

Date published online: August 2009

COVER
FEATURE

challenging cataract cases **Diamond knives holding ground in cataract surgery**

by **Vanessa Caceres EyeWorld Contributing Editor***Advantages can outweigh risks and special care, some say*[Cataract diamond knives](#)

Metal knives may be gaining an edge, but a number of cataract surgeons say there still is nothing like a diamond blade. "Although there are some excellent new metal blade designs, they still do not surpass the diamond blade in my experience," said David F. Chang, M.D., clinical professor of ophthalmology, University of California San Francisco. "Most of us have a diamond paracentesis blade, a diamond keratome, and a diamond blade that is either of a pre-set or adjustable depth for corneal relaxing incisions."

"I've been a diamond advocate since they were first on the scene," said Louis "Skip" D. Nichamin, M.D., Brookville, Pa. "Nothing can compete with its sharpness, consistency of incisions, and the quality."

Those who favor diamonds say its predictability is one advantage. "It's reproducible—you know exactly what you're getting," said Francis S. Mah, M.D., co-medical director, Charles T. Campbell Ophthalmic Microbiology Laboratory, University of Pittsburgh School of Medicine, Pittsburgh. Surgeons also herald their precision. For example, Jack A. Singer, M.D., Randolph, Vt., has used the Fine Triamond (Mastel, Rapid City, S.D.) since 1995 for all cataract and IOL cases. "The small dimensions make it possible to use it for both side port and phaco/IOL incisions. Its extreme sharpness creates a more uniform internal incision that seals more consistently with minimal hydration, potentially reducing the risk of wound leak and endophthalmitis," he said.

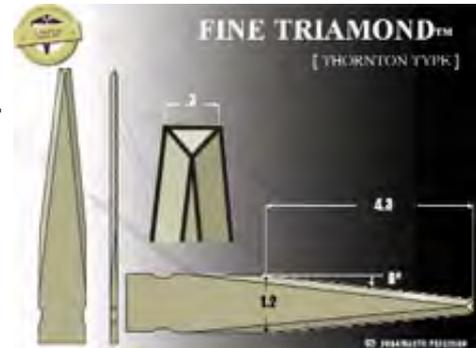
"Surgeons performing clear corneal incisions are probably more likely to be using diamond keratomes because of the precise incisions they make through Descemet's membrane," Dr. Chang said.

And J.E. "Jay" McDonald II, M.D., Fayetteville, Ark., favors the edges and designs of that have evolved for diamond blades in the past few years. "In cataract surgery, the trapezoid design as described by I. Howard Fine [M.D., Eugene, Ore.] has helped my wound construction," he said. Although initially pricey, cost is a factor that can work in favor of a diamond knife, some surgeons say. Even though an initial investment may be in the \$3,000 range, the diamond blades can last indefinitely with proper care. They can pay for themselves after several hundred cases, Dr. McDonald said.

Managing diamonds

That all said, diamond knives require special care. Surgeons have to get over the shock of the upfront price tag and avoid costly errors. Dr. Mah has witnessed a diamond knife get broken after just one use.

It's best to place one person in charge of the knife's care, Dr. Nichamin said. "You have to educate them about its cost and the importance of the knife and then empower them to take on that responsibility," he said. "Rather than seeming onerous, it can become a coveted task."



A Fine Triamond diamond knife favored by Dr. Singer; this knife is made by Mastel Precision

Source: Mastel Precision

Dr. Chang suggests perhaps even the surgeon should handle the care of the diamond knife.

Good maintenance is easier to manage in a private practice versus a hospital setting, Dr. Mah said. Although he likes diamond knives, he doesn't use them currently because he works in an academic setting where he doesn't always have the same nurses and technicians available.

"It only takes one touch of the tip to anything more than human tissue, and the knife is ruined," Dr. McDonald said.

To help with cleaning, particularly when doing corneal relaxing incisions not associated with cataract surgery, Dr. McDonald and staff dip the diamond tips in hydrogen peroxide to remove protein and tissue debris. They also use a steam cleaner sprayer to clean the tips.

Remembering to retract the blade into the handle can protect the blade and protect members of the surgical team who have to pass the blade back and forth, Dr. Chang said.

You may also want to have more junior surgeons stick with metal blades initially, as they may have trouble developing a tactile feel for diamond knives, Dr. Nichamin said. However, the feel of a diamond can come with time, he added.

Of course, some of it comes down to surgical preference. "I prefer the tactile feel of steel when I create incisions," said Steven H. Dewey, M.D., Colorado Springs, Colo. "I reuse blades about 10 or so times before they dull significantly. I believe diamonds are less expensive than single-use steel, but the pricing improves for steel with reuse."

A world of metal, silicone, and diamonds

Going forward, disposable blades, along with diamond blades, may become more widely accepted, especially with the threat of toxic anterior segment syndrome (TASS) and the spread of prion diseases more prevalent in Europe, Dr. Nichamin said.

For example, the BD Atomic Edge (BD, Franklin Lakes, N.J.), made of silicone, is extremely close in sharpness to a diamond and can be reused up to 10 times, Dr. Mah said.

"I think disposables are going to gain a greater foothold. Fortunately, the disposable technology is improving," Dr. Nichamin said.

Editors' note: *The doctors interviewed for this story did not indicate any financial interests related to their comments.*

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