Orthodontic Faculty Development Fellowship Award

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Biography

I received my BDS at Nair Hospital Dental College in Mumbai, India, in 2002; a PhD in Oral Biology at Boston University in 2009 and an MSc in Orthodontic at the University of Washington in 2012. After completing a post-doc at the University of Washington and Seattle Children's Hospital, I moved to the University of British Columbia as an Assistant Professor in Orthodontics. My primary research interests lie in exploring the developmental processes that govern craniofacial growth, and the genetic and epigenetic influences at the molecular/cellular and tissue levels, which integrate to produce the complex phenotypes we treat in our clinics.

Synopsis of Research Project

There is a lack of high quality, comprehensive, 3D information on prenatal growth of the human skull, specifically in the second trimester, when adult head morphology is being established and when craniofacial anomalies can develop. The majority of existing human skull ontogeny studies analyze postnatal stages. The few studies that have evaluated prenatal stages, historically relied on the use of photos, 2D x-rays or measurements on dissected and disarticulated post-mortem skeletons, not preserving spatial relationships between bones. This proposal will investigate human craniofacial development during the fetal period, utilizing a large and well-preserved collection of human fetal heads and CBCT scans. Contemporary 3D µCT imaging techniques with contrast-enhancement will allow detailed visualization and geometric morphometric analysis of growth trajectories and ontogeny for individual bones, teeth as well as cartilaginous structures; during the fetal period. Integration patterns of growth between the cranial base and the facial region will be studied in detail. Together, this work will provide important human-specific information about craniofacial morphogenesis and ontogeny

Importance of the Foundation

In a financially challenging research environment, support from the AAOF afforded me the ability to follow an organized and mentored period of research development in the past. Continued support from the AAOF is not only encouraging but, more importantly, enabling my perusal of an academic career. I thank the foundation and all of its champions for their efforts and am truly honored to be a recipient of this award.