

PERI-IMPLANT DISEASE:

WHAT YOUR PATIENT CAN DO TO PREVENT LOSING THE IMPLANT; WHAT YOU CAN DO TO PREVENT LOSING THE PATIENT.

Tremendous strides have been made in both the construction and the placement of modern dental implants compared to earlier iterations. Yet, the prevalence of peri-implant disease continues at an alarming rate. In a meta-analysis of 110 clinical studies examining the extent of peri-implant disease affecting more than 12,000 active dental implants, it was shown that almost half of all those implants had peri-implant disease involvement[1,2,3,4] *(see Table 1)*.

So, what else can be done to avoid these degenerative implant conditions from becoming implant failures in your patients? Guidance can be drawn from a recent workshop of the European Federation of Periodontology where they point out that "As with periodontitis, peri-implant mucositis and peri-implantitis develop as a result of the accumulation of bacterial plaque. So the treatment for peri-implant disease adopts the same principles of therapy as those used in treating gingivitis and periodontitis."[5].

> While the causes of implant failure can be multi-factorial, the fact remains that the accumulation of bacterial plaque is far and away the most important cause of peri-implant disease.[6]

Knowing that bacterial plaque is at the heart of both periodontal disease and also peri-implant disease is still a long way from controlling it. For decades, both dental patients and dental professionals have been fighting dental plaque accumulation and yet periodontal disease has now reached epidemic levels.[7] Could it be that our efforts have been ineffective or only poorly effective?

Table 1

Prevalence of Peri-Implant Disease	
	% of implants
Peri-implant mucositis	Average: 35.6%
Peri-implantitis	Average: 13.1%
Peri-implantitis & Peri-implant mucositis	Total: 48.7%

Most dental professionals teach their patients that it is imperative to brush and floss daily as key elements in an effective daily home oral hygiene regimen. But how really effective is brushing and flossing in reducing the accumulation of dental plaque? Are there other patient-friendly ways to achieve much greater plaque reduction than with brushing and flossing? These are important questions to be answered because patients can do more at home to achieve optimal oral health than we can do for them in our offices. Periodontal and peri-implant destruction occurs daily, so a truly effective daily home oral hygiene regimen that actually prevents pathogenic bacterial infection is the best defense against both periodontal disease and also peri-implant disease.[8]

Table 2 shows the effectiveness of brushing and flossing each day at home in reducing dental plaque compared to brushing and rinsing at home. Both of these studies were controlled, randomized, evaluator-blinded, six month studies. Each had over 300 patients enrolled. The results may challenge your long-held beliefs. The first study showed that brushing and rinsing was 18 times more effective than brushing and flossing and the second study showed that

brushing and rinsing was 6 times more effective than brushing and flossing in reducing dental plaque.[9]

Table 2

Effectiveness of Flossing vs Rinsing		
	% plaque reduction	
	Study #1	Study #2
Rinsing & Brushing	37.5% 18x better plaque reduction	20.0% 6x better plaque reduction
Flossing & Brushing	2.1%	3.4%

An additional six-month study with 160 patients also showed that brushing and rinsing was far more effective in reducing plaque and inflammation (as measured by the Plaque Index, the Modified Gingival Index and the Bleeding Index) than was brushing and flossing.[10] We don't need to "toss the floss." Flossing still provides important adjunctive benefits, but a daily home care oral hygiene regimen that does not include rinsing or irrigating, is one that is sorely lacking.[11]

If at-home rinsing strongly merits inclusion in a daily oral hygiene regimen, then at-home subgingival irrigation perhaps, deserves an even more important role. WaterPik Corporation has conducted studies showing that with rinsing alone, the rinsing agent can reach to 21% of the depth of a 6mm pocket. By using an oral irrigator with a subgingival tip, the irrigant can reach to 90% of the depth of that same 6 mm pocket.[12]

We are now on the road to optimal oral health. We have identified accumulating bacterial plaque as the principal causative agent in both peri-implant disease and also in periodontal disease. We have also identified rinsing and subgingival irrigation as being critically important if our patient's oral hygiene regimens are to be truly effective.[9]

Since rinsing and subgingival irrigation are so critically important in achieving effective oral hygiene, does it make any difference which rinse or irrigant our patients use? Inhibiting bacterial plaque buildup is best accomplished with brushing and rinsing with an effective antiseptic rinse or brushing and irrigating with an effective antiseptic irrigant. Recent testing of professional antiseptic rinses was done to determine the efficacy of each antiseptic rinse against key periodontal bacteria and the results may surprise you.

Table 3 shows the comparative efficacy of each of the tested antiseptic rinses against both Fusobacterium nucleatum and Prevotella intermedia at 30 seconds exposure time. These bacteria were chosen because of their extreme pathogenicity and because they play such an important role in the development of periodontal disease. To ensure that testing was done under realistic conditions, fresh, human, whole saliva was used as an organic challenge in testing each rinse because salivary proteins inactivate many antiseptic rinses.[13] The tested rinses are arranged in descending order of efficacy. Two key points that can be gleaned from this table are that 1) There is a tremendous difference in efficacy amongst the tested antiseptic rinses, ranging from complete inactivation of both pathogenic bacteria by the molecular iodine rinse to no biocidal activity, at all by a stabilized chlorine dioxide rinse against Prevotella intermedia and 2) The molecular iodine rinse was the only rinse to completely inactivate the bacteria.[14]

