

# Peri-implantitis: Can it be treated without surgery?



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**With the introduction** of a uniform classification of periodontal and peri-implant disease in 2018, definitions of health and disease have now also been established for implants.<sup>1</sup> Comparable evidence on peri-implantitis should therefore be possible in the future. In recent years, there have been enormous developments in implantology with regard to the digital workflow and materials, but also new insights into what can lead to failure or how to counteract peri-implant mucositis and, subsequently, peri-implantitis.<sup>2</sup>

The proportion of patients with implants is increasing, due to an ageing population. A study at the University Clinic of Dentistry Vienna in Austria showed that the proportion of older patients with implants is continuously increasing.<sup>3</sup> For example, the proportion of patients between 70 and 75 years of age with implants in the outpatient clinic was already 30% in 2017; in 2013, this was only around 20%.<sup>3</sup> Old age is linked to various dimensions, usually accompanied by various diseases, which in turn can lead to polypharmacy and to malnutrition. In order to maintain stable occlusion in old age, people increasingly rely on fixed prostheses, which, however, are sometimes more difficult to clean than removable prostheses. The risk of complications also increases with age, and peri-implantitis is almost inevitable if prophylactic

measures and the reduction of risk factors are not undertaken promptly and closely monitored.

Once bone resorption around the implant has begun, there is no predictable therapy that reliably leads to cessation of the inflammation or to regeneration, as is the case with periodontitis. The established treatment paradigm is that a conservative approach is limited and surgical intervention—resective or regenerative—is inevitable once several threads of the implant have become exposed. However, the following patient cases are intended to demonstrate that even initially hopeless situations can be resolved by relatively simple therapeutic measures if peri-implantitis has not yet progressed to the point of complete mobility of the implant (which was the situation in the first case presented).

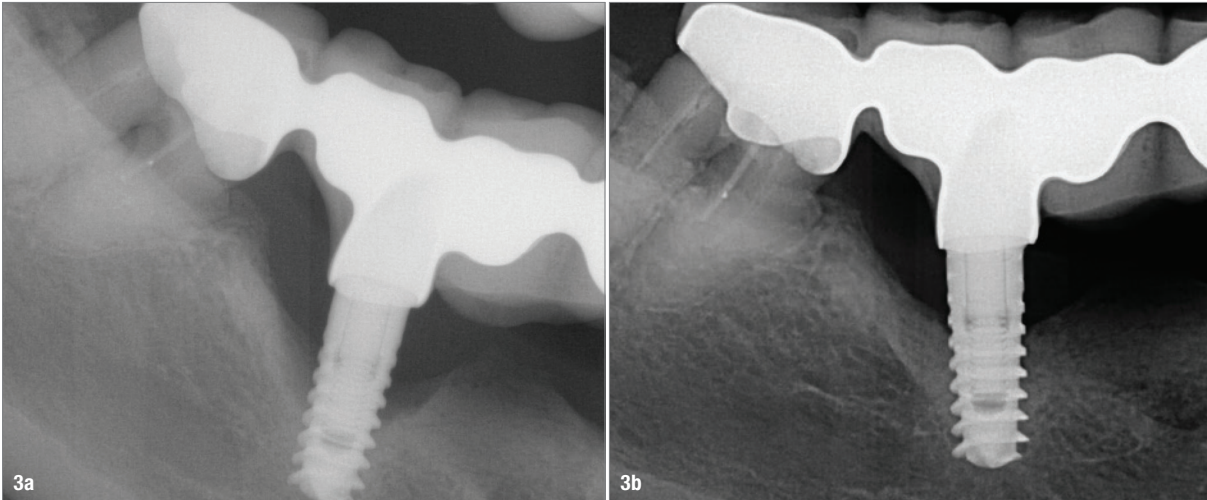
## Peri-implantitis prevalence and risk factors

On the one hand, implants as replacements for lost teeth have a relatively high success rate over observation periods of more than ten years.<sup>4</sup> On the other hand, it has been shown that 10–50% of implants showed signs of peri-implantitis after ten years. In general, the prevalence of peri-implant mucositis is as much as 80% and that of peri-implantitis between 28 and 56%.<sup>5</sup> Peri-implantitis

