

Use of Acidulous Electrolyzed Water (Hicrosoft Oxidizing Water) in Dental Clinics

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In our clinic, Omco Actid NDX-70KMW was installed in April of 1966 and Hycrosoft oxidizing water generated by it has been used for dental treatment. Hycrosoft oxidizing water has its advantages in dental treatment with lower degree of metal corrosion and more stability of residual chlorine than general SAEW. Problems with using it used to be more time required for the operator and higher operating cost, which have been solved after repeating try-and-errors to settle on this final product. It has been used for hand washing, cleaning equipment and for treatment, and we are going to focus on the first two uses.

Hand washing

Produced Hycrosoft oxidizing water stored in a tank is heated by a fish-tank heater in cold seasons and distributed to the sinks at two locations in our clinic. It is essential to wear rubber gloves to handle it just like handling super acidic water. As to wiping after hand washing, using cotton towel causes re-contamination by bacteria and requires more effort on the part of the staff. Using paper towel contributes to more waste and cost. Drying the hand by a dryer is also expensive and causes noise, and also takes more time to dry. Therefore, non-fabric rayon towel is repeatedly used instead.

Rayon does not contribute to reducing chlorine concentration and is easy to handle in absorbing and desorbing water. You can store several pieces soaked in a sink and wring one to wipe hands quickly although not completely dry. The hand-wrung rayon towel has sterilization effect and remove bacteria from the tables and chairs by wiping them. Not requiring as much force to wring it as cotton gauze, rag or dish cloth, it can be easily handled by females.

Disinfection of equipment

1. Manual devices

After using a device, Hycrosoft oxidizing water is used to wash off visible contaminants attached to it, and after going through supersonic cleaning for 3 minutes, it is cleaned again by hand, dried and sterilized. It is assumed that injuries cause by contaminated equipment are more often found than those caused by used syringes, but pre-washing equipment with Hycrosoft oxidizing water seems to reduce the chances of secondary infections.

It has been more than a year since we started using Hycrosoft water directly from the supersonic tank, but we have seen only slight change of color on the stainless steel surface, but not any problems like corrosion holes. Some rust in the equipment is identified at the very beginning of the operation, but it gets less of a problem afterwards.

2. Handpiece

Prepare several turbine handpieces for a patient and clean them after use by rubbing up and down in a cleaning pot equipped with a brush with the used bars still attached to them. After turning off the supply water, they should be kept turning without water for about one second (If there is no mechanism to prevent suck back, they should be spun with water outside the pot after cleaning to drain out Hycrosoft water). Take off the bars and wipe off moisture. It will extend the life of the air-oscillation unit of the handpiece to lubricate every time it is cleaned. However, since oil tends to reduce chlorine concentration, rinse water should be replaced after one round or two. The turbine hand-

piece should be lubricated once a day after treatments, and the pot water should be renewed after 7 to 8 times of cleaning. However, since none of the handpiece manufacturers accept cleaning with chemical agents not to mention Hycrosoft water, there is no repair guarantee if something goes wrong with the device. In our clinic, handpieces have been cleaned this way for 4 years, but there has been no change in the frequency of cartridge exchange.

3. Reamer bar etc.

Small bits of parts such as reamer bars that are hard to clean by supersonic wave can be cleaned in a mesh basket. According to the studies by Kosono of Kyushu Dental College, even steel bars that are most vulnerable to corrosion can be cleaned without much corrosive damages compared to mechanical ones caused by operational impact.

4. Unit cleaning

To clean a unit after use or before surgical operation, use rayon towels mentioned above. Total area of cleaning is up to 2 meters on one side. In case of implant operations that require utmost cleanliness, rayon wet tissues can be used to cover the handles of the light and operation table as well as the vacuum grip that are held during the operation. Water supplied to the 3-way syringe can be used not only for the treatment but also for cleaning and deodorizing the sordes in the spittoon. Supplying water to the 3-way syringe constitutes personal modification to the device and is not recommended during the manufacturer's warranty period. Otherwise, it is possible that malfunctions of even other parts cannot be covered due to the Product Liability Law. As a convenient way of piping, a gardening spray can be used to supply water with the water-supply valve of the 3-way syringe replaced with that for Hycrosoft oxidizing water. However, depending on the electrolyzer model, the packing at the switch might deteriorate to allow water leak, and water drops might get into the device during the cavity drying process before CR (composite resin) filling. For this reason, the packing might have to be changed earlier than expected.

Usage during treatment

Endodontic treatment: Root canal cleaning (by supersonic wave, air-oscillation system cleaner)

Prosthodontics and operative dentistry:

Cleaning and disinfection of retaining teeth before insertion and filling and cavity (plaque needs physical cleaning), cleaning and disinfection of impressions and articulators (infection prevention by dental technician) as well as fitting trays and fitting TEK, cleaning and disinfection of prostheses dropped during adjustment, and bars and handpieces.

Periodontics: Supersonic cleaning, water-jet by air-scaler to remove calculus, cleaning dental pockets, cleaning abraded or curetted legions, gargling during brushing, cleaning the brush after brushing instructions.

Surgical: Disinfection of areas for operation, cleaning cavity after extraction of infected teeth before curetting, cleaning lesions after hydrotomy for wisdom teeth, cleaning equipment (washing off blood paste followed by supersonic cleansing)

X-rays: Cleaning the dental film cover after x-rays, disinfection of the film holders.

Informed consent

These are various ways of using Hycrosoft water, but the patient's informed consent is essential before applying it for treatment because it has not been approved in accordance with the Pharmaceutical Law.