Title: Procedure to treat peri-implant disease -Role of Er:YAG laser-

Takao Watanabe, DDS, DDSc

Visiting Professor, Specially appointed assistant Professor, Department of Oral Science, Graduate School of Dentistry, Kanagawa Dental University, 82 Inaoka, Yokosuka, Kanagawa, Japan.

Globally the average life span is increasing and, equally, implant treatment is being conducted as an alternative approach for missing teeth. A high survival rate of implants has been reported. However, peri-implant diseases have also been increasing around 10 years after implant placement. If patients have a history of periodontal disease, they are at higher risk of developing peri-implantitis and to need additional treatment. maintenance systems to keep implants in good condition for at least 30 years must be considered.

Cumulative Interceptive Supportive Therapy (CIST) maintenance system was proposed by Dr. Lang. CIST aims to prevent and arrest the peri-implant disease by evaluating a few parameters, which can be used to assess the clinical condition of the peri-implant environment. CIST contends that the detection and treatment of early pathogenic changes during follow-up implant maintenance visits. It can prevent peri-implant soft tissue inflammation and progressive bone loss. The CIST protocol includes mechanical antiseptic and antibiotic treatment to control ongoing infections followed by regenerative or surgical techniques to correct peri-implant bony lesions.

Er:YAG laser mostly has same effect function and ability compared with YSGG laser. The wavelengths of each are similar. LiteTouch^{TM} by Syneron (Israel) effective for both hard and soft tissue. It can use with water supply spray. The effect is caused by high temperature in small areas to vaporize bacteria conjunction with peri-implant diseases. However, the water supply can reduce damage to tissue and also implant surface. Using guide mirror with hand-piece and tip, it is easier to guide laser beam to periodontal pocket bottoms. It also has LLLT effect to maintain healthy peri-implant tissue. This laser system for implant maintenance is meaningful and reasonable to minimize and maintain minimal volume of bacteria in conjunction with peri-implant diseases in peri-implant pocket.

In this lecture, I will consider how to use Er:YAG laser using Lite-Touch in CIST system.

The CIST protocol uses a multi-tier system, having basic treatment at the bottom and more advanced treatment in higher tiers. Each tier builds upon the previous used treatments creating a scaling system, advancing tiers is only done if the current tier is not effective. In protocol MR diagnosed normal condition, patients perform their own maintenance as daily care. In protocol A diagnosed early peri-implant mucositis, PMTC (professional mechanical tooth cleaning) is performed by hygienist. In protocol B diagnosed severe peri-implant mucositis, disinfectant liquid (chlorohexidine) combined with Er:YAG laser is used to prevent colonialization of peri-odontal bacteria on the implant surface by hygienist. It also is proposed (LLLT effect). Protocol C diagnosed early peri-implnatitis is classified by a probing depth of 4 to 6mm along with

bleeding and possible bone loss of less than 2mm. The protocol is defined by the use of systemic administration of antibiotics, usually azithromycin by dentist. Protocol D diagnosed sever peri-implantitis is classified according to surgical treatment. The main treatment in this protocol is mechanical removal of the bacteria in conjunction with periodontal diseases on implant surface. Configuration of implant surface is removed to make smooth surface and then Er:YAG laser is combined to disinfect bacteria. By decreasing the periodontal pocket depth, the environment will be changed to aerobic where bacteria cannot thrive.

Conclusion: Er:YAG laser with antiseptic therapy (chlorohexidine) in protocol B, antibiotic therapy (azithromycin) in protocol C and surgical therapy in protocol D of CIST system, should be used in the peri-implant diseases for more effective outcome.