

# Photocure acrylic individual splints in orthognathic surgery

Constantin Landes, MD, DMD, Frankfurt, Germany  
FRANKFURT UNIVERSITY MEDICAL CENTER

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Occlusal wafer splints are commonly used in orthognathic surgery after osteotomy of the jaws for a correct intraoperative jaw positioning, before the osteosynthesis.<sup>1-3</sup> Considerable time and, consequently, high cost are frequently involved in the fabrication of high-quality splints with durable and stable occlusal profile, smooth surfaces, and sufficient elasticity; in addition, a dental technician may also be required. If a splint should fit badly or a last-minute change of surgical planning is needed, a new appointment for the operation, or a "night shift," may be required. Most splints are made from polymethylmethacrylate. These materials have shown changes in dimension on autoclaving.

I have searched for an economic and easy-to-handle material for splint construction that can be autoclaved and united with an intraoperative-positioning facebow. A fast and versatile preparation should ensure that the surgeon can work without the aid of the dental technician.

## TECHNIQUE

Triad transparent VLC custom tray material (Triad; Dentsply, York, Pa) is a filled photocure dimethacrylate that polymerizes through exposure to 400- to 500-nm wavelengths ultraviolet-A. Casts are set and modified through model surgery in a semiadjustable articulator. Cast isolation was performed before the adaptation of half a Triad layer to the occlusal plane. The modified casts are put into occlusion with 1 to 2 mm of distance so that the splint has sufficient height and stability. All labial and buccal excess is removed. The upper cast is removed, and the lower jaw model with the now-moldable splint set into the photo-polymerization chamber. Three minutes of polymerization on the cast is sufficient; after removal of the cast, another 2 minutes for the lower side is needed. The edges are smoothed, and steam-cleaning is performed. Two more minutes of vacuum photo-polymerization removed the oxygen

inhibition layer on the splint surfaces. All splints were autoclaved preoperatively.

The fabrication time for each splint was 10 minutes, and splints fit well after autoclaving. The costs per splint made by the surgeon were negligible (\$3 for the acrylic, plus the one-time investment of \$150 for a polymerization chamber). A polymethylmethacrylate splint manufactured by an outside lab takes, on average, 90 minutes to make and costs about \$100.

Fifteen patients tolerated the Triad splints well. No mucosal inflammation could be discerned—and, likewise, no sign of tooth decalcification was found. I advocated only little covering of the cusps to the lips and vestibule, because the fit could be checked more easily and the esthetics were better. The medium splint thickness was 1.8 mm. No early relapse was seen in the jaw position. No breakage, partial dissolving, or change of dimension was noted. The occlusal profile did not become abraded in the process of use and cleaning. The patients reported no unpleasant taste or smell, and the esthetics of the splint were good.

## REFERENCES

1. Lindorf HH. [Surgical-cephalometric bite reconstruction (double splint method)]. *Dtsch Zahnarztl Z* 1977;32:260-1.
2. Luhr HG, Kubein-Meesenburg D, Schwestka-Polly R. [The importance and technique of temporomandibular joint positioning in the sagittal splitting of the mandible]. *Fortschr Kieferorthop* 1991;52:66-72.
3. Leib AM. The occlusal bite splint—a noninvasive therapy for occlusal habits and temporomandibular disorders. *Compend Contin Educ Dent* 1996;11:1081-4, 1086, 1088.

### Reprint requests:

Constantin Landes, MD, DMD  
Klinik für Kiefer- und plastische Gesichtschirurgie  
Frankfurt University Medical Center  
Theodor Stern Kai 7  
60596 Frankfurt  
Germany  
c.landes@lycos.com

Senior resident, Klinik für Kiefer- und plastische Gesichtschirurgie [Department of Maxillofacial and Plastic Facial Surgery], Frankfurt University Medical Center.

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