

ZEISS VISUMAX 800: Redefining Refractive Surgery With Unmatched Speed and Comfort

Excerpts from a symposium held during the 2024 meeting of the American Society of Cataract and Refractive Surgery.



John F. Doane, MD: Adoption of lenticule extraction with ZEISS SMILE by refractive surgeons worldwide has been on a consistently upward trajectory. As of 2023, more than eight million surgeries with SMILE and SMILE pro have been performed with VisuMax femtosecond lasers (Carl Zeiss Meditec). What often gets lost in the SMILE conversation is that this technique was developed 24 years ago when ZEISS built a femtosecond laser specifically to correct refractive error using small incision lenticule extraction. What's also impressive is that more than 800 peer-reviewed articles have been published about SMILE and SMILE pro, and we have close to 17 years of clinical evidence supporting the concept of lenticule extraction.

While the first-generation VisuMax laser is wonderful, the VISUMAX 800 traveling unit is dramatically better, with new features that benefit both surgeons and patients. One of the most remarkable advances is the speed of the VISUMAX 800.

FAST PERFORMANCE



Sonny Goel, MD: The increased pulse frequency of the VISUMAX 800—2,000 kHz compared to 500 kHz for the VisuMax—has reduced the time it takes to create a lenticule using SMILE pro from 30 seconds to just under 10 seconds.¹ Speed is great, but what does speed mean for us? For patients, it means less time under the laser and less anxiety. As a surgeon, I know I get nervous and sometimes hold my breath when I see a laser going across an eye, so being able to create a lenticule in less than 10 seconds makes for a less stressful day for me.

There's also a safety component associated with faster lenticule creation. Reinstein and colleagues reported that 65% of suction breaks with the VisuMax laser occur after 10 seconds.² If we're creating lenticules in less than 10 seconds with the VISUMAX 800, we can expect a 65% reduction in suction breaks, going from 0.5% to approximately 0.2%.

In their comparison of intraoperative times, Brar and colleagues found that overall surgery time per case was 7 minutes with the VISUMAX 800 compared with about 9.5 minutes with the VisuMax.³ By reducing my surgery time by 2.5 minutes per case, I'm saving about 25 minutes per half-day surgery session. That means less time in the office for everyone—patients and their drivers, surgeons and their staff—which means my staff can go home to their families on time at the end of the day. Looking at these efficiencies just from that perspective, the VISUMAX 800 adds great value to my practice.

EASE OF LENTICULE DISSECTION

Dr. Doane: When it comes to ease of lenticule dissection, the VISUMAX 800 is a game-changer, particularly for surgeons who are

reluctant to attempt thin lenticules. When we photodisrupt, the gas bubbles expand, and we're probably not ahead of those gas bubbles with the VisuMax. With the VISUMAX 800, we're ahead of those gas bubbles. The photodisruption, spot-to-spot, is well focused, resulting in the best possible tissue dissection.

I can attest to the fact that going from the VisuMax to the VISUMAX 800 is a totally different game. During my first -1.00 D case using the 800 traveling, I looked back at the clinical application specialist and said, 'Wow, that was easy.' After performing lenticule extraction with SMILE for 12 years, I was much more confident doing a -1.00 D treatment with the VISUMAX 800, which means that when we do a -3.00 D and above, those dissections are even easier.



William F. Wiley, MD: I totally agree. Dissections with the 2,000 kHz VISUMAX 800 are extremely smooth. We can make each spot tighter as it's being laid down for a better, cleaner dissection.

Dr. Goel: Not only is the laser fast, but my dissections are easier. There's less inflammation the next day, and patients are more comfortable. We found no difference in uncorrected visual acuity between the VisuMax cases and the VISUMAX 800 cases. And that was with the 800 right out of the box. As we start to fine-tune our results, I expect they'll be even better.

