

- Anti-retraction Valve
- Aerosols
- Dental Surgery
 - Sterile irrigation

Bien-Air Dental
solutions

Anti-Retraction Valve

- What is it?

A one-way valve that opens when the foot control is depressed and closes when the foot control is released.

- What does do?

Help prevent fluid retraction from the oral cavity into non-sterilizable dental handpiece tubing and water lines.

- Should you sterilize your anti-retraction valve?

If the location of the anti-retraction valve is in the handpiece, instead of the coupling [or motor for electric handpieces] than it may be sterilized, ensuring that any contamination contacting the valve will not be transferred to a new handpiece.



Anti-Retraction Valve related studies:

- <https://www.ncbi.nlm.nih.gov/pubmed/6386926>

J Am Dent Assoc. 1984 Nov;109(5):712-6.

"Each time the handpiece turbine is stopped while the bur is still in the patient's mouth, almost 1 ml of microbe-laden oral fluids may be aspirated into the average dental unit water line by the retraction valve present in the dental unit. This fluid ... infectious agents including ... **influenza**, ... This germ-laden water may then be sprayed into the mouth of the next patient, possibly initiating an oral or upper respiratory tract infection. Sterilizing the handpiece between appointments, although of great significance in the prevention of disease transmission, will not totally eliminate the problem discussed here... A viable alternative is the installation of a check valve (**anti-retraction valve**) downstream from the retraction valve. Installation of a check valve resulted in an almost 4,000-fold decrease in this contamination.

- <https://www.nature.com/articles/s41368-020-0075-9>

International journal of oral science volume 12, Article number: 9 (2020)

"Therefore, the use of dental handpieces without anti-retraction function should be prohibited during the epidemic period of COVID-19."

Aerosol

- What is it?

The terms "aerosol" and "splatter" in the dental environment were used by Micik and colleagues 8-12 in their pioneering work on aerobiology. In these articles, aerosols were defined as particles less than 50 micrometers in diameter.

[https://jada.ada.org/article/S0002-8177\(14\)61227-7/pdf](https://jada.ada.org/article/S0002-8177(14)61227-7/pdf)

- How is it created?

Dental devices, such as high-speed dental handpieces, use high-speed gas to drive the turbine to rotate at high speed and work with running water.

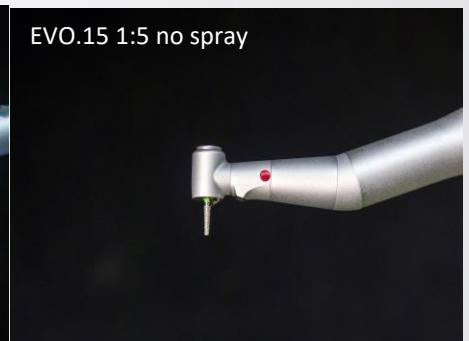
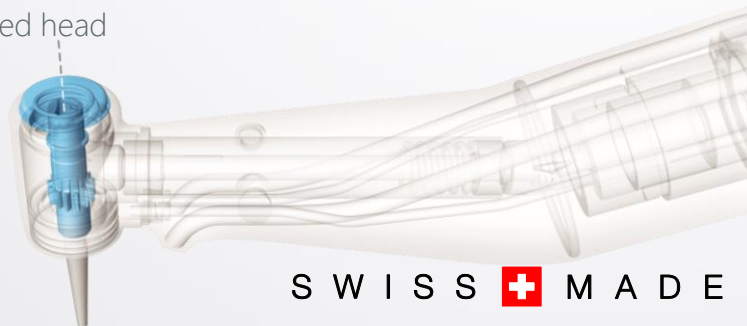
<https://www.nature.com/articles/s41368-020-0075-9>

- Can you reduce aerosol?

- With Air driven handpieces, you cannot reduce the speed and therefore, spray is needed to cool the tooth, due to the high speed of the bur.
- In many electric handpieces, water is required to cool the handpiece itself.

Bien Air electric HP design Water for mechanical cooling not required

- Ceramic insulated push-button guaranteed not to elevate above human body temperature during operation
- Double Wall, stainless steel, insulated head
- Does not require water
- Full torque over complete RPM Range - allows user to slow bur speed down to 75K RPM



S W I S S + M A D E

Sterile Irrigation

- What is it?

sterile bulb syringe, sterile single-use disposable products, or sterilizable tubing
<https://www.cdc.gov/oralhealth/infectioncontrol/faqs/oral-surgical-procedures.html>

- When is it required?

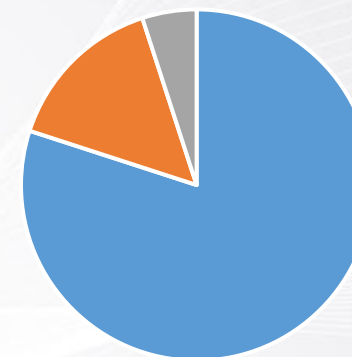
Oral surgical procedures raise the risk of local or systemic infection because microorganisms from inside or outside the mouth can enter the vascular system and other normally sterile areas of the oral cavity (e.g., bone or subcutaneous tissue). These procedures require a higher level of infection prevention than routine procedures.
<https://www.cdc.gov/oralhealth/infectioncontrol/faqs/oral-surgical-procedures.html>

- How is a surgical procedure defined?

Examples are biopsy, periodontal surgery, apical surgery, implant surgery, and surgical extractions of teeth (removal of erupted or nonerupted tooth requiring elevation of mucoperiosteal flap, removal of bone or section of tooth, and suturing if needed)
<https://www.cdc.gov/oralhealth/infectioncontrol/faqs/oral-surgical-procedures.html>



Share of Usage %



■ Air Driven 45 ■ Electric 45 ■ Uses sterile

Bien Air electric motor system with Sterile water pump



Sterile irrigation ✓

**ADEC 500 Delivery unit
With sterile pump**

Air driven 45°

Sterile irrigation ✗



Electric 45°

Sterile irrigation ✗



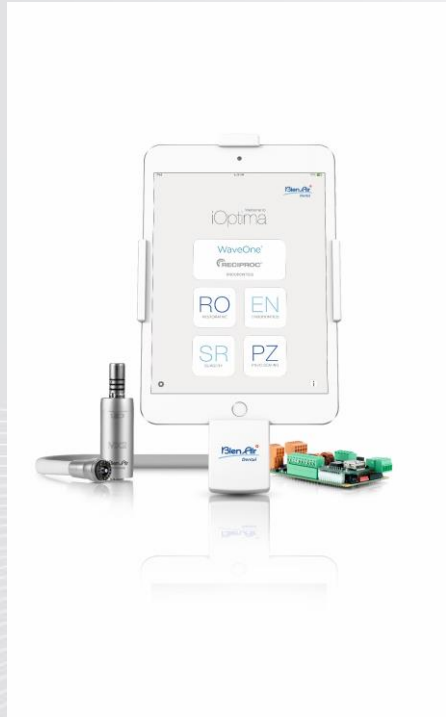
Bien Air – Handpiece infection control guidelines

- Water spray originating from dental unit
 - Sterile water is always preferable
 - If dental unit water must be used, then anti retraction valve is necessary
 - Sterilizable anti-retraction valve is optimal
- Aerosol minimization
 - If water spray can be eliminated (i.e. ortho, slow speed, intermediate speed etc.), it should not be used.
 - If water spray cannot be eliminated:
 - Electric handpieces do not emit aerosol in the reverse direction, back toward the clinician and staff
 - If you can find an electric handpiece that can run without water to cool the head, use one
 - Bur RPM should be reduced to the lowest possible setting to minimize the aerosol generated by water spray contacting rotating bur accommodate the procedure.
- Dental Surgery
 - Sterile irrigation mandatory
 - No dental delivery unit water acceptable
 - No compressed air driven handpieces (embolism / emphysema risk)

Post COVID-19
Guidelines

Solution to eliminate aerosol contamination in dental office post COVID-19

iOptima INT
1700704-001



Sterile Pump
1900200-001



CA 1:2.5
1601055-001



- ✓ Sterile irrigation – no risk of foreign body contamination
- ✓ Sealed head – no risk of contaminant penetration
- ✓ <100K RPM (75% slower than air driven handpiece) virtually eliminate aerosol
- ✓ Sterilizable motor
- ✓ Sterilizable anti-retraction valve

Procedures covered:

- | |
|---|
| CUT RETENTION GROOVES |
| PORCELAIN ADJUSTMENT |
| FINAL C+B PREP FINISHING BEVELS + MARGINS |
| CAVITY PREP FINISHING BEVELS + MARGIN |
| OCCUSAL ADJUSTMENTS |
| DENTIN REDUCTION |
| TOOTH SECTIONING |
| BULK ENAMEL REDUCTION |