Peri-implantitis, problems and solutions – a 2 year study

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Peri-implantitis is defined as a progressive loss of bone near an implant accompanied by inflammation of the soft tissue. As is apparent from to long-term monitoring, peri-implantitis is considered to be the main reason for implant failure and, if not promptly tre ated, it will result in implant loss. Several possibilities of halting peri-implantitis or even to restore and return the anatomy of supporti ve tissues to a normal state are discussed. The need for prevention is stressed and the results of short-term observations on the stability of the bone level around two-phase implants are presented .

Peri-implantitis is an eminent complication in implant therapy. It greatly affects its success; in the case of bone loss the ratio between the extra- and intra-alveolar parts of the implant changes, thus reducing the occlusal force which the implant is able to transfer on the bone in the frame of physiological load. The therapy becomes more complicated and modification of the treatment procedure used for periodontal therapy of natural teeth is required. Two types of marginal peri-implantitis are known: peri-implant mucositis, i.e. an inflammatory process that is limited to the peri-implant soft tissue (occurring at the implant neck) without resorption of the alveolar bone, and real peri-implantitis, i.e. inflammation of soft tissues and bone loss detectable by x-ray. Also known from literature is apical peri-implantitis, which is not directly connected to the implant neck and is therefore not discussed in this paper.

Evaluation of two stage implant system Impladent STI-BIO with respect to marginal bone resorption

The criteria for implant success have been set up with reference to the Brånemark Implant System. The major criterion is the annual measurement of peri-implant bone loss; during the first year of implant placement, the bone loss should be no more than 1.5 mm and, in subsequent years, no more than 0.1 mm. With some other implant systems, higher rates of bone loss have been observed.

Tab. 1: Success evaluation of STI-BIO implants (RVG Trophy)

Bone loss	After 4 months		After 12 months	
	n	%	n	%
without bone resorption	38	49.4	3	9.7
< 0.5 mm	32	41.6	21	67.7
0.5 – 1.5 mm	4	5.2	6	19.4
> 1.5 mm	3	3.9	1	3.2
Total 31	77			

The two-year study presented here was aimed at evaluating osseo-integration using the STI-BIO Implant System. The study monitored 42 patients with a total of 77 implants, 31 of which were monitored for a year or longer. Bone loss was measured using radiography.

Results: Four months after the implant insertion – prior to Phase II – 91 % of the implants showed either no signs of bone resorption or less than 0.5 mm, 5.2 % showed bone resorption of 0.5-1.5 mm and 3.9 % more than 1.5 mm. After 12 or more months, the implant having been under functional loading following the seating of the prosthetic posts; 9.7 % of implants showed no bone loss, 67.7 % bone loss less than 0.5 mm (87 % of implants fitted into the category of bone loss between 0.0-0.5 mm), 19.4 % of implants showed bone loss between 0.5–1.5 mm, and 3.2 % more than 1.5 mm. No implant was lost during the period monitored. Substantial bone loss (2.0-3.5 mm) was observed in patients with mucosal dehiscence above the implant during the healing phase.

Conclusions: Results of the short-term STI-BIO implant study are fully comparable with more renowned systems; larger bone loss at the implant neck was explained in all cases. Peri-implantitis may occur with all implant system presently in use. The most important factors causing peri-implantitis are: bacterial infection (colonisation of the implant surface and micro-gaps between the implant components), biomechanical overloading, chronic traumatisation of soft tissues, and acute trauma of hard tissues (preparatory thermal or mechanical). The prevention of peri-implantitis includes careful surgical procedure, exact prosthetic treatment, and especially oral hygiene (individual as well as professional). Based on clinical experience, prevention of peri-implantitis is being highly stressed as the most reliable measure ensuring the long-term success of implant function.

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