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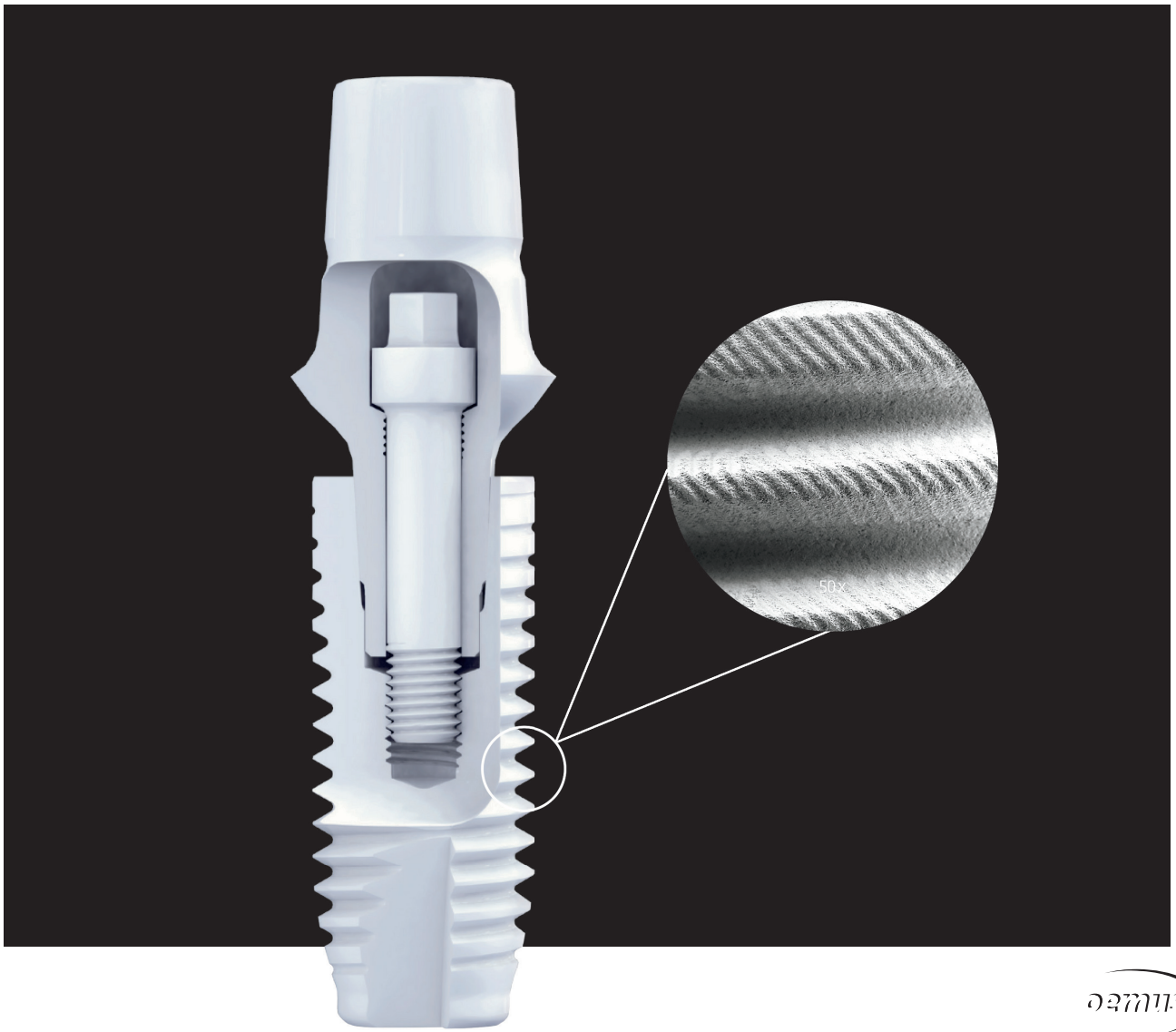

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Young minds, new materials: next generation revolution

In dentistry, particularly in implantology, stagnation is not an option. The rapid development of new materials, technologies, and treatment methods requires practitioners to be flexible and committed to continuous education. The younger generation of dentists has a unique opportunity—and responsibility—to actively shape this progress. Ceramic implants are an outstanding example of how research, education, and practice can be integrated in a sustainable and forward-thinking way.

