

Handpieces and the Risk of Patient Burns

Reducing the risk of thermal damage with new technology

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Despite two reports being issued by the U.S. Food and Drug Administration (FDA) in recent years, electric handpieces continue to burn patients during dental procedures.^{1,2}

Some burns are so severe that the patient may require reconstructive surgery afterwards.

The safety of the patient is a priority for dental professionals. However, when the patient is anesthetized and the operator is insulated from the heated attachment by the housing of the handpiece, a burn may not become apparent until after the damage is done. Fortunately, new technology has been developed to eliminate the risk of such burns.

In the initial 2007 report, the FDA attributed burns on the patient to poor handpiece maintenance. A poorly maintained electric handpiece sends increased power to the handpiece head or attachment to maintain its performance. This increase in power can cause heat to build up rapidly, which in turn can burn the patient. Using results from a study by Moritz and Henriques, the American Burn Association has determined the length of time in which different temperatures can cause serious burns to the skin.^{3,4} These findings were also used by the American Dental Association (ADA) in their Laboratory Evaluation of

Electric Handpiece Temperature and the Associated Risk of Burns.⁵ The ADA states that third-degree burns can occur in as little as 1 second when tissue is exposed to temperatures of at least 68°C, and a 5-minute exposure can cause third-degree burns at temperatures of at least 48°C. Such burns would not only cause pain to the patient, but may also create lasting damage requiring reconstructive surgery.

“A burn may not become apparent until after the damage is done.”

The Need for New Handpiece Technology

With the Contra-Angle EVO.15, Bien-Air (www.bienair.com) has developed a handpiece proven to never exceed human body temperature (data on file), thus eliminating the threat of burning the patient. Bien-Air claims to be the only manufacturer in the world to offer a push-button bur change mechanism with an anti-heating safety system. The Swiss-made EVO.15 is equipped with patented CoolTouch+™ heat-arresting technology, which eliminates the risk of burning patients with the head of the handpiece. In Bien-Air's patented new technology, a tungsten carbide ball is placed between the push-button and the top of the housing of the tool's bur locking mechanism to absorb heat in the event of contact when rotating.

Heat generated by handpieces is most definitely a concern for dentists, especially when such heat could harm the patient. Many choose to take precautionary measurements to ensure that they avoid touching the patient's lip, cheek, or tongue with the head of the handpiece while working; however, in some instances, the contact may be unavoidable. Such precautions may be taken on the assumption that it is the very nature of a handpiece head to generate heat during use because of the mechanics and friction. Bien-Air's CoolTouch+ technology guarantees the operator peace of mind that he or she will not unknowingly burn a patient while using the Contra-Angle EVO.15 handpiece.

The Magnification Factor

At times, the integration of new technology can be cumbersome and unfruitful for a practice. However, when it comes to the introduction of Bien-Air's EVO.15, the benefits of using the newly developed handpiece are clear. The EVO.15 delivers not only clinical precision but also increased patient safety.

Dentistry has been trending in the direction of a minimally invasive approach, as well as that of magnification-enhanced dentistry. While the use of magnification in dentistry clearly has multiple clinical benefits, it can also bring new challenges. Magnification can limit the field of view, and in such instances, the clinical team must pay extra attention to their instruments as they move outside of the magnified field of view. As mentioned previously, the head of the handpiece can generate tremendous heat. Therefore, to avoid burning the soft tissue, the clinician may shield the head of the handpiece with proper retraction or isolation. When the handpiece leaves the field of view as a result of magnification, the risk of thermal damage to the patient increases.

By adopting the EVO.15, such risks are removed. Equipped with Bien-Air's CoolTouch+ heat-arresting technology, the EVO.15 gives dental practitioners peace of mind, even when the handpiece is out of sight. The FDA may be on high alert regarding patient safety, but industry-wide safety regulations are yet to be formulated. By guaranteeing a reduction in



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heat, the EVO.15 allows the clinician to focus purely on the actual restorative procedure, improving efficiency and clinical experience for both the dentist and the patient alike.

Conclusion

Considering the pace at which dental professionals practice, efficiency and performance are key to staying on task and on schedule. For each procedure, it is critical to have consistency in equipment and technology. While it is frustrating to the operator when a handpiece requires constant maintenance, works inconsistently, or stops working altogether, such flaws in the dental equipment must also be unnerving to the patient. Poor maintenance of a handpiece can also cause further heat to be generated, which may result in burns to the patient. Not only is the Contra-Angle EVO.15 equipped with an anti-heating safety system, it also provides unparalleled durability and precision. Even when facing challenges such as magnification and avoiding contact between the handpiece and the tissue, Bien-Air's EVO.15 will not exceed human body temperature, therefore eliminating the risk of burns to the patient.

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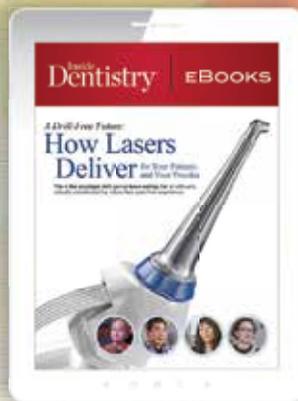
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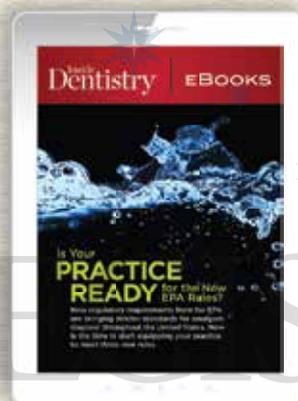
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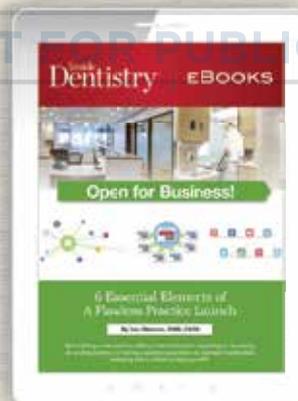
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