



Feature

# The Value of an Optimally Sharp Instrument

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Manual and Ultrasonic instrumentation techniques and guidelines for treatment have changed over the past few decades according to technological advancements and theoretical interpretation in the literature. Technological advancements in the areas of ergonomics, metallurgy and cryogenic processing have led dental manufacturers to develop instruments that lessen the incidence of musculoskeletal disorder, increase patient comfort, and permit treatment of more advanced periodontal conditions. Even more important, these advancements in technology and innovation have paved the way for instruments that not only stay sharper longer but led to the creation of a unique brand of instruments that do not have to be sharpened at all.

It is critical for dentists and dental hygienists to use optimally sharp dental instruments when removing hard and soft deposits from the tooth surface. Sharp dental instruments offer benefits for both the clinician and the patient. For the clinician, sharp dental instruments provide greater tactile sensitivity, facilitating the detection of deposits and tooth anomalies. With sharp instruments, clinicians apply less pressure when removing deposits. This in turn decreases muscle strain and hand fatigue. Applying less pressure aids in ergonomic health and lessens the incidence of developing a musculoskeletal injury, ultimately promoting career longevity. Sharp instruments allow clinicians to practice more efficiently, reducing the number of strokes required to remove hard deposits and the amount of time per procedure.

Sharp dental instruments provide a more comfortable patient experience. Less pressure is applied during treatment because sharp instruments are able to bite into the calculus (when using stainless-steel instruments) or remove the calculus in layers with a few light strokes (when using sharpen-free instruments). Dull instruments burnish calculus, forcing the clinician to apply unwanted pressure to remove the deposit. This often translates to pain for the patient and the clinician. Fewer strokes means less time in the chair for the patient. Patients are also happier and

more likely to refer new patients to the office. An added bonus is increased production for the clinician and additional revenue for the office. With less repetitive strokes, gingival tissues have a better response, facilitating greater treatment outcomes.

When using a manual hand instrument, deposit removal should always be performed with an optimally sharp edge. In order to maintain that sharp edge, traditional stainless-steel instruments must be continuously sharpened and properly maintained so they can be effectively used to provide safe patient care and to keep clinicians safe from unwanted musculoskeletal injuries. It is vital that clinicians are properly educated and continuously trained on sharpening techniques and provided ample time to do so. Because the Centers for Disease Control's (CDC) guidelines recommends the sharpening of sterile instruments to reduce the chance of an accidental stick or injury, clinicians must be provided ample time to perform these duties consistently, which can be often hard to come by in a busy office. Most importantly, the clinician should value the importance of sharpening and have a solid understanding of the relationship between their own health and safety, patient care and treatment outcomes.

In addition to limited time, there are some other drawbacks to sharpening. Because many clinicians have not been properly trained to sharpen or simply lack the technical ability to do so, many instruments are improperly sharpened and, in the process, ruined. Instruments are designed to be used in a specific manner. Any modification to the working end can alter the effectiveness of that instrument and cause undesirable harm to the patient like residual and burnished deposits, tissue trauma, gouging of the root surface or breaking of the working in during patient treatment of processing during sterilization. An over sharpened instrument becomes a cutting tool because the angle of the sharpening edge has been significantly altered. This can result in damage to healthy teeth leading to oral health conditions like tooth sensitivity.

One alternative to sharpening is to use a sharpening service. The majority of sharpening services use machines to perform this task, so the working end of the instrument is sharpened at a precise angle, eliminating the potential for design modification and human error. This often requires clinicians to have extra sets of instruments on hand because the majority of these services will require the dull instruments to be shipped for servicing. If extra sets are not available, office production may be compromised during that time. Most sharpening services will also charge a fee per instrument.

A more economical alternative to the use of a sharpening service is sharpen-free instruments. The working ends of Sharpen free instruments are specially coated a wear resistant material creating a razor-sharp edge. This feature permits the clinician to use a shaving stroke with lighter pressure offering benefits to both the patient and clinician. There are two companies that manufacture sharpen-free instruments. American Eagle produces a line of XP-Sharpen free instruments. LM™ Dental produces a line of sharpen-free instruments coined Sharp Diamond. Sharp Diamond instruments are developed using a high wear resistant super steel. The working end is coated using Physical Vapor Deposition (PVD) technology that bonds a diamond-like micro-coating to create LM Sharp Diamond™ instruments. This breakthrough, ultra-hard coating keeps Sharp Diamond instruments razor sharp giving clinicians a more effective edge for longer. LM's Sharp Diamond instruments also come with an innovative handle design. The LM-ErgoSense, developed in 2014, features a thicker handle, light weight, handle with an optimized shape, silicone surface, and color coding, making LM Sharp Diamond the ideal ergonomic instrument.

So, what does sharpen-free really mean? It seems that there is a fair amount of confusion and misinformation regarding what qualifies an instrument as sharpen-free. Some instrument manufactures will try to muddy the waters by offering free sharpening or using phrases like “stays sharp longer”. Providing an instrument sharpening service does not make the instrument sharpen-free. An instrument that holds its edge a little bit longer, before becoming dull and requiring sharpening, is not sharpen-free. Sharpen-free is a lot like being authentic—either it is sharpen-free or it isn't. Sharpen-free means the instrument stays sharp from one appointment to the next, there is no difference in sharpness after each use, and the instrument remains functionally sharp throughout a commonly expected life-span. You never have to sharpen the instrument.

When dull instruments are used, both the clinician and the patient suffer. It is essential that clinicians properly care for their instruments so that they last longer. This includes maintaining a continuous sharp edge by manual sharpening, using a sharpening service, or investing in sharpen free instruments. Clinicians should be given the tools they need to perform effectively and efficiently, to promote ergonomic health, and to provide high quality care to help keep their patients happy. This alone should make the use of sharp instruments mandatory for all dental health care practioners.

## About the Authors

With over 27 years of experience, Joy D. Void-Holmes is considered a thought leader in dental hygiene and is recognized for her ability to evoke passion into her work to help elevate the knowledge of the dental community. She is an educator, writer, consultant, and researcher. Published author for multiple dental related articles, editor and chief of the Inspire the Future Newsletter, creator of the Dental Hygiene Student Planner, and co-founder of the Inspire the Future Summit educators conference. She is an accomplished speaker and has lectured nationally. Joy currently serves as president for the Maryland Dental Hygienists' Association and is a consultant examiner for the Commission on Dental Competency Exams. Dr. Joy received her doctorate degree from Nova Southeastern University.