Progress in implantology is largely driven by the tireless work of research. Universities and scientific institutions play a crucial role in providing the clinical evidence for the success of ceramic implants and continuously contributing to their development. As a young researcher in this emerging field, it is essential to overcome obstacles, provide convincing evidence, and not only apply the findings in practice but also actively share them with colleagues and the next generation of professionals, thereby fostering sustainable progress.

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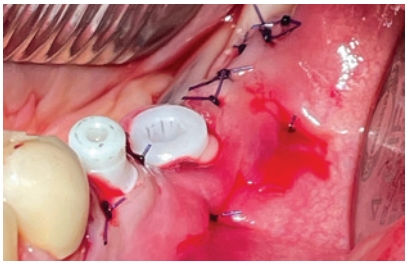

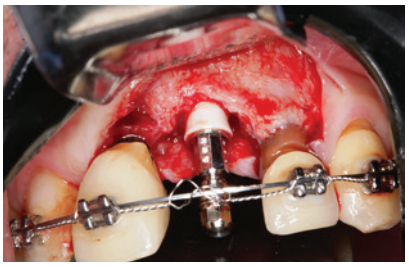

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Those working in implantology today cannot afford to rely on outdated knowledge. Ceramic implants present specific requirements that go beyond those of titanium implants. The surgical and prosthetic specifics require focused education, workshops, and specialised programmes—ideally at renowned universities. Only through this structured learning can one systematically acquire the necessary knowledge, apply it confidently in practice, and fully unlock the potential of this innovative material. Especially the younger generation, who have a long clinical career ahead of them, should start shaping the future today.

Younger patients increasingly value sustainability, biocompatibility, and aesthetics. Ceramic implants meet all these demands and offer a future-oriented alternative to titanium implants. Their unbeatable advantage lies not only in their aesthetic inconspicuousness but also in their long-term tissue compatibility and the high-quality standard of the materials used. These qualities make them an ideal choice for modern implantology, significantly contributing to the long-term success of treatments.

– Keep growing, never stop learning! –

Yours sincerely
Dr Marc Balmer

Cover image courtesy of
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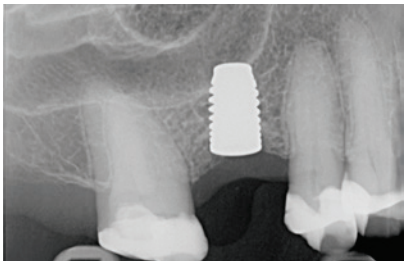

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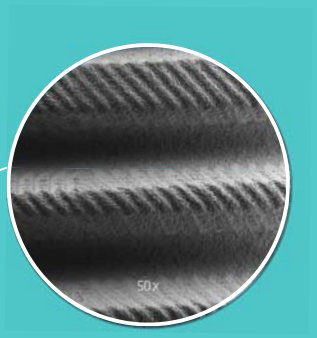

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Building up immunological firewalls

How ceramic implants can deliver immune sustainable outcomes and transform overall health

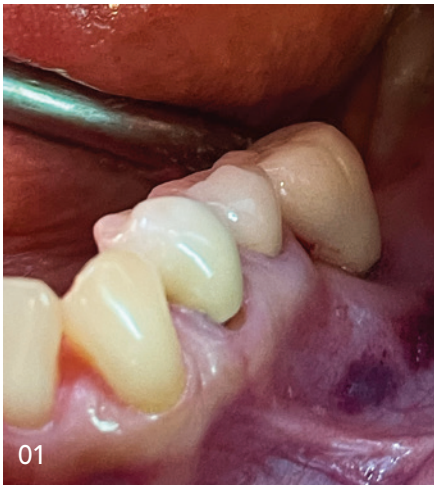
Dr Fabian Schick, Dr Dr Johann Lechner & Dr Florian Notter, Germany