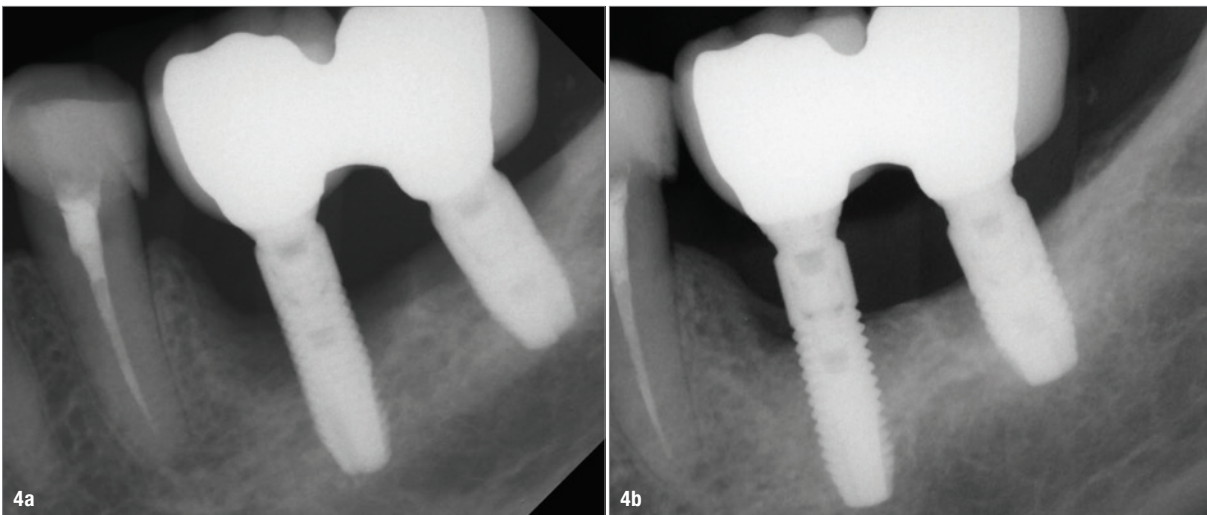


**Fig. 1:** The patient presented because of a broken denture tooth and loose restoration. Lifting of the upper lip revealed multiple fistula exits with pus discharge.

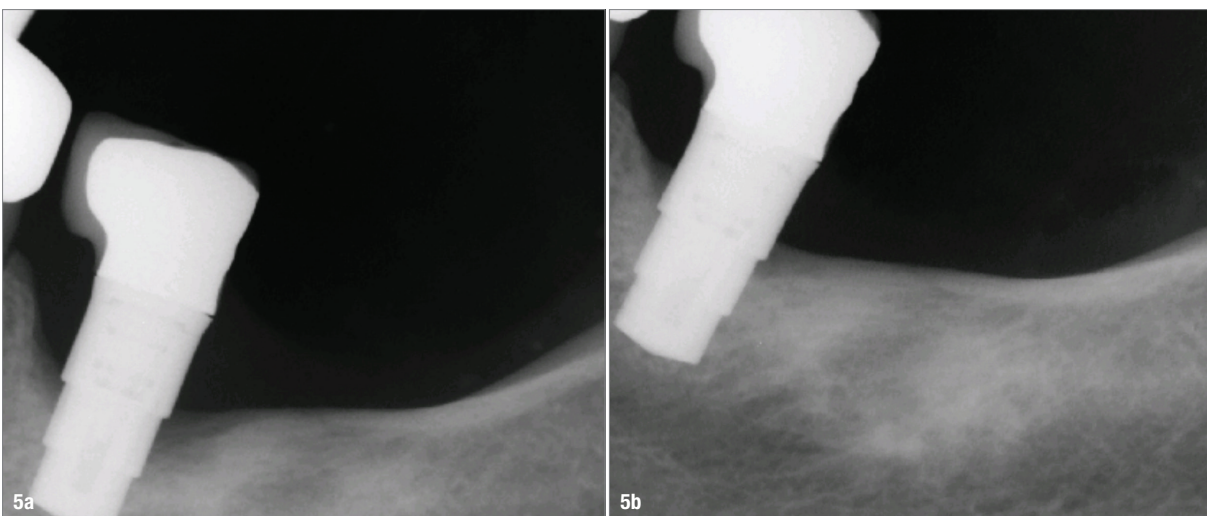
**Fig. 2:** No further conservative therapy could be initiated for the maxillary implants.



