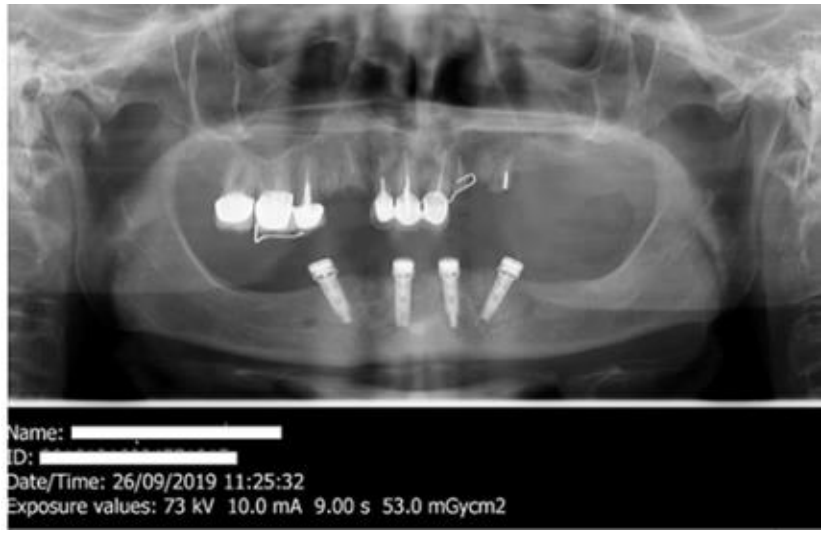
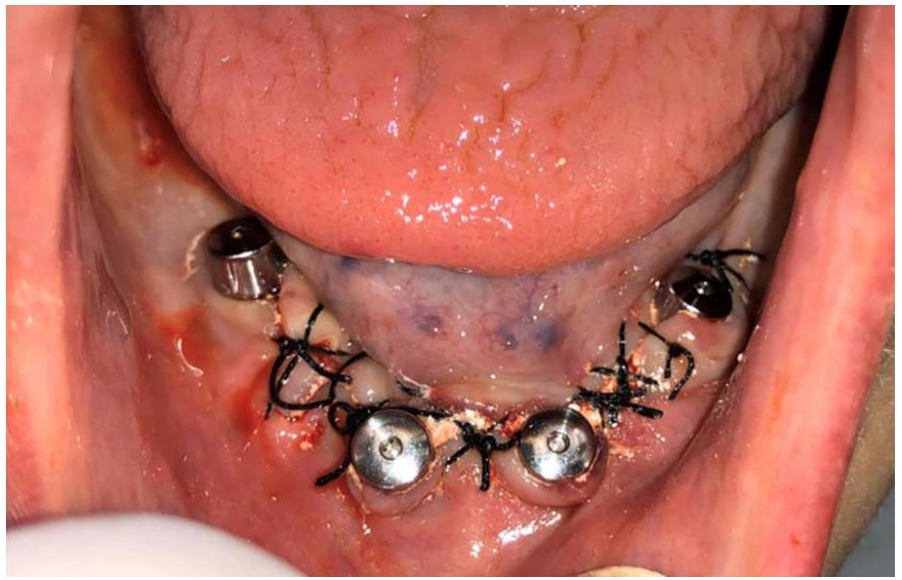
4 weeks after implantation with MED use

6 weeks after implantation with MED use, post electromagnetic field stimulation (30 days from activation)

6 weeks after implantation with MED use, post electromagnetic field stimulation (30 days from activation)





Pulsed Electromagnetic Field (PEMF) Increases Stability of Dental Implants: A Randomized Controlled Clinical Trial

M. A. Melo[1] , B. Nayak[2], O. Dolkart[3], P. Satwalekar[2], Y. Kumar[2], A. Chandrasekar[2], O. Fromovich[4], E. Yakobson[5], S. Barak[4], B. Bueno-Silva[1], J. A. Shibli[1]

[1]*Department of Periodontology and Oral Implantology, Dental Research Division, University of Guarulhos, SP, Brazil*
[2]*SVS Institute of Dental Sciences, Mahabubnagar, KNR. University of Health Sciences, Telangana, India*
[3]*Division of Orthopedic Surgery, Tel Aviv Sourasky Medical Center, Tel Aviv University Sackler Faculty of Medicine*
[4]*Private Practice, Tel Aviv, Israel*
[5]*Magdent Ltd, Bnei-Brak 5120109, Israel*

