Program Speaker – Sang Lee, DMD, MMSc

Title

Quantifying Function: Integrating Digital Jaw Motion Analysis in Research and Clinical Practice

Abstract

Contemporary prosthodontic practice has increasingly incorporated digital technologies; however, the accurate capture of functional mandibular movement continues to present both clinical and research challenges. This presentation examines the use of digital jaw motion analysis as a means to quantify mandibular function and improve occlusal accuracy. Clinical studies comparing conventional electronic jaw-tracking devices with optical tracking systems are reviewed, with particular attention to differences in measured sagittal condylar inclination, Bennett angle, and dynamic occlusal behavior. Additional evidence suggests that restorations and occlusal appliances designed using real-time optical jaw-tracking data demonstrate fewer occlusal discrepancies and reduced dynamic interferences when compared with restorations fabricated using conventional or average articulator settings. Incorporating patient-specific mandibular motion into digital workflows allows clinicians to move beyond averaged articulator values and toward more functional, individualized prosthodontic care. The lecture also discusses clinical implications, current limitations, and future directions for the use of jaw motion data in research, diagnosis, and definitive prosthetic rehabilitation.

Learning Objectives

- Compare conventional electronic and optical jaw-tracking technologies and their influence on the measurement of mandibular motion and posterior occlusal determinants.
- Explain how patient-specific jaw motion data affect static and dynamic occlusion within digital prosthodontic workflows.
- Apply principles of digital jaw motion analysis to improve occlusal design, minimize chairside adjustments, and enhance functional treatment outcomes.

Biography

Dr. Sang Lee is an associate professor at the Harvard School of Dental Medicine (HSDM). He received his BS from Bucknell University and his DMD from the University of Pennsylvania School of Dental Medicine. He completed advanced graduate training at HSDM, earning a Master of Medical Sciences (MMSc) in oral biology, a certificate in prosthodontics, and a certificate in implant dentistry. Dr. Lee previously served as assistant dean for clinical affairs and medical director at HSDM, where he oversaw clinical operations and quality assurance. He also served as director of Advanced Graduate Education, overseeing 14 advanced graduate programs, and as director of the AGE Prosthodontics Program. His clinical and translational research focuses on digital dentistry, optical mandibular tracking, computer-guided implant surgery, and implant rehabilitation.