



**2025 Biomedical Research Award**  
**Dr. Shivam Mehta, Texas A&M University College of Dentistry**

### **Biography**

Dr. Mehta is the program director and assistant professor at Texas A&M University College of Dentistry. He is a dental graduate from India. He also obtained his Master' degree and certificate in orthodontics form India. In 2018 he completed a 1 yr. fellowship program on Recent Advances in Orthodontics at University of Illinois, Chicago. Following his fellowship, he was invited to join University of Connecticut for a dual degree/certificate program (Master of Dental Science and certificate in orthodontics). He loves treating orthodontic patients as well as teaching and sharing his clinical experience with residents enabling them to successfully manage a variety of orthodontic cases. His research focus is on rapid palatal expansion, artificial intelligence, and clinical trials.

### **Project Synopsis**

Posterior crossbite is found to be prevalent in 14-20% of the population and mini-screw assisted rapid palatal expanders (MARPE) are frequently for managing transverse maxillary deficiency in young adult and adolescents. If the MARPE appliance is only anchored to the mini-screw implants (MSIs) in the palate, it is known as bone-anchored MARPE. However, if the MARPE appliance is anchored to both MSIs and maxillary posterior teeth, it is known as hybrid MARPE. Bone-anchored MARPE leads to higher stresses on palatal miniscrews than hybrid MARPE whereas hybrid MARPE results in higher stress on maxillary molars. The literature on comparing the periodontal effects of bone-anchored MARPE versus hybrid MARPE is scarce. Additionally, how treatment with bone-anchored MARPE versus hybrid MARPE affect the maxilla and maxillary structures is yet to be studied.

This randomized controlled trial will unravel the events during different MARPE designs and thus, help clinicians to achieve predictable results in patients requiring maxillary expansion. This study will evaluate the periodontal side effects such as alveolar bone loss with bone-anchored MARPE versus hybrid MARPE. Additionally, this study will evaluate, for the first-time, with the help of voxel-based CBCT superimpositions whether bone-anchored MARPE exhibits differences in dental and skeletal effects of expansion compared to hybrid MARPE. The information gained about root resorption will help the clinicians to better understand and potentially reduce root resorption in their orthodontic practice while doing MARPE expansion in orthodontic patients. The knowledge gained from this proposal will be invaluable for clinicians using different MARPE designs and will help them make informed decisions in providing better care to orthodontic patients requiring maxillary expansion.

### **3) A statement of how orthodontic education will benefit from your award**

In addition to clinical practice, being in academia and teaching the next generation of orthodontists is an incredibly rewarding experience for Dr. Mehta. Teaching the residents on how to appraise the current literature, and how to conduct a credible research project such as randomized clinical trial will benefit them a lot in their own practice. Once the residents graduate, they will encounter situations when new innovations are introduced in the orthodontic field. With the ability to appraise the evidence, the residents can appreciate the advantages and disadvantages of such innovations by reading relevant research and decide whether or not to incorporate it into their future clinical practice.

### **Why the Foundation is important to your project**

Dr. Mehta is very thankful to AAOF for funding the project. The support and generous funding from AAOF plays a key role in conducting this research. Dr. Mehta's desire is to conduct clinical trials to find answers for clinical questions. The AAOF serves as a critical source of funding for orthodontic research. Dr. Mehta and his team is very excited and thankful to AAOF for supporting this research.

### **How Foundation funding is expected to or has benefitted your career**

Dr. Mehta's vision has always been to make a difference in patient outcomes through credible research. AAOF has supported numerous research projects that are meaningful to advance the specialty. The support from AAOF has served as a key professional stepping stone for Dr. Mehta to further his career aspirations in academia combining his interests in clinical excellence and research.