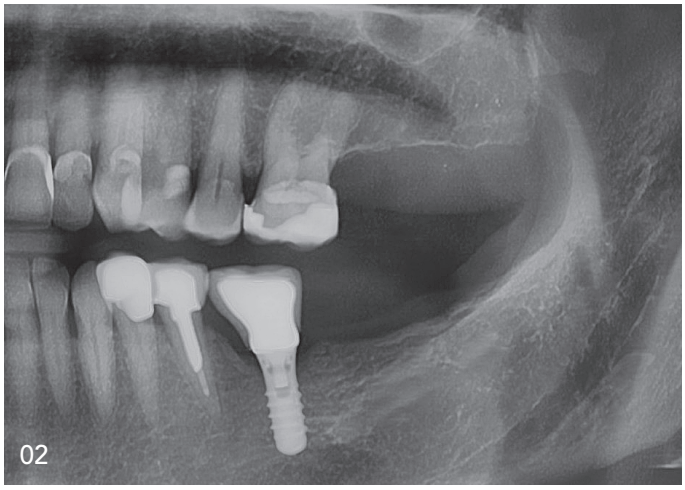
Introduction

It is well established that diseases like periodontitis and peri-implantitis can have systemic effects on general health.[1–4] A key factor may be the compromised barrier function of oral soft tissues, which can allow pathogens to penetrate deeper into the body, triggering systemic inflammatory responses. This may result in an increased concentration of aMMP-8, leading to an elevated rate of tissue degradation.[5] This phenomenon represents a localised immune overload, potentially leading to chronic systemic stress.

An analogy can be drawn to "leaky gut," where a compromised intestinal barrier is implicated in chronic autoimmune conditions and allergies.[6] Similarly, "leaky gum" highlights the role of impaired soft-tissue barriers in oral health. This connection underscores the critical role of dentistry in contributing to immune health by restoring these protective barriers and utilising biocompatible materials.

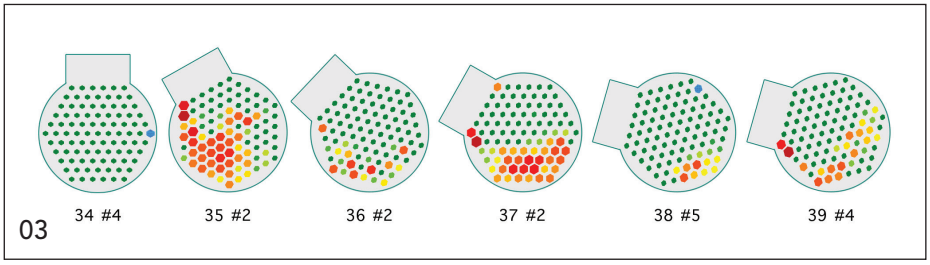
Integrative biological dentistry addresses these issues by employing strategies that support immunological relief, enhance barrier functions, optimal bone regeneration and the use of materials with high biocompatibility. Ceramic implants exemplify this approach, offering documented advantages in soft-tissue integration,[7] aesthetic outcomes, and immunological sustainability. Recent studies using transalveolar ultrasound have further revealed favourable intraosseous behaviour of ceramic materials,[8] showing reduced osteoimmunological stress and decreased cytokine loads unlike titanium, which can release





01
Clinical baseline situation showing titanium implant at position 36 with recurrent inflammatory reactions.

02
Radiographic baseline situation revealing crater-like bone loss around implant 36.



03
Transalveolar ultrasound measurement highlighting osteolytically altered bone areas in red and healthy bone structure in green.

