

Diamond Blade Knife Care: Safe Reprocessing Without Breaking and adding up to \$20,000 To the Bottom line.

While diamond blade surgical knives are still preferred by top ophthalmologists over steel knives for precise incisions that dissect tissue instead of tearing it, particularly for cataract surgery, the downside is that they are very fragile and expensive. Breakage can occur during cleaning before sterilization even without human error.

Improper cleaning of the blades can also lead to a clear material buildup invisible to the naked eye and that dulls the cutting edges. This can lead to unnecessarily sending the knife back to the manufacturer for costly cleaning and re-honing.

“You don’t want any debris on the knife blade”, says board-certified ophthalmologist Mitchell A. Jackson, MD, a cataract and refractive surgery specialist who performs about 2,000 procedures a year between his private practice and ambulatory surgery center. “The whole purpose of using a diamond blade is reproducibility of a precise cut, every cut, every case”.

To help eliminate costly diamond blade knife damage and debris-caused dulling, an inexpensive, easy - to- use cleaning system has been developed that enables safe, efficient cleaning without breakage. This is helping to save thousands of dollars annually while improving practice efficiency.

“Diamond blades are much more precise than steel, will cut right through softer eye tissue without distorting it and provide better wound closure “says Dr. Jackson. His private practice called ‘Jackstone™’, is a well known clinical-study site that conducts research and clinical studies on surgical devices, new lens implants and medications before available to the medical industry.

“Over the years, we’ve used a variety of diamond blade cleaning techniques from punching Styrofoam and special cloths to ultrasonic and steam cleaning, but these always led to a rougher, less precise edge or damaged blade, even when there was no human error” says Dr. Jackson, who has performed more than 50,000 cataract and laser vision correction procedures since 1993, and presents at U.S. and international symposiums on cataract and refractive technologies. “Once that happens, the diamond blade is no better than steel, typically requiring the knife to be sent back to the manufacturer for expensive re-honing or diamond replacement.

Though diamond blade re-honing can cost more than \$500 and diamond replacement can cost a couple thousand dollars, if proper care is taken they are less expensive than disposable steel blades on a per case basis, according to Dr. Jackson.

“Cleaning diamond knives correctly is critical”, says Dr. Jackson. “A diamond knife can last for decades if you take care of it. I’ve used some of mine for 15- 20 years. One cleaning system I’ve used, enables very safe, cost effective cleaning consistently.”

In general, “the more handling required or the more complex the cleaning process, the more likely that a diamond blade will be accidentally damaged,” according to Dr. Jackson. He also stresses the importance of not placing the diamond blade where debris from previous cleanings can contact or otherwise damage the blade.

“Ultrasonic cleaning is time consuming, as well as prone to vibration and human error,” says Dr. Jackson. When using an ultrasonic, you need to change the solution each time to prevent debris floating in the solution from previous cleanings from striking the diamond and potentially chipping its edges.

“The ultrasonic also eats away at the glue holding the blade in the handle so occasionally the blade drops off, usually into the ultrasonic bath, and there have been cases where the blade was accidentally tossed out with the solution”, says Dr. Jackson

Since the diamond blade is very thin, high pressure steam cleaning can push on one side of its crystalline structure, therefore creating a tendency to break along the crystalline plane. This can cause chipping, leading to edges that become serrated instead of smooth.

To eliminate costly diamond blade knife damage, a cleaning system has been developed that does away with unnecessary actions, vibration, pressure, and contact with surfaces. To eradicate debris-caused diamond blade dullness, the system utilizes a protocol that allows placing the blade in an area absent of debris.

The system developed by NJ Products, LLC, Rolling Meadows, Illinois, under the trademark Opti-Kleen® Blade Cleaning System and is distributed by a number of non-exclusive independent distributors. The Opti-Kleen® Blade Cleaning System provides for cleaning the blade by utilizing a small tray that holds three pre-packaged proprietary gel-like foam pads. The larger of the three pads, containing the blue colored cleaning solution, produces the cleaning process by removing debris including tissue, bodily fluids and other debris and depositing them into the pad. The two smaller compartments, containing purified water, provide for two sequential, independent rinses with the later of the two designed to remove excess rinse solution prior to the knife being placed into the sterilizer. The system was carefully engineered following FDA, APIC and AORN members and AAO recommendations for pre-cleaning of medical instrumentation prior to sterilization processes.

For cleaning, the blade passes through the three pads in sequence, (steps 1, 2 and 3) and the entire process can take less than 10 seconds. Several initial, gentle passes will remove debris from the blade surface and deposit into the first pad. The following two steps remove the cleaning solution leaving the blade pristine. Then, following standard industry practice, the knife is sterilized prior to its next use.

The design of the Opti-Kleen® Blade Cleaning System provides, according to Dr. Jackson, “a controlled, reproducible, cleaning technique that can prevent diamond blade damage and contamination, while improving efficiency on surgery days”.

Following the directions-for-use, the technician can clean about 30- 50 diamond knives per tray. Typically a new cleaning tray is used daily, however using a reusable storage holding cradle also developed and supplied by NJ Products can allow the tray to be used for several days under certain conditions.

“By using the Opti-Kleen® Blade Cleaning System we save on the average over four repairs and blade replacements per year” says Dr. Jackson.

Finally according to Dr. Jackson, “compared to more complicated, time-consuming cleaning methods, surgeons using this system can realize significant time-savings as well as between \$10,000 and \$20,000 annually to our practice’s bottom line in reduced diamond blade repair, replacement, and additional gained surgery slots”.