ABSTRACT

Purpose

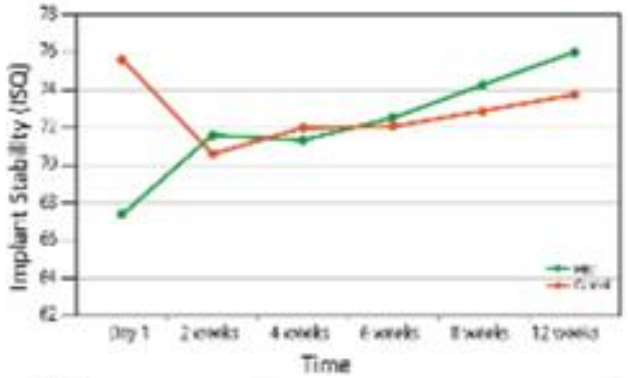
Pulsed electromagnetic field (PEMF) generation is a non-invasive technique that enhances osteoblastic activity and healing of the surrounding tissue. This study examined to what extent PEMF can lead to enhanced dental implant stability.

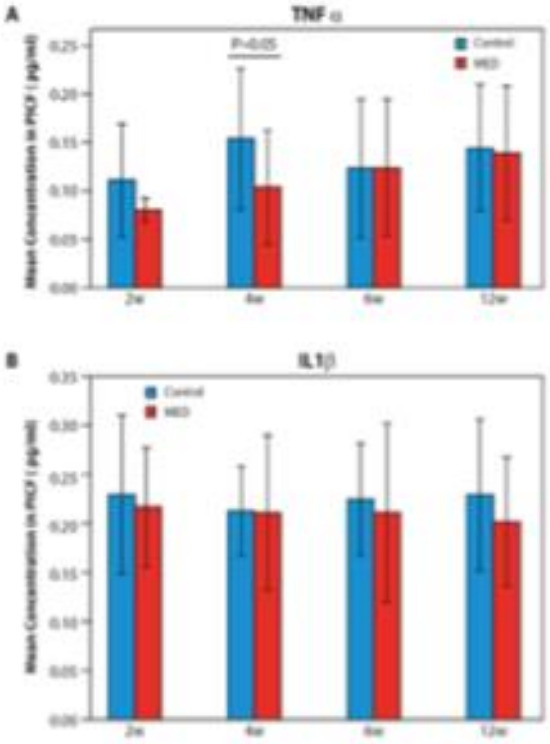
Methods

Nineteen patients (40 implants in total) were recruited to take part in a randomized controlled clinical trial and were assigned to either the PEMF group in which they were implanted with a Miniaturized Electromagnetic Device (MED) or the control group where they were fitted with a sham healing cup. To assess the stability of the implants stability resonance frequency analyses (RFA) were calculated to establish an implant stability quotient (ISQ). RFA was measured immediately after surgery, and then2, 4, 6,8 and 12 weeks later. X-rays were taken at baseline, 6 w and 12 w post-implantation. Proinflammatory cytokines were evaluated in PICF.

Results

The PEMF group differed significantly from the control group in terms of mean ISQ values. In the first two weeks (primary stability time frame) the MED treated group exhibited an increase in stability of 6.8 %, compared to a decrease of 7.6 % in the control group compared to baseline. MED treated implants showed an overall stability increase of 13% (p=0.02), unlike the control group which presented an overall decrease in stability of 2% (p=0.008). Cytokines levels were lower in the MED treated group.





Conclusion

: PEMF generated by the MED device may be used as a novel treatment modality to promote stability of the implant during the initial post-operative healing period. These results should contribute to the health and wellbeing of patients treated with immediate or early loading protocols.

Pulsed Electromagnetic Field (PEMF) Increases Stability of Dental Implants: A Randomized Controlled Clinical Trial

M. A. Melo[1] , B. Nayak[2], O. Dolkart[3], P. Satwalekar[2], Y. Kumar[2], A. Chandrasekar[2], O. Fromovich[4], E. Yakobson[5], S. Barak[4], B. Bueno-Silva[1], J. A. Shibli[1]

[1]*Department of Periodontology and Oral Implantology, Dental Research Division, University of Guarulhos, SP, Brazil*
[2]*SVS Institute of Dental Sciences, Mahabubnagar, KNR. University of Health Sciences, Telangana, India*
[3]*Division of Orthopedic Surgery, Tel Aviv Sourasky Medical Center, Tel Aviv University Sackler Faculty of Medicine*
[4]*Private Practice, Tel Aviv, Israel*
[5]*Magdent Ltd, Bnei-Brak 5120109, Israel*