Patent

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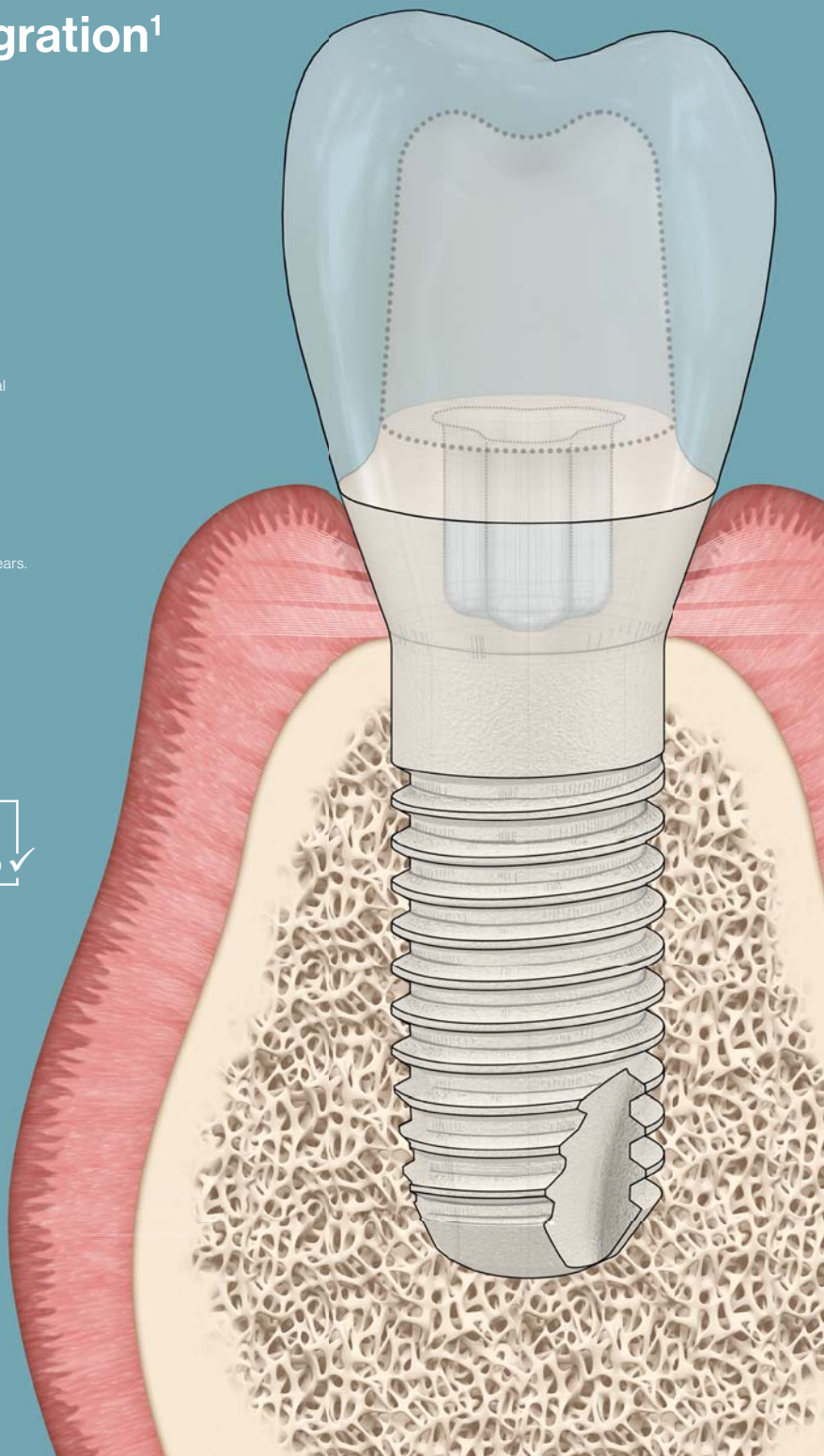
- **No Peri-Implantitis[2, 3]**



