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**Basic Science Question:**

What is the eruption sequence along with the root formation process of the anterior teeth?

**Report:**

The term eruption comes from the Latin word “erumpere” which means to break out. In dentistry, it is defined as the “axial or occlusal movement of a tooth from its developmental position within the jaws to its functional position in the occlusal plane”. The primary (baby) teeth gradually erupt through the gums during the first 2 ½ years of life. The primary teeth will eventually shed and be replaced by permanent (adult) teeth. For the anterior teeth, the first teeth to erupt are usually the front teeth including the central and lateral incisors, along with the canines. The complete set of primary teeth is in the mouth from the age of 2 ½ to 3 years of age to 6 to 7 years of age. After age 4, the jaw and facial bones of the child begin to grow creating space of the larger permanent teeth to emerge. Between age 6 to 12 a mixture of both primary and permanent teeth reside in the mouth. After the age 13, only permanent teeth will be in the oral cavity and the last permanent teeth to erupt will be the third molars that erupt between age 17-21.

After the crown formation is nearly complete, the tooth root begins to develop. The main tissues that contribute to root formation are the Hertwig’s epithelial root sheath (HERS), dental papilla, and dental follicle. The HERS are important for cementum and PDL formation. The dental papilla get induced to become odontoblasts and later form root dentin. The dental follicle cells contact the root dentin surface through the epithelial root sheath and they differentiate into cementoblasts to form cementum. In addition, collagen fibers secreted by dental follicle cells fix the root in the jaw bone. Following root development and elongation, the tooth will erupt into the oral cavity. It is important to note that when primary teeth are lost, it is because the root of the baby tooth was resorbed and disintegrated.

**References:**

“All About Primary Teeth.” *Triangle Pediatric Dentistry*,  
[www.trianglepediatricdentistry.com/all-about-primary-teeth/](http://www.trianglepediatricdentistry.com/all-about-primary-teeth/).

Chaitanya, Penmatsa, et al. “Time and Eruption Sequence of Permanent Teeth in Hyderabad Children: A Descriptive Cross-Sectional Study.” *International Journal of Clinical Pediatric Dentistry*, Jaypee Brothers Medical Publishers, 2018,  
[www.ncbi.nlm.nih.gov/pmc/articles/PMC6212657/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC6212657/).

“Eruption Charts.” *Mouth Healthy TM*, [www.mouthhealthy.org/en/az-topics/e/eruption-charts](http://www.mouthhealthy.org/en/az-topics/e/eruption-charts).

Huang, Xiao-Feng, and Yang Chai. "Molecular Regulatory Mechanism of Tooth Root Development." *International Journal of Oral Science*, Nature Publishing Group, Dec. 2012, [www.ncbi.nlm.nih.gov/pmc/articles/PMC3633063/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3633063/).

"Teeth Eruption Timetable." *Cleveland Clinic*, [my.clevelandclinic.org/health/articles/11179-teeth-eruption-timetable](http://my.clevelandclinic.org/health/articles/11179-teeth-eruption-timetable).