Table 3

	Log reduction at 30 seconds	
Antiseptic Rinse	*Fusobacterium nucleatum*	*Prevotella intermedia*
Molecular iodine 100 ppm	6.0 complete inactivation	6.0 complete inactivation
Chlorhexidine gluconate 0.12%	4.8 28x less effective	3.3 730x less effective
Cetylpyridinium chloride 0.07%	0.2 820,000x less effective	5.3 7x less effective
Chlorine dioxide	0.71 361,000x less effective	3.9 190x less effective
Povidone iodine 10%	1.8 28,000x less effective	1.3 73,000x less effective
Hydrogen peroxide	0.4 640,000x less effective	0.52 532,000x less effective
Stabilized chlorine dioxide	0.04 964,000x less effective	0 no biocidal activity

**Testing conducted at Prime Analytical Laboratories, Concord CA, April, 2023*

The rinse found to be the most effective (100 ppm molecular iodine) was tested again to further validate its efficacy. The additional testing was also conducted with a human saliva challenge, but the testing was expanded to two other pathogenic periodontal bacteria, Porphyromonas gingivalis and Tannerella forsythia. The complete inactivation of these additional pathogens within 30 seconds further validated the unique efficacy of the molecular iodine rinse.[15]

Some Information in table 3 may be confusing because it shows two different iodine rinses with vastly different levels of efficacy. The molecular iodine rinse was shown to be tens of thousands of times more effective than the povidone iodine rinse. Why is that? 10% Povidone iodine contains several different species of iodine each in abundant supply, but only one species of iodine is actually biocidal and it is present in only trace quantities (2-3 ppm) in povidone iodine. That biocidal species of iodine is molecular iodine (I2) and it accounts for all of the antiseptic activity of povidone iodine. Molecular iodine oral care products were developed and patented by ioTech International (www.iotechinternational.com) in 2017. They are stable solutions containing high levels of molecular iodine at levels 30-100 times greater than is present in povidone iodine and are available as a ready-to-use rinse or as a concentrated irrigant for use in a Water Flosser.[16] Because iodine is an essential nutrient, required by humans in order to avoid iodine-deficiency diseases[17] and because high level molecular iodine solutions contain almost none of the other abundant iodine species, they are non-staining and have wide margins of safety.

The evidence is clear. If you want to help your patients avoid the ravages of periodontal disease, achieve better treatment outcomes and higher levels of patient satisfaction, you'll follow these 3 easy steps:

1 Educate your patients to the importance of their role and of their responsibility in being meticulous in their daily home care.

2 Ensure that your patients include rinsing and/or subgingival irrigation as part of an effective home care regimen.

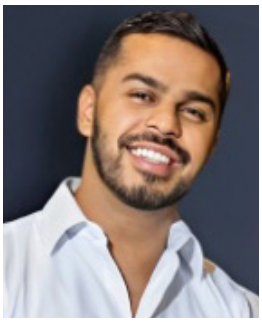
3 Ensure that the rinse or irrigant that your patients are using has evidence-based effectiveness.

Helping your patients to an effective daily oral hygiene regimen will also be helping your patients to better overall health. Let's not lose sight of the fact that periodontal bacteremias are closely linked to Alzheimer's disease, cardiovascular disease, certain cancers and a myriad of other debilitating diseases.

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Dr. Naved Fatmi is one of South Florida's most recognized dentists and smile restoration specialists. He is a graduate of the University of Florida (College of Dentistry). He has served a five year term in the Florida Board of Dentistry along with being a Vice Chair and the Chairman of the board. He is a current Co-Chairman for Larkin Hospital Dental Residency Program. His level of professionalism, matched with his passion for providing exceptional dental care has allowed him to be a frequent speaker for multiple dental companies. He is heavily involved in continuing education as an educator and continuously seeking new education.

Gennell Gentile, RDH/BSDH



Gennell has almost 10 years of clinical practice as a dental hygienist and has since transitioned her dental career into operational leadership roles. She loves connecting with patients, clients, and colleagues. Gennell cares passionately about peoples' health and well-being and thrives in supportive roles where she can listen to inspire and cultivate ongoing relationships within her sphere of influence.

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Dr. Michael J. Scherb, DMD, FAGD



Dr. Scherb is a graduate of the University of Alabama School of Dentistry with a special award presented to him in restorative dentistry. He has practiced dentistry in the Jupiter area since 1989. He is a certified member of the American Dental Association, Florida Dental Association, and former president of the North Palm Beach County Dental Association.

He has been awarded Fellowship in the Academy of General Dentistry, which requires over 500 hours of continuing education and passing a written exam.

He has completed all the continuums at The Pankey Institute for Advanced Dental Education and is currently one of the teaching faculty. Dr. Scherb was granted Pankey Scholar status in 2002, an honor which has been conferred to less than 50 doctors in the world. Other studies include The Concept of Complete Dentistry seminars with Dr. Peter Dawson, Predictable Dentistry seminars with Dr. Bill Strupp, Seattle Institute for Advanced Dental Education with Dr. Frank Spear, and numerous other courses with the world's top clinicians. He is also a member of the American Academy of Cosmetic Dentistry.

Dr. Scherb has been a resident of Palm Beach County all his life. He is married to his lovely wife Dawn and has three children - Clinton, a Sheriff for Palm Beach County and United States Marine, Jade, and Summer. He would like to thank all of them for their inspiration.