

“Application of the nanostructured NiTi alloys with shape memory effect in the modern dentistry”

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Abstract: Nowadays materials used for the manufacture of implants are not compatible with living tissue and rejected by the body, requiring replacement of the implant. Nanostructured NiTi alloy, due to its biocompatibility with living tissue and mechanical compatibility with bone tissue, is the most promising material for the manufacture of implants, in particular, dental [1-3].

On the basis of the NiTi alloy with shape memory effect “NANO-DENT” LTD (Moscow) has developed new types of implants: to replace absent tooth in case of thin jaw bone (also in cases of low jawbone); to introduce through the tooth root into jaw bone in order to save tooth root; to enlarge the narrow jawbone, etc. The surface of implants is covered with layer of diamond-like carbon in order to ensure high biocompatibility. Also, the method of the treatment of the sick tissue by injections of Liquid Implants has been proposed. Liquid Implants cause the grows of a bone, eliminate the local osteoporosis and improve osteointegration of NiTi implants by formation of intermediate composite layer. This new treatment procedure includes the optional injection into the jaw bone tissue of the mixture with the powder of porous NiTi. Long-term medical practice showed a high implant survival rate, including severe cases where implant surgery by conventional techniques were not recommended. New equipment enhances implant dentistry, as well as being cost-effective, due to its simplicity.

References

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