

Reuse of Orthodontic Mini Screws: Cleaning, Sterilization, and Stability Assessment Review

Res. Asst. Arda Saribas, DDS

Department of Orthodontics, Izmir Katip Celebi University, Turkey

Abstract:

The cost and environmental impact of orthodontic mini screws have made their reuse a significant topic of research. Effective sterilization and cleaning protocols are essential for ensuring safe reuse. This study examines chemical cleaning and sterilization methods alongside stability assessments to evaluate the feasibility of mini screw reuse.

Effective sterilization is crucial for removing biological residues and preventing infections. Research indicates that steam sterilization at 132°C for 6 minutes is highly effective while preserving the mechanical properties of mini screws.

Chemical cleaning protocols, such as using a combination of 37% orthophosphoric acid and 5.25% NaOCl, have shown promising results. Alternatively, a 9% etidronic acid and 2.5% NaOCl solution has been found to cause less corrosion while maintaining comparable cleaning efficiency.

Studies reveal that properly sterilized and cleaned mini screws retain their primary stability, with clinically acceptable insertion and removal torque values, ensuring reliable performance in orthodontic treatments.

The reuse of orthodontic mini screws is both cost-effective and environmentally friendly when appropriate protocols are followed. Chemical cleaning methods improve surface properties and stability, enhancing clinical safety. Further standardization and broader studies are recommended to optimize these protocols for clinical practice.