1. **Glauser R, Schupbach P.** Early bone formation around immediately placed two-piece tissue-level zirconia implants with a modified surface: an experimental study in the miniature pig mandible. Int J Implant Dent. 2022 Sep 14;8(1):37. doi: 10.1186/s40729-022-00437-z. PMID: 36103094; PMCID: PMC9474793.
2. **Brunello G, Rauch N, Becker K, Hakimi AR, Schwarz F, Becker J.** Two-piece zirconia implants in the posterior mandible and maxilla: a cohort study with a follow-up period of 9 years. Clin Oral Implants Res. 2022 Dec;33(12):1233–44. doi: 10.1111/clr.14005. PMID: 36184914.
3. **Karapataki S, Vegh D, Payer M, Fahrenholz H, Antonoglou GN.** Clinical performance of two-piece zirconia dental implants after 5 and up to 12 years. Int J Oral Maxillofac Implants 2023;38:1105–1114. doi: 10.11607/jomi.10284

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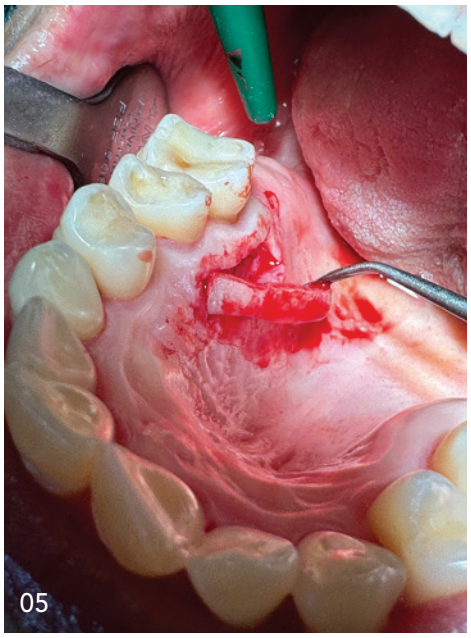
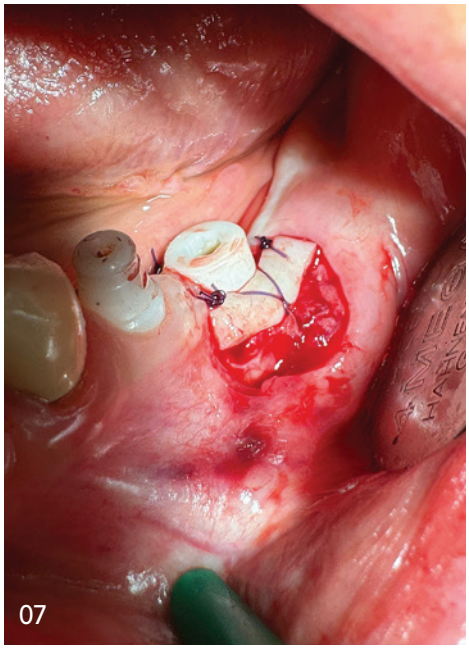


04
Postoperative clinical situation after immediate implantation at positions 35 and 36.

05
Harvesting of the free gingival graft from the palate.

06
Wound management of the donor site using A-PRF membranes and suturing technique.

07
Transplantation of the free gingival graft to the recipient site.



metal particles into bone, that could cause osteoimmunological stress.[8–10]

These findings reinforce the notion that reducing immunological stress in the oral and maxillofacial region can positively influence overall health.[11]

This case report demonstrates how targeted surgical techniques, and the use of biocompatible ceramics can simultaneously achieve immunological relief and aesthetically sustainable outcomes.

Materials and methods

Patient case and diagnosis

A 45-year-old female patient is presented with a chronically inflamed and painful titanium implant at tooth position 36. Clinical examination revealed a lack of keratinised mucosa, and radiological imaging showed crater-like bone loss around the implant. (Fig. 1). Previous disinfection treatments had failed to achieve stable conditions. The patient sought a long-term, inflammation-free, and aesthetically satisfactory solution.

Transalveolar ultrasound imaging identified osteolytic and degenerated areas with elevated cytokine activity of RANTES/CCL5[12] around both the titanium implant and an insufficiently treated root canal at tooth 35 (Figs. 2 & 3). These findings indicated potential contributors to systemic immunological stress and localised tissue degradation.

Surgical reconstruction

In the first stage of treatment, the peri-implantitis-affected titanium implant and the insufficiently treated tooth were removed. Inflammatory tissue was meticulously debrided using metal-free

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