

How to ensure biosafety in the use of light-curing units?

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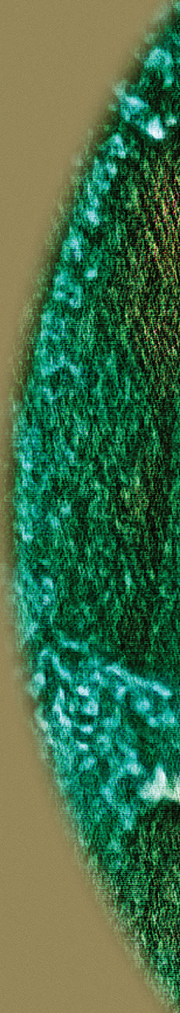
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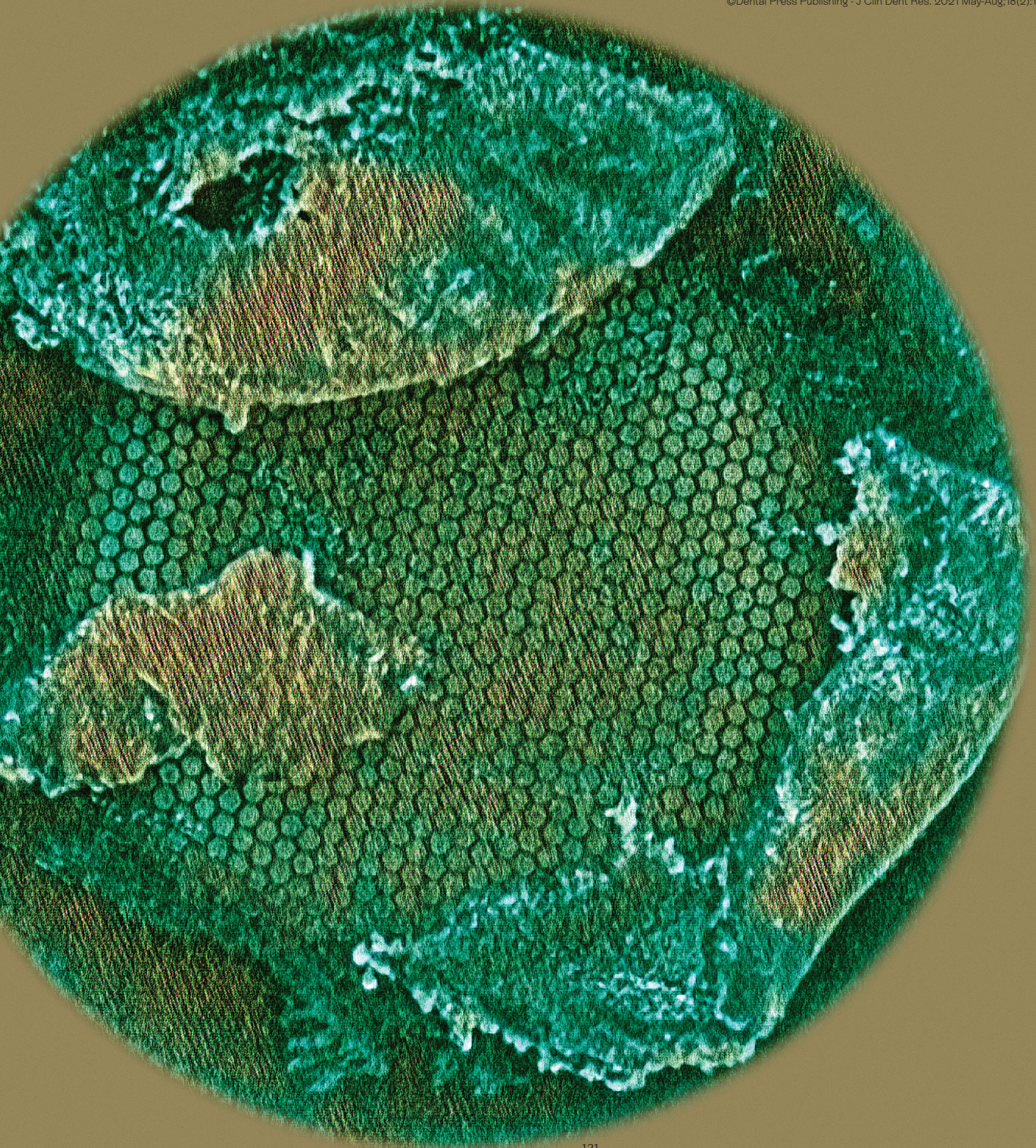
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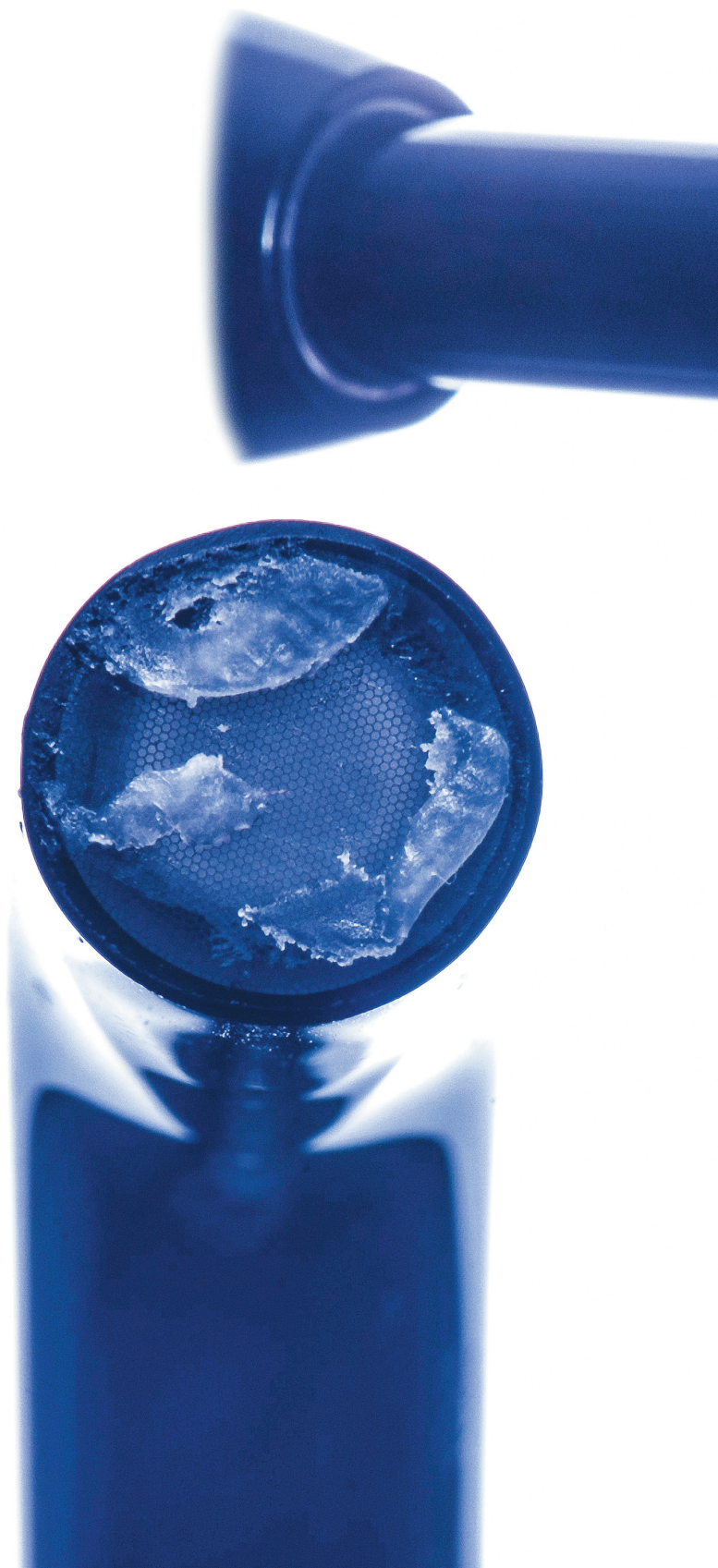




