

Integration between 3D Digital Smile Design and Jaw Tracking Systems: A New Frontier in Prosthodontics

The advent of digital technology has revolutionized various aspects of dental practice, including prosthodontics. This abstract presents an innovative approach that integrates 3D Digital Smile Design (DSD) and Jaw Tracking Systems, aiming to enhance the predictability and efficiency of prosthodontic treatment planning and execution.

3D Digital Smile Design has emerged as a powerful tool for visualizing the desired outcome of aesthetic dental treatments, allowing for patient involvement and improving communication between the dental team. However, the static nature of DSD presents limitations in considering dynamic occlusal relationships, which are crucial for the long-term success of prosthodontic rehabilitations.

Jaw Tracking Systems, such as the Zebris JMA-Optic, provide dynamic, real-time data about mandibular movements, occlusal contacts, and temporomandibular joint function. This data is invaluable in diagnosing and managing Temporomandibular Disorders (TMD) and in planning complex rehabilitations.

The integration of 3D DSD and Jaw Tracking Systems allows for a comprehensive approach that combines aesthetics and function. This integration enables the creation of a dynamic smile design that considers not only the static aesthetic parameters but also the dynamic functional parameters. This approach ensures a harmonious integration of the planned restorations with the patient's occlusion and mandibular movements, thereby increasing the predictability of treatment outcomes and the longevity of the restorations.

This presentation will delve into the methodology of integrating 3D DSD and Jaw Tracking Systems, illustrated with case presentations. It will also discuss the potential benefits, challenges, and future directions of this integrated approach in prosthodontics.

We believe that the integration of 3D DSD and Jaw Tracking Systems represents a significant advancement in prosthodontics, paving the way for a new era of digital and dynamic treatment planning and execution.

