**Dr. Shlomo Barak**, specijalist oralne i maksilofacijalne kirurgije, diplomirao je dentalnu medicinu na *Hebrew University-Hadassah Faculty of Dental Medicine* u Jeruzalemu i studij prava na *Inter Diplomacy Center, Faculty of Law* u Herzeliji, Izrael. Među brojnim dužnostima koje je obnašao, od 1986-2003. bio je predstojnik *Dental and Oral Surgery Division* u *Maccabi Medical Care.* Od 2007. do 2012. obnašo je dužnost direktora *Institute of Dentistry &Oral Maxillofacial Surgery, Hillel Yaffe Medical Center*,u Haderi, povezanog s *Rappoport Faculty of Medicine, Technion*, Haifa. Od 2014. je predsjednik uprave tvrtke *Magdent* i radi u privatnoj praksi u Tel Avivu. Vlasnik je dvaju patenata. Do sada je od izraelske vlade primio 3,5 milijuna USD za četiri istraživačka projekta u području primijenjenih oralnih znanosti. Jedno od njih je o aktivnoj kapici za cijeljenje koja ubrzava rast kosti i povećava gustoću kosti – Magdent, što je i tema njegovog predavanja.

**Using a New Pulsed Electromagnetic Field Healing Cap for Better and Faster Dental Implant anchorage**

**Objective**: In the present study, a new healing cap, that could generate a pulsed electromagnetic field (PEMF) around titanium implants to stimulate peri-implant osteogenesis, was tested in the rabbit model and in a preliminary human study.

**Materials and Methods**: A total of 22 implants were inserted in the proximal tibial metaphysis of 22 rabbits. A healing cap containing the active device was inserted in half of the implants (11 test implants), an “empty” healing cap was inserted in the other ones (11 control implants).The animals were euthanized after 2 and 4 weeks, and the samples were processed for microcomputed tomography and histology. In the proceeding preliminary human study in a total of 20 implants (10 test implant), an implant stability quotient (ISQ) Values (Ostell) were registered 4 (mandible) and 6 (maxilla) weeks after implant placement.

**Results**: Most of the effects of the tested device were confined to the coronal region. Two weeks post-implantation, test implants showed a significant 56% higher trabecular bone fraction (BV/TV), associated with enhanced trabecular number (Tb.N, +37%) and connectivity density (Conn.D, +73%) as compared to the control group; at 4 weeks the PEMF induced a 69% increase in BV/TV and 34% increase of Tb.N.There was no difference in the trabecular thickness (Tb.Th) at either time point. Furthermore, we observed a 48% higher bone to implant contact (BIC) in the test implants versus controls after 2 weeks; this increase tended to remain stable until the fourth week. Mature trabecular and woven bone were observed in direct contact with the implant surface with no gaps or connective tissue at the bone-implant interface. The ISQ values in the active devices are sufficient to allow for loading 4 and 6 weeks after implant placement.

**Conclusions**: These results indicate that the PEMF device stimulated early bone formation around dental implants resulting in higher peri-implant BIC and bone mass already after 2 weeks in animal model which suggests an acceleration of the osseointegration process by more than 3 times.