We already know that light curing units can be different¹ and their characteristics, as well as the operator's technique, may influence the resin-based materials' polymerization reaction.² Another subject that must be discussed is biosafety, since the equipment's daily use, in different patients, demands an adequate protection to avoid the cross contamination, especially considering the current treatment conditions during the COVID-19 pandemic.

The first step to be done is cleaning and disinfecting light curing units before their use. Manufacturers specify adequate care, as well as adequate products to be used in their cleaning and disinfection in the instructions for use. In most cases, a gauze dipped in isopropyl alcohol may be used for that. Equipment that are easier to clean and without areas that may retain residues are preferred.³

Any dirtiness, microbial contamination or resin-based material residues that may be adhered to the light curing unit's tip must be removed (Fig 1). These residues may cause reduction or irregularities of the light emitted by the equipment and negatively affect the resin-based materials' polymerization. Pointed or sharp instruments must be avoided, since they can damage the equipment. Broken or damaged tips must be replaced.⁴



↓ **Figure 1:** Dirtiness and resin-based material residues adhered to the light curing units' tip must be removed. A gauze dipped in isopropyl alcohol can be used for that.



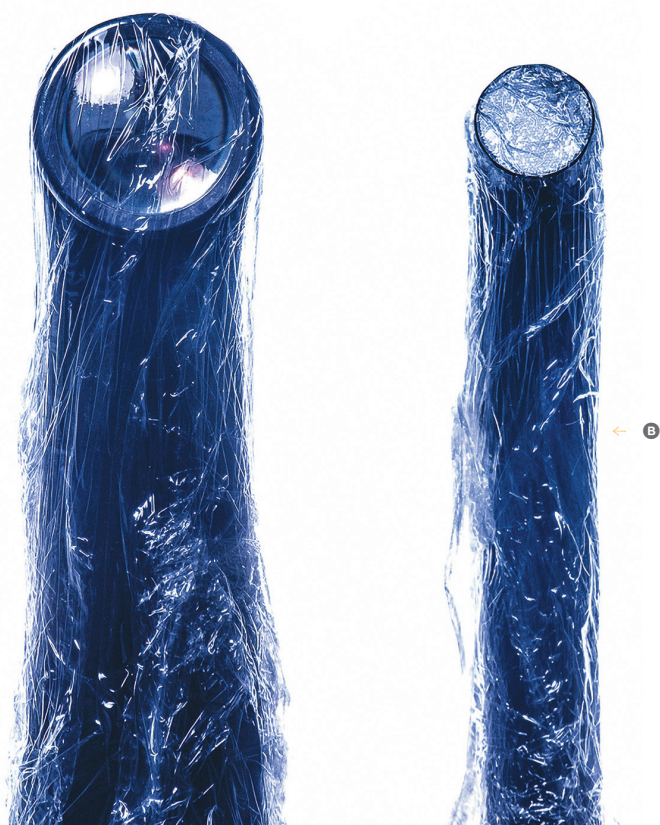
After cleaning and disinfection, protection barriers must be applied in the equipment to avoid cross contamination and ensure biosafety during its use.⁵ These barriers must be thin, translucent and be juxtaposed to the equipment's tip (Fig 2). Barriers inadequately applied may cause the reduction of the light emitted and prejudice the resin-based materials' polymerization (Fig 3).⁶

↓ **Figure 2:** Correct placement of protection barriers. Barriers must be thin, translucent and juxtaposed to the light curing units' tip. PVC films must be positioned over the tip in a single layer, without wrinkles.





← **Figure 3:** Inadequate placement of protection barriers. Barriers positioned with space (A) or multiple layers wrinkled over the tips (B) will cause a significant reduction of the light emitted by light curing units and, consequently.



Some manufacturers have barriers designed specifically for their light curing units, and they are easily used. Another option is a material commonly found in dental offices, the PVC film. It must be applied in a single layer over the equipment's tip, without any fold or wrinkle.

After the use in each patient, the protection barrier must be removed, the equipment must be cleaned and disinfected, and another barrier must be applied. With these cautions, biosafety, the absence of cross contamination between patients and operators will be maintained without the prejudice of the light emitted by the light curing units. This will ensure the adequate polymerization of resin-based materials and improved durability of light curing units.

But how do we know when it is necessary to replace our light curing units? This subject is of extreme importance and will be discussed in the next number of the column.

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