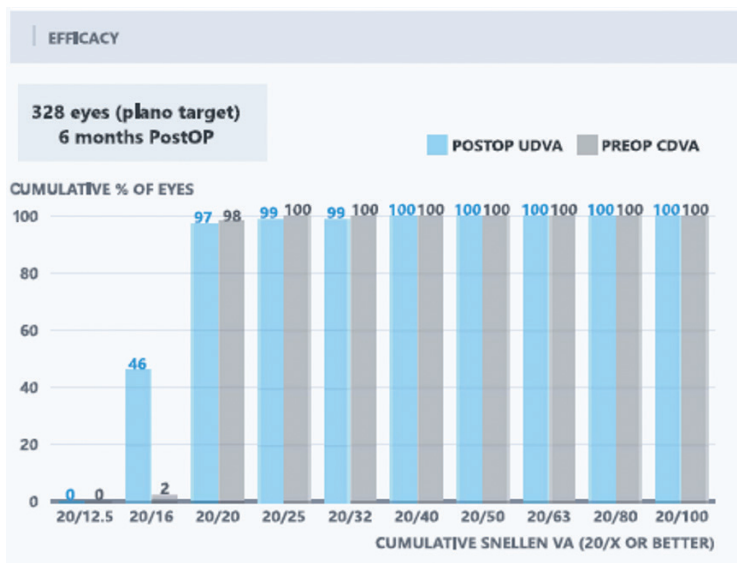


Figure. In 328 patients at 6 months postoperative, Dr. Doane found that 97% achieved 20/20 visual acuity.

CENTRALIGN® AND OCULIGN® INTELLIGENT ASSISTANT SYSTEMS

BY AUDREY R. TALLEY ROSTOV, MD

Audrey R. Talley Rostov, MD: ZEISS has incorporated two new digital assistant features into the VISUMAX 800 to aid with centration and cyclotorsion alignment, addressing some of our concerns when using the VisuMax laser.

Centralign® is a computer-controlled function that uses pupil center and vertex position to give you full control of centration, helping to ensure a smooth docking process. Simply put, Centralign points you to where you want to go to align the system. It makes centration easy and takes all the anxiety out of that maneuver.

The OcuLign® integrated tracking system is designed to account for cyclorotation. After manually marking the eye (this will be automated in the near future), you then dock and align your marks with the three lines shown by the OcuLign. The OcuLign automatically recalculates the treatment pattern and helps to counter any cyclorotation that may occur.



Figure. Dr. Rostov uses the Centralign® in her practice.



Audrey R. Talley Rostov, MD:

As a cornea surgeon, I really appreciate the precision that the VISUMAX 800 achieves. I've done some research work with femto deep anterior lamellar keratoplasty (DALK) and femto keratoplasty, and it's beautiful to see how precisely the VISUMAX 800 cuts the cornea.

NEW TOOL HELPS REFINE REFRACTIVE OUTCOMES

Dr. Doane: For more than 20 years, I used an Excel spreadsheet that I created to analyze my outcomes data, because I felt the programs offered by third parties had some shortcomings. In the last two years, I've become an advocate for ZEISS VISULYZE software that enables us to follow the data and create treatment tables and nomograms. We use three nomograms for SMILE pro—with-the-rule, against-the-rule, and oblique axis—because eyes with the same refractive error react differently when the orientation is different.

To start using VISULYZE, you enter refractive data for at least 50 eyes. The program statistically analyzes that data, determines the treatment for those eyes, and creates nomograms. In reviewing a subset of 328 patients at six months post-op, we found that 97% achieved 20/20 visual acuity (Figure).⁴ Astigmatism correction for the parameters that qualify for SMILE pro have been dynamite.

COMFORTABLE SURGICAL EXPERIENCE

Dr. Wiley: We live in a world where patients' expectations are rising so fast that it's difficult to stay ahead of the game. Young patients who are choosing to have LASIK or SMILE expect a great experience, and it's our job to try to meet that expectation.

With the VISUMAX 800, we now have a platform that makes for smooth and easy dissections and fast overall treatment times, and studies have confirmed what we're seeing with our VISUMAX 800 cases: shorter treatment times reduce patients' anxiety and eye movements during surgery.⁵

In addition, I believe the VISUMAX 800 is the first modern laser that incorporates some of the features that we're accustomed to having in a modern tech world—multiple camera views to show you where you are during docking, for example. The VISUMAX 800 truly does bring a modern graphic user interface that enhances the surgeon's comfort throughout the case.

IN SUMMARY

Dr. Doane: With the digitization and automation incorporated into the VISUMAX 800, we're experiencing not only faster performance but also the benefits of the intelligent assistant systems. The digital connectivity that will be introduced over the next several months will enhance that experience even further. ■

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