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Implant complications in the esthetic zone and how to prevent it surgically and prosthetically?

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Background: The aim of this article was to review the literature on differential diagnosis and treatment of complications and failing implants in the esthetic zone. Complications varied widely--from simple adjustment to complete remaking of the prosthesis. This article summarizes key aspects of the interdisciplinary approach to implant-based treatment in the esthetic zone. Measures of success generally include implant integration and health of the surrounding periodontal tissues; in the anterior dentition, esthetics must also be measured.

Method: A successful team approach to treatment mandates that the periodontist have a clear understanding of what is expected in terms of the restorative result, including the restorative materials that will be used, as implant position can significantly impact this. Equally important, the restoring dentist must understand the surgical treatment options and the procedural limitations in terms of tissue regeneration and implant placement.

Conclusion: The goal of this article is to sensitize the participant to the changing treatment concepts and methodologies used today in both the surgical and restorative phases of implant treatment. The four principle areas of treatment explored include: emerging hard tissue management procedures and materials; enhancing the gingival biotype and gingival volume; implant placement and restoration strategies that may impact soft and hard tissue stability; and the impact of implant and abutment designs on hard- and soft-tissue volume and post-restoration stability.

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Combinatorial effects of arginine and fluoride on oral microbial ecology

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Fluoride is a widely used anti-caries agent, which promotes tooth hard tissue remineralization and suppresses bacterial activities. Recent clinical data have shown that oral hygiene products containing both fluoride and arginine possess superior anti-caries effect compared to those containing fluoride alone, indicating synergy between fluoride and arginine in promoting caries-preventive benefit. Here we hypothesize that arginine may augment the ecological benefit of fluoride by enriching alkali-generating bacteria in the plaque biofilm, and thus synergizes with fluoride in controlling dental caries. Specifically, we assessed the combinatory effects of NaF/arginine on the microbial composition of single-, dual- and three-species biofilm using bacterial species-specific fluorescence *in situ* hybridization and quantitative PCR. We also recruited 30 volunteers with either caries-free (CF; n=15, DMFT=0) or caries-active (CA; n=15, DMFT>4) status to further evaluate the ecological benefit of toothpaste containing both fluoride and arginine. We found that arginine synergized with fluoride in suppressing acidogenic *S. mutans* in either planktonic or biofilm cultures. The NaF/arginine combination synergistically reduced *S. mutans* but enriched *S. sanguinis*, and thus maintained a "streptococcal pressure" against the potential growth of *P. gingivalis* within the three-species biofilm *in vitro.* More importantly, this S. sanguinis-enriching effect was reproduced *in vivo* after two-week application of arginine-containing fluoride toothpaste in CA group. The arginine-containing fluoride toothpaste also significantly inhibited the acidogenic capacity and promoted the alkali-generating activity of cariogenic microflora. The "metabolism-normalizing" effects of arginine-containing fluoride toothpaste are likely attributed to its ability to enrich the transcripts of *arcA* and *ureC*, and suppress *ldh* transcripts of oral microbiome in CA population. Taken together, we conclude that the combinatory application of fluoride and arginine is able to maintain a healthy oral microbial equilibrium, and thus represents a promising ecological approach to caries management.

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