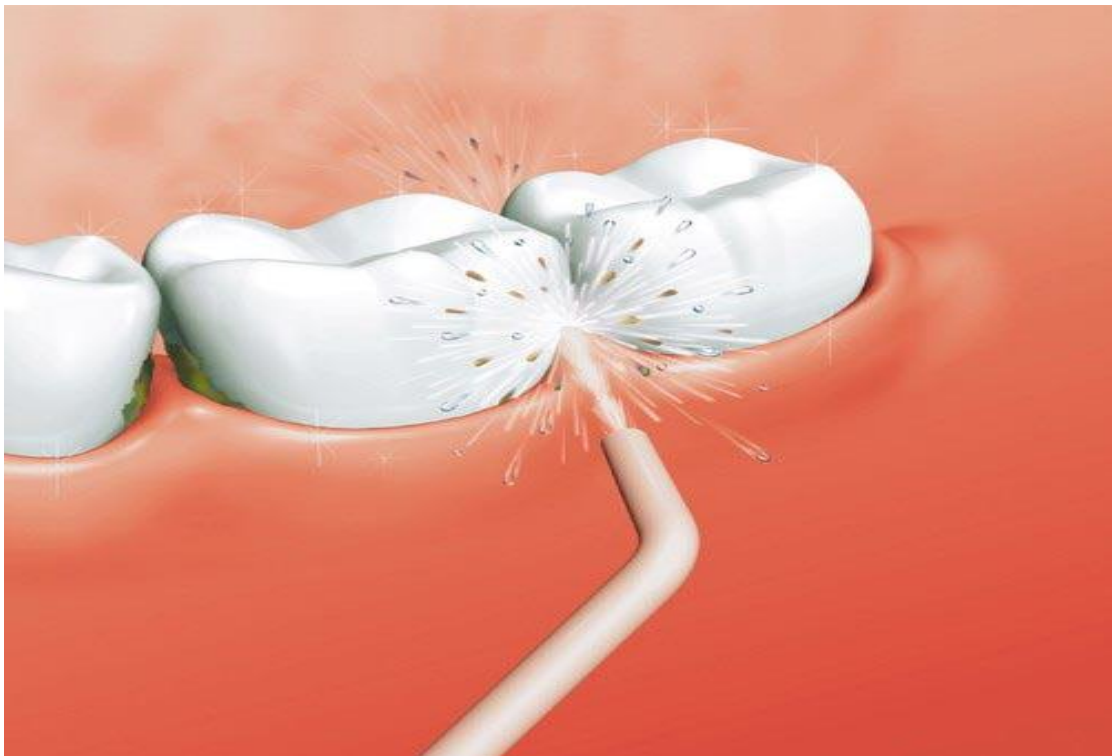


# The Greatest Invention Since The Wheel: The Oral Irrigator, Next Level Dental Care!!!

An oral irrigator (also called a dental water jet) is a home care device that uses a stream of pulsating water to remove food debris between teeth and below the gumline, and improve gingival health.

The first oral irrigator was developed in [Fort Collins, Colorado](#) in 1962, by dentist Dr. Gerald Moyer and engineer John Mattingly.



A 2008 [meta-analysis](#) of whether or not oral irrigation is beneficial as an adjunct to tooth brushing concluded that "the oral irrigator does not have a beneficial effect in reducing visible plaque" but suggests it may be beneficial to gingival health in addition to regular oral hygiene measures. A study at the [University of Southern California](#) found that a 3 second treatment of pulsating water (1,200 pulses per minute) at medium pressure (70 psi) removed 99.9% of plaque biofilm from treated areas.



Recently, there has been a renewed interest in oral irrigation. Numerous studies have supported the hypothesis that daily irrigation with a pulsed water-jet device improves oral health. Maximum benefit appears to be achieved with initial to moderate periodontal patients whose traditional mechanical methods of oral hygiene may be less than ideal. There have also been studies evaluating the efficacy of different antimicrobial agents added to the irrigation unit's reservoir. These studies have met with varying results, and the literature will be examined to determine current recommendations and expected clinical outcomes. Another area of research is the professional delivery of antimicrobial agents. The most promising agents and techniques for delivering antimicrobial agents in the dental office will be reviewed to enable the clinician to make informed decisions regarding patient therapy.

Early studies showed a reduction in gingivitis but not in the plaque (biofilm) index. This led to confusion as clinicians felt that if plaque was not mechanically removed, then the oral irrigator was not an effective homecare device. For many years, the oral irrigation device was reserved for orthodontic patients and for patients with food impaction or tooth positioning problems. Currently, research has focused on plaque alteration and host modulation. One of the areas that researchers focused on in the past, was the possibility of oral irrigation forcing bacteria into the blood stream, where it could cause infection or damage to bodily organs. Research has found little evidence to suggest that daily irrigation causes significant bacteremia, at least not more than other oral hygiene practices such as, toothbrushing or flossing. In 1988, Cobb found that irrigated areas reduced pathogenic bacteria up to 6 mm and was non-injurious to the tissue. In fact, the risk of bacteremia is significantly higher in those individuals who have poor oral hygiene, thus controlling oral infection is of utmost importance in reducing the incidence of bacteremia. Studies have shown that using an oral irrigation device can substantially improve tissue health and thus can be an effective tool for daily use.



