

The following report summarises the second paper presented during the **Insights into surgical approach to the treatment of peri-implantitis** session, at the EAO's 26th annual Scientific Meeting in Madrid, 2017.

Peri-implantitis is one of the most important challenges in implant dentistry, yet it still needs to be accurately defined. It is characterised by inflammation of the peri-implant connective tissue which progresses to bone loss around implants, in the same way periodontitis does around teeth. Supported by more than 25 years of research, we can state that bacteria is the origin, and peri-implantitis is an infectious disease. The aim of this session was to shed light on the problems presented by surgical approaches for treating peri-implantitis.

## Flap design based on peri-implant defect characteristics

Alberto Ortiz-Vigón

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The speaker began by presenting a clinical case which involved an unaesthetic soft tissue dehiscence and very poor patient satisfaction. Although the criteria for peri-implant health had been met (PPD  $\leq$  5mm, no BoP and no bone loss > 5mm) (Sanz et al. 2012), the dehiscence appeared after the initial six-month healing period. It is possible that this was caused by an inadequate surgical approach.

When treating patients with similar problems, lesions must be resolved; bone levels must be stabilised; and the patient's demands about comfort and aesthetic must also be met. These treatment areas can be categorised according to the 'BMP concept' – bone, mucosa, patient.

In the first step (bone), the treatment approach should be based on the classification of defect morphologies defined by the speaker, Professor Schwarz and coworkers (Schwarz et al. 2010) (Figure 1).

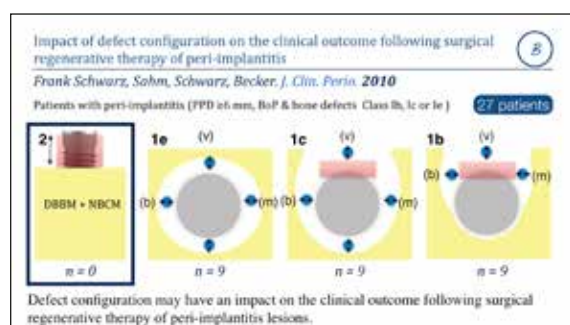


Figure 1

### Bone defects

In cases involving class 2 or supracrestal defects, our approach should be resective: remove the granulation tissue; decontaminate the exposed implant surface; recontour the bone; polish the new transmucosal area; and apically reposition the flap (Figures 2–4).

As the previous speaker had mentioned, a recent *in vitro* study confirmed that implantoplasty procedures leave implant surfaces similar to



Figure 2



Figure 3



Figure 4

machined surfaces, while the implant strength remains unchanged (Costa et al. 2017). Regardless, however, biomechanical concerns surrounding narrow diameter implants with internal connections persist, as according to clinical observations they seem to be more prone to fracture after implantoplasty. Demand is growing for devices which facilitate implant decontamination

but do not remove too much of the titanium surface (Figure 5).



Figure 5

By contrast, in cases involving class 1 or intra-bony defects, our approach should be to reconstruct: raise a full thickness flap; decontaminate the implant surface; fill the intra-bony compartments with xenograft; and cover with a collagen membrane (Figures 6–7).



Figure 6



Figure 7

Whether a membrane is used or not does not seem to influence bone levels. However, analysing healing complications in a five-year follow-up period, the following conclusion can be made: when using a membrane, 44% of patients had exposures and 79% showed crater-like lesions in the soft tissue margin (Roos-Jansåker et al. 2007).

## Mucosa

Although the evidence is limited, we can presume that the amount of keratinised tissue around implants can influence successful long-term maintenance of peri-implant stability. A systematic review stated that it has no effect on well-maintained patients, but it seems to be significant in non-maintained patients, and recessions are more pronounced when sufficient keratinised mucosa is lacking (Wennström & Derks.

2012). The practical conclusion may be that grafting procedures should be considered individually.

A recent clinical study found more plaque accumulation, discomfort when brushing, and peri-implant inflammation when a band of less than 2mm of keratinised tissue was present (Souza et al. 2016). In these situations, the speaker recommended soft tissue augmentation.

A clinical study comparing free gingival flaps with collagen matrices in peri-implantitis patients is currently being carried out, but results are not ready yet (Solonko et al. 2018).

## Patient

Patient-reported outcomes measures (PROMs) were one of the recommendations of the 8th European Workshop on Periodontology. This highlights the fact that patients have a subjective perception of treatment, and this has to be included in criteria for success (Lang et al. 2012).

A recent study concluded that patients can have unrealistically high expectations of implant therapy. This can make dentist/patient relationships difficult to manage in cases involving peri-implantitis (Abrahamsson et al. 2016). It is currently clear that treatment decisions must take into account the expectations, circumstances and compliance of the individual patient.

To illustrate this, the speaker presented a case involving a malpositioned implant in the aesthetic area which had developed a supracrestal defect. The treatment approach which was selected involved removing the implant and performing soft tissue augmentation. To treat the residual defect in the adjacent tooth, a modified flap was raised to allow regeneration of the defect (Figure 8) and the flap was then coronally advanced.



Figure 8

## Take home messages (Figure 9)

- a resective approach for treating class 2 defects in non-aesthetic areas is recommended
- a reconstructive approach is recommended for class 1 intra-bony defects, as it may achieve better results
- the decision to perform soft tissue augmentation should be made based on individual cases
- in aesthetic areas, a modified flap technique can be used to minimise recessions

When planning treatment, the decision-making process for raising a flap should be based on a reverse BMP concept: PMB (patient-mucosa-bone). The factors which should be considered at each stage are:

- patient: aesthetic demands and implant position
- mucosa: hygiene access and keratinised tissue
- bone: defect morphology and surface treatment

## References

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Evidence based statements	
<b>Main concepts presented</b>	<b>Based on</b>
The surgical treatment of peri-implantitis is effective in longterm arresting the progression of the disease.	TYPE I <b>Randomized Clinical Trials</b>
The presence of keratinized mucosa (≥2mm) significantly improves brushing discomfort, plaque accumulation and peri-implant inflammation.	TYPE II <b>Observational studies</b>
Flap design for the peri-implantitis treatment should be based on patient's related factors and peri-implant defect characteristics.	TYPE III <b>Clinical experience</b>

Figure 9

Schwarz, F., Sahm, N., Schwarz, K. and Becker, J. Impact of defect configuration on the clinical outcome following surgical regenerative therapy of peri-implantitis. *Journal of Clinical Periodontology*, 2010; 37: 449–455. [doi:10.1111/j.1600-051X.2010.01540.x](https://doi.org/10.1111/j.1600-051X.2010.01540.x)

Solonko et al. Patient perception and clinical efficacy of collagen matrix versus free gingival graft in the treatment of peri-implantitis: Multicenter randomized clinical trial. In preparation, 2018.

Souza AB, Tormena M, Matarazzo F, Araújo MG. The influence of peri-implant keratinized mucosa on brushing discomfort and peri-implant tissue health. *Clin. Oral Impl. Res.* 27, 2016, 650–655

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This summary was prepared by the EAO Congress Scientific Report rapporteurs and approved by the speaker.

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