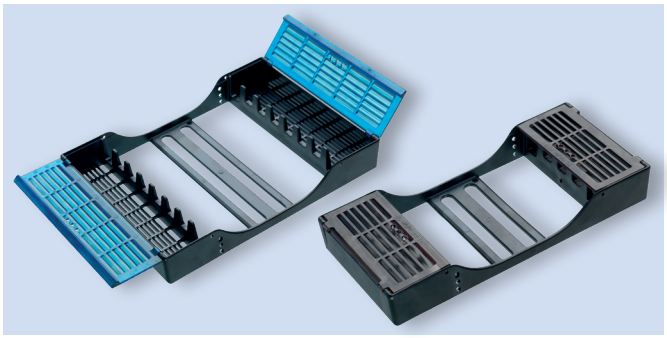
Durability and efficacy of cleaning of the new LM-Servo E cassette in washer-disinfectors and autoclave sterilization

LM feel the difference

Aims of the study

Closed cassette systems provide a more efficient and safer way to process, sterilize and organize instruments in a dental practice - these eliminate manual steps during instrument reprocessing such as hand scrubbing and time-consuming sorting of instruments, thereby improving safety and increasing efficiency. The LM-Servo E evolution series (picture 1) has a patented design to improve safety with safety shields preventing sharp prick injuries and at the same time protecting the instrument tips during maintenance actions. LM-Servo E is the first dental instrument cassette that meets IP30 protection grade. The more closed cassette may have an impact on washing result of hand instruments placed inside. In this study the efficacy of cleaning and the durability of the cassette material and design in different maintenance conditions was studied.



Picture 1. LM-Servo E cassettes. Series includes cassettes for 5 or 8 hand instruments, both with four color options.

Methods

Durability in autoclave and disinfector:

1. LM-Servo E was tested in autoclave Bravo 17V, (134 ˚C 4 min single pre-vacuum (solid/unwrapped) cooling to 90 ˚C) for 2500 cycles. Inspection of changes in cassette dimensions, functionality of RFID tag, and material wearing / mechanical functionality of the LM-Servo E was done.

2. For worst case maintenance conditions testing, a harsh maintenance cycle test including 40 cycles (Dürr 212 (2 %) - soaking 16 h - rinsing - autoclaving, 3 Bar/143 ºC, ca. 5 ½ h cooling) overall equivalent to 2000 cycles of normal cleaning and sterilization cycles in dental practice, was performed on a separate set of cassettes.

3. LM-Servo E cassettes filled with maximum amount of hand instruments were processed in SciCan Hydrim C61 wd G4 instrument washer-disinfector for 500 cycles (P4).

Efficacy of cleaning:

Hand instruments and LM-Servo E cassettes were soaked in cow blood and left to dry for 2 days. Cassettes both placed into LM-ServoMax tray and individually were then washed in SciCan Hydrim C61 wd G4 instrument washer-disinfector (P4: rinse, washing with disinfection, drying 95 ˚C, cleaning agent SciCan HIP Ultra) and visually inspected for possible remains of blood.

Results

Durability in autoclave and disinfector:

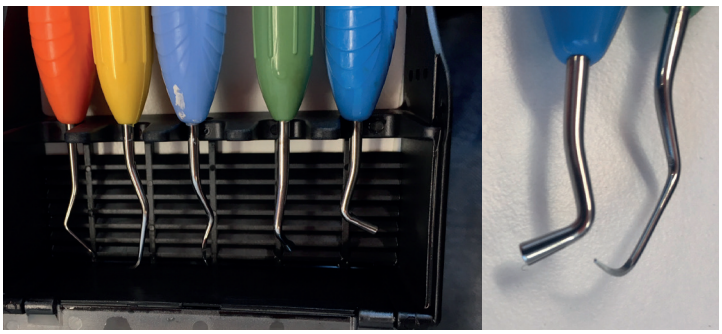
After 2500 autoclave cycles or 500 cycles in washer-disinfector no other signs or wearing than a small reduction in cassette lid dimensions (<0.5mm reduction in width) were noticed, but without impact on mechanical functionality. Based on experience in from long-term clinical maintenance of the cassette material, small shortening of the cover can be expected in long-term clinical use. RFID tag functionality was confirmed after 2500 cycles.

Efficacy of cleaning:

Although posessing a much more closed design both cassette and all hand instruments were completely clean without any residues of blood (picture 2).

Drying time of the LM-Servo E cassette and LM-ServoMax tray is longer than existing LM-Servo cassette and that should be notified in maintenance.

Before



After

Picture 2. Washability testing of hand instruments placed into LM-Servo E cassette. After disinfector cleaning, the hand instruments showed no visual stains of contamination.

Conclusions

- LM-Servo E cassette containing full set of hand instruments can be washed in washer-disinfector either individually or placed in the LM-ServoMax tray. Washer-disinfector supplier's instructions for loading instruments and containers should be followed.
- LM-Servo E cassettes including also RFID tag withstands autoclaving (> 2500 cycles) and thermo-disinfector (>500 cycles) very well.
- Drying time of the new LM-Servo E after maintenance is longer than for other LM cassette models due to more closed structure.

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