Hybrid ceramics in practice

A CAD/CAM material for patients with functional disorders

Author: Dr Sjoerd Smeekens, Netherlands

The treatment of patients with functional disorders is a challenge for dentists. The extent to which the VITA ENAMIC hybrid ceramic (VITA Zahnfabrik, Germany) with its dentine-like elasticity may be a suitable material for treating patients with bruxism is described in this article. Although reconstructions with VITA ENAMIC are still experimental for this indication, I have already implemented them with clinical success.

Fig. 1: Initial situation.
Fig. 2: The extra-oral examination showed a reduced lower third of the face.
Fig. 3: Intraoral examination: Situation at maximum intercuspation.
Initial situation

The 48-year-old patient had suffered for ten years from severe temporomandibular joint pain and headaches, resulting in depression, which had led to his inability to work. Numerous visits to the dentist and treatment attempts (including occlusal splinting) had brought no relief. The patient had rejected the corrective jaw surgery recommended for the existing Class III skeletal abnormality owing to the uncertain therapy outcome. Figures 1 to 3 show the initial situation.
Preliminary treatment

After the patient’s referral to our clinic, we first tried to stabilise the occlusion via a reversible correction of tooth position. The optimal length of the incisal edges, the occlusal plane, and the horizontal and vertical dimensions were determined with a maxillary bite registration in wax (Fig. 4). It was shown that, through an elevation of the vertical dimension by 8 mm, a correction of the Angle Class III relationship was possible.

For the long-term evaluation, a PMMA splint for permanent use was fabricated on the basis of the bite registration (Figs. 5 & 6). Ten hours after its insertion (Fig. 7), the patient reported, with tears of joy, that he was pain-free. This situation has been maintained for the wear time of two years.

Material selection

Only after successful elevation of the vertical dimension were the permanent restorations fabricated. The objective was to preserve the healthy tooth substance through a non-invasive procedure. In order to achieve an exact fit, a restorative material that could be milled very thinly at the edges was required. Furthermore, a material with properties as close as possible to those of the natural teeth was needed. With its high durability and elasticity, as well as the possibility of adhesive bonding, VITA ENAMIC met these prerequisites.

Fabrication of the definitive restorations

For the precise transfer of the optimal tooth position, the digital moulding was performed once with and once without the splint. The superimposed scans formed the basis for the virtual design of the monolithic restorations made of VITA ENAMIC (Figs. 8 & 9). After fabrication, these were characterised and polished (Figs. 10 & 11).

When tried in, they exhibited a high-precision fit, and the patient was very satisfied with the shade; therefore, the adhesive bonding was performed immediately. In order to create an invisible transition to the tooth substance, pre-warmed composite filling material was used.

Summary

With the integration of the VITA ENAMIC restorations (Figs. 12–14), the patient’s self-confidence increased and he took up a new profession. This example shows that the non-invasive treatment concept presented can achieve outstanding results, leading to a significant increase in quality of life, even in patients with extreme functional problems.

Editorial note: This article was first published in the 1/2016 issue of the digital dentistry magazine (OEMUS MEDIA AG).

contact

Dr Sjoerd Smeekens is a well-known specialist in the field of restorative dentistry. He runs his own practice in Beuningen in the Netherlands and can be contacted at administratie@reconstructivetaandheelkunde.nl.