Study Spotlight: Intraoperative performance of ZEISS MICOR 700

Seeing beyond

Assessing the performance and lens fragmentation efficacy of a non-cavitating handheld lensectomy system in different cataract grades.

Source

Title
First in-human clinical performance of a new non-cavitating handheld lensectomy system in 665 consecutive cataract surgeries

Authors
Tsontcho Ianchulev, Elizabeth Yeu, Edward H Hu, Paul Singh, Gautam Kamthan, Gavin Li, Seth Pantanelli, Farrell Tyson

Publication
