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Outcomes of Femtosecond Laser-Assisted Cataract Surgery Compared to Conventional Phacoemulsification

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Cataract surgery is one of the most common and successful surgical procedures worldwide. Femtosecond laser-assisted cataract surgery (FLACS) has been introduced as a technology designed to enhance precision and safety by automating key steps such as capsulotomy and lens fragmentation. This prospective study compared clinical outcomes between FLACS and conventional phacoemulsification in 120 patients over a 3-month follow-up. Participants were randomized to undergo either FLACS or standard phacoemulsification cataract surgery. Primary endpoints included uncorrected visual acuity, endothelial cell loss measured by specular microscopy, intraoperative complications, and postoperative inflammation.

Patients in the FLACS group exhibited significantly faster visual recovery, with a mean uncorrected visual acuity of 20/25 at 1 week versus 20/32 in the

conventional group ($p = 0.03$). Endothelial cell loss at 3 months was 12% in FLACS patients compared to 27% in the control group ($p < 0.01$), suggesting less corneal trauma. Capsulotomy precision and lens centration were markedly improved with FLACS. Intraoperative complication rates were lower in the FLACS group, though the difference was not statistically significant. Postoperative inflammation was comparable between groups. Despite higher initial costs, FLACS may offer clinical advantages, particularly in complex cases such as dense cataracts or small pupils. Limitations include the learning curve associated with laser use and increased procedure time.

In conclusion, FLACS provides enhanced safety and visual outcomes and may become the preferred technique as technology advances and costs decrease.

Biography

Dr. Emily Nguyen is a Consultant Ophthalmic Surgeon at the Royal Victorian Eye and Ear Hospital in Melbourne. She specializes in cataract surgery and is a leading expert in the clinical application of femtosecond laser technology. Dr. Nguyen is recognized for her contributions to advancing precision and outcomes in modern cataract procedures.