Journal of Prosthetic Dentistry, 123*(2).  |