

MALO CLINIC study indicates 3X-less bone loss with PEEK-polymer-based dental prosthetics

The MALO CLINIC are taking part in a long term clinical study into the CAD/CAM-millable JUVORA™ disc, made from PEEK-OPTIMA™, as a substructure for the Clinic's signature All-on-4® procedure, where prostheses supported full-arch implant-supported restorations for edentulous patients.



THE DENTIST'S PERSPECTIVE

"Our conclusion, after three years of follow-up, is that it must be the PEEK-OPTIMA™ biomaterial that is helping to enhance patient results, and we think this is really exciting. What JUVORA offers us is confidence that patients are receiving the best possible treatment, and not experiencing unnecessary bone loss. The All-on-4 technique has not changed; our experienced surgeons have not changed – the only change is the material substructure. Therefore, when the JUVORA disc is used as the substructure for All-on-4, the PEEK-OPTIMA material mimics the behaviour of natural periodontal ligament by providing a cushioning and shock-absorbing effect in the mouth, under extreme force."

Miguel Nobre, Director of Oral Hygiene and R&D, MALO CLINIC

THE RESULTS

At 3 years of patient follow-up, when compared to metal, the JUVORA-based prostheses had positive results^[1]

- ▶ 3x-lower marginal bone loss
- ▶ Peri-implant disease avoided in most patient cases
- ▶ Patients reported an improved quality of life
- ▶ Absence of correlation between plaque and bleeding
- ▶ High implant survival – close to 100%



Full-arch implant supported fixed hybrid made with **JUVORA™** with All-on-4® framework data comparison

Data from 3 year clinical study led by MALO CLINIC Lisbon compared with their routine patients receiving a titanium framework implant⁽¹⁾

JUVORA™		Titanium
100%	Implant survival	98%
0.5%	Peri-implant disease (implant level)	2.1-3.0%
0.38mm	Marginal bone loss (maxilla AO4)	1.52mm
1	Bleeding index	2
2	Plaque index	2
9.0	Patient comfort	7.9

Patient selection

The MALO CLINIC did not discriminate in its patient selection and included a number of cases with complex histories, including heavy bruxers. This means that even in complex cases, JUVORA exhibits better performance than conventional dental materials such as titanium.

Handle extreme forces with JUVORA™

Shock-absorbing properties of JUVORA

PEEK-OPTIMA™ offers several mechanical benefits over metal frameworks, namely, a more favorable strength-to-weight ratio and the potential for shock absorption. Metal prosthetics are naturally stronger; however they are less resilient and can be less comfortable for the patient^[2].

The shock-absorbing properties of PEEK-OPTIMA are explained by its modulus of elasticity, which is very similar to that of cortical bone. When stress transfer is measured against conventional dental materials, PEEK exhibits the most shock absorption^[3].



References

[1] de Araújo Nobre, M.; Moura Guedes, C.; Almeida, R.; Silva, A.; Sereno, N. Hybrid Polyetheretherketone (PEEK)-Acrylic Resin Prostheses and the All-on-4 Concept: A Full-Arch Implant-Supported Fixed Solution with 3 Years of Follow-Up. *J. Clin. Med.* 2020, 9, 2187.

[2] Kurtz, S (2012). "PEEK Biomaterials Handbook". Edition 1, Oxford, Elsevier Inc.

[3] Based on the tendency of a material to deform when opposing forces are applied as expressed by the average elastic (Young's) modulus values of the two materials (Titanium 110 GPa or PEEK 4GPa).

[4] * All-on-4 is a registered trademark of Nobel Biocare.

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Click buttons below to learn more:



Antonio Silva, Master Technician, MALO CLINIC discusses how the material properties of PEEK-OPTIMA™ enable JUVORA™ to create a new future of dental prosthetics



Dr Miguel Nobre, Director of Oral Hygiene and R&D, MALO CLINIC, presents a lecture on the clinical evidence of PEEK in dentistry



Dr Carlos Moura Guedes, MALO CLINIC, Clinical Director explores why materials hold the key to the evolution of the Clinic's signature All-on-4™ treatment protocol

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