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Name of Topic: ASSESSMENT OF THE USE OF PULSED ELECTROMAGNETIC FIELD TO ENHANCE BONE HEALING IN DENTISTRY

Keywords: Pulsed Electromagnetic Field (PEMF), Dental Implants, Osseointegration, Osteoporosis, Resonance Frequency Analysis (RFA), Implant Stability, Implant failure.

Findings

Background : Accelerating osseointegration in dental implants is crucial for successful oral rehabilitation, necessitating the development of procedures that reduce healing periods and enable early patient recovery. Pulsed electromagnetic field (PEMF) therapy, a non-invasive form of low-field magnetic stimulation, has shown therapeutic benefits in bone healing. This study investigates the impact of PEMF on bone-implant union, emphasizing in vivo and in vitro assessments. Despite its potential, defining optimal PEMF settings remains a challenge, including magnetic field intensity, frequency, and application duration.

Methods : Examining 55 implants in 25 patients, this research applied PEMF for 30 minutes daily for two weeks to the implant site, comparing it with a "sham" control. Using Resonance Frequency Analysis, the study measured Implant Stability Quotient (ISQ) values.

Results: Indicate a significant increase in ISQ values on the 10th, 30th, and 90th days post-implant placement with PEMF therapy. Comparisons between

magnetic and non-magnetic groups highlight higher mean ISQ values in the magnetic group, indicating superior implant stability.

Conclusion : PEMF therapy emerges as a valuable tool, enhancing bone formation around dental implants and potentially reducing osseointegration time. These findings offer crucial insights for researchers and clinicians seeking effective strategies to improve implant osseointegration in challenging clinical scenarios.