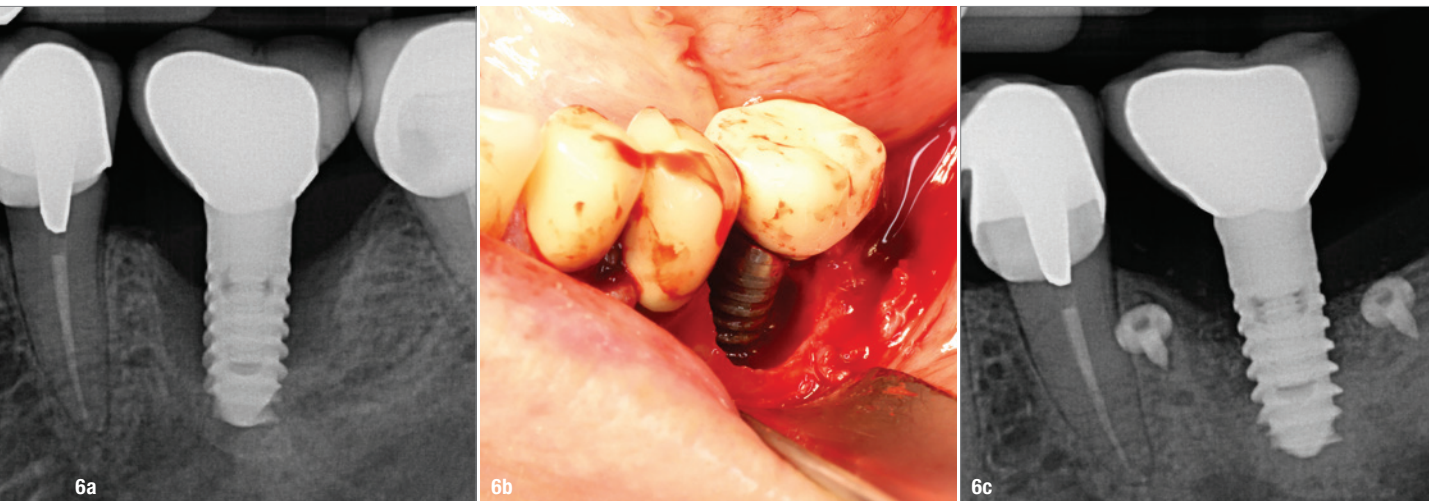
**Figs. 3a & b:** Situation before conservative therapy (a) of peri-implantitis affecting implant #46 in the second case and six to 12 months thereafter (b).



**Figs. 4a & b:** Situation before conservative therapy (a) of peri-implantitis affecting implants #36 and 37 in the third case and six to 12 months thereafter (b).



**Figs. 5a & b:** Situation before conservative therapy (a) of peri-implantitis affecting implant #36 in the fourth case and six to 12 months thereafter (b).



**Figs. 6a–c:** Implant #36 in the fifth case was initially planned for explantation, but could ultimately be preserved only with regenerative surgical measures (one-year follow-up).

cases are rising in daily practice, but their development can usually be linked to known risk factors.<sup>6</sup> These include:

- smoking;
- history of periodontitis;
- poor oral hygiene;
- irregular supportive periodontal therapy intervals; and
- systemic disease (poorly controlled diabetes, cardiovascular disease, immunosuppression).

Sometimes it is a combination of several risk factors that drastically increase the risk of complications. Zitzmann et al. have already noted in a review that the incidence of peri-implantitis is almost six times higher in patients with periodontitis compared with non-periodontitis patients.<sup>7</sup>

## Patient cases

### Implant loss due to poor oral hygiene and lifestyle habits

In the following patient case, several factors led to failure. Despite the patient smoking more than 40 cigarettes daily, implants were placed in such a way that a fixed restoration was possible. The patient stated that she could not tolerate any palatal coverage and wanted a fixed option. Since her smoking, abundant alcohol consumption and poor brushing habits were not improved, peri-implantitis was not a surprise diagnosis. This usually occurs around seven years after implantation if—like in the following case—periodontitis treatment for the remaining dentition is ignored and the patient's lifestyle aggravating to the periodontium. The patient presented because of aesthetic problems, but also because the implants were already very loose (Fig. 1). Conservative periodontal therapy with instruction on the correct use of interdental brushes could not prevent the loss of the implants (Fig. 2).

### Implant preservation with the aid of subgingival cleaning by air-scaler and concomitant administration of systemic antibiotics

Is conservative peri-implantitis therapy ever enough to resolve advanced peri-implantitis cases? The following cases show that a single subgingival cleaning with air-scaler and adjunctive systemic antibiotics helped to regenerate the bone around the implants. A single-blind randomised clinical trial concluded that systemic adjunctive antibiotic administration does not necessarily provide a clinically relevant benefit when, for example, amoxicillin and metronidazole are administered systemically in combination.<sup>8</sup> Would the same effect have occurred in the cases shown here even without adjunctive metronidazole administration for seven days after subgingival cleaning? According to a more recent randomised clinical trial, the administration of metronidazole as an adjunct to non-surgical peri-implantitis therapy resulted in significant improvements in clinical, radiographic and microbiological parameters after 12 months of follow-up.<sup>9</sup>

In the second, third and fourth patient cases (Figs. 3–5), subgingival debridement was performed once by air-scaler and then metronidazole was taken at a dosage of 500 mg three times daily for seven days.

### Implant retention through interdisciplinary treatment

Not all cases develop as promisingly as the second, third and fourth cases did. The conservative approach should always be attempted first, and if this does not lead to the desired clinical success, further surgical measures can be considered, including the use of methods for which there is not yet a strong evidence base.<sup>10</sup> The fifth case involved an implant that was initially thought to be lost, but could have been finally saved after periodontitis/peri-implantitis treatment and subsequent augmentation and use of a membrane as well as use of the GalvoSurge

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**Figs. 7a & b:** Situation of a removable prosthesis in the upper jaw and a screw-retained prosthesis in the lower jaw in a patient.

implant cleaning system (Fig. 6). Such interventions are relatively costly and the corresponding costs for augmentation material and the application of the electrode in that procedure are ultimately borne by the patients, who have an additional financial outlay in order to save the implant. Surgical interventions can only take place in an operating theater or clinic—a challenge that older people are usually no longer able to cope with, as they are largely no longer able to attend an appointment on their own.<sup>11</sup>

Ultimately, the best peri-implantitis therapy is prevention and control of risk factors, ideally before implant placement begins. In my view, the most common mistake is inadequate peri-implantitis prevention and inadequate therapy, which usually consists only of oral hygiene by the prophylaxis assistant. Sometimes patients are also instructed to attend oral hygiene sessions every few weeks—but this will not stop already existing peri-implantitis, and further bone loss will occur.

The following scheme can help to prevent complications with implants:

- regular checks using a conventional periodontal probe (a special plastic implant probe is not necessary, but can make access for probing a little easier);
- annual close-up check of implants to detect incipient bone loss as soon as possible;
- screw-retained implants to make it easier to deal with complications;

- a backup strategy for older people so that initially fixed restorations can be converted into removable ones—supported on the same implants;
- cleanable design of the superstructure—no artificial gingivae up to the alveolar ridge;
- conscientious training on using interdental brushes—often people are still instructed on the use of dental floss, which is usually insufficient when cleaning the implant superstructure to remove plaque from the often wide interdental spaces.

### Ageing population

According to the United Nations, the global proportion of people over the age of 65 will rise to over 1.5 billion by 2050, and this population group will account for 25–40% of the total population in the EU. As the population ages, so does the proportion in need of care. According to the Austrian Federal Statistical Office, for example, 70% of women older than 90 and around 50% men in this age group require care, most of which is provided at home by relatives. How do complex and possibly even fixed implant restorations fit into the care regime? Even with patients who are institutionalised, the nursing staff seem to be incapacitated (for example, the sixth case is that of a patient from a Viennese nursing home; Fig. 7). It is therefore of crucial importance to also offer regular recall to the older generation, especially to those who can no longer visit the dental office on their own. Mobile units are used for this purpose, which unfortunately currently only take place on a project basis and have not yet become established for the general public in Austria.<sup>12</sup>

### about the author

**Prof. Hady Haririan** is head of the Department of Periodontology at the dental clinic of the Sigmund Freud University in Vienna in Austria. He studied dentistry at the Medical University of Graz in Austria and the Paris Descartes University in Paris in France. He completed postgraduate training in periodontics at the Medical University of Vienna, graduating with an MSc in periodontology in 2012. In 2017, he finished his doctoral studies in the regeneration of bones and joints programme at the same university. In 2019, he completed his habilitation in the field of periodontology. He has been a board member of the Österreichische Gesellschaft für Parodontologie (Austrian Society of Periodontology) since 2013 and its secretary general since 2019.

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