The primary purpose of oral irrigation is to reduce harmful bacteria and therefore the risk and severity of periodontal disease. Studies have shown that daily oral irrigation has the potential to suppress periodontal pathogens located within the pocket. Oral irrigation has demonstrated a reduction in proinflammatory mediators. Periodontal disease causing bacteria cause an increase in cytokine levels, which leads to bone resorption. Daily oral irrigation leads to a reduction in pro-inflammatory cytokines that leads to a slight, but significant, improvement in mild to moderate periodontal disease. In addition, oral irrigation has demonstrated a significant reduction in bleeding, gingivitis, periodontal pathogens and probing depths. The reduction in probing depth was minimal and may not be clinically relevant.. Thus it appears that oral irrigation is a useful adjunct in suppressing and controlling periodontal disease. Patients who may benefit from oral irrigation include those with orthodontic appliances, implants, crown and bridge, diabetes, periodontal maintenance, gingivitis and those whose traditional oral hygiene may be less than ideal



## Daily irrigation

There are several types of oral irrigators, but like all self-care devices they require daily use for maximum efficacy. The most common type for home use is a pulsed flow irrigator. There are also direct flow or steady stream irrigators. Most of the studies completed on oral irrigation were done using pulsed irrigators by Waterpik Technologies. Results cannot be extrapolated to other pulsating devices or direct flow irrigators. Another type of oral irrigator, is the pulsed flow, magnetized irrigator. The hypothesis is that the charged water decreases calculus formation as well as achieves the benefits found with non-magnetic irrigators. Two studies have shown a decrease in calculus on lower anterior teeth only with magnetization but no greater reductions in bleeding or gingivitis.

There is also a type of irrigator that incorporates micro-bubbles of air into the water stream. These bubbles produced by the Braun Oral B OxyJet, are designed to enhance plaque disruption and thereby reduce gingival inflammation. However, in a study by Frascella et. al. the OxyJet was found to be safe but there was not difference in the reduction of clinical parameters compared to the non-irrigation group.

There are several tips for use on the market today. The most prevalent is the jet tip or standard tip, which is designed for supragingival placement. This standard tip can deliver an irrigant to an average of 50 percent of the pocket depth. Another tip that can be very helpful for periodontal patients is the Pik Pocket™ subgingival irrigation tip by Waterpik Technologies. This is a soft latex free rubber tip designed to fit Waterpik oral irrigators. The Pik Pocket tip has been found to penetrate 90 percent of

the depth of the pocket. This can be a very effective tool to flush out periodontal pockets or to deliver antimicrobials to the depth of the pocket. Ora-tec also manufactures a uniquely designed tip that can be used for both standard and sulcus irrigation with their Via-Jet home irrigator. In addition, a few manufacturers supply cannula tips to be used with their irrigators. Cannula tips have not been tested for safety or efficacy for home use by the patient.



There are several reasons why daily irrigation is beneficial for oral health. One reason is to remove unattached plaque and dilute toxins. A second reason is to control gingivitis, especially in those patients who do not or cannot perform adequate interproximal hygiene. The oral irrigator appears to "pick up the slack" in patients whose home care is less than ideal. A third reason that oral irrigation is beneficial is that it can improve bad breath by reducing the pathogenic bacteria or by using a specially designed tongue cleaner attachment. This can be an effective tool in motivating patients to irrigate. For patients who do not receive the desired result with traditional home care methods, irrigation can be most effective in helping them to gain good oral health.

Patients should be instructed to direct the tip at a 90 °angle to the long axis of the tooth, and about 3 mm away from the gingival margin. Then, follow the gingival margin and stop at each interproximal area for five or six seconds, irrigating both the lingual and buccal aspect of the teeth. For moderate to advanced periodontal disease, daily subgingival irrigation can be very beneficial in helping to achieve adequate home care.

It is well established that traditional brushing and flossing, or rinsing with antimicrobials does not penetrate more than a millimeter or two subgingivally. Since



most of the active periodontal disease process occurs subgingivally, the necessity of cleaning to the base of the pocket becomes apparent. Fortunately, the Pik Pocket tip attachment for the Waterpik oral irrigator is easy to use and is safe and effective. In a study by Braun and Ciancio, it was discovered that the subgingival tip was able to reach 90 percent of moderate (4-6mm) pockets, and 64 percent of deeper pockets (7mm or above). One final method of irrigation that can be an effective method for delivering an antimicrobial to deeper areas, is the cannula. This method requires commitment, easy access, an isolated area, and high dexterity on the part of the patient.



The biggest advantage of daily irrigation is that it helps patients to maintain a reduced bacterial count in the oral cavity. This in turn leads to fewer bleeding points, more shallow probing depths, and improved gingival health.

The key to success with oral irrigation seems to be consistency, as the bacteria must be continually "knocked down" to achieve maximum benefit. Still, irrigation is only one component of a comprehensive dental care program. Patients must also perform daily thorough toothbrushing, flossing, and any other adjuncts the dental professional deems appropriate. During dental office visits, thorough debridement is still paramount to achieving oral health.

In conclusion, home irrigation can be a key part of treatment planning to care for patients by reducing the numbers of harmful bacteria in the oral cavity, and thus reducing the severity of periodontal disease. Professional irrigation may be limited but new sustained or controlled release devices have shown efficacy when used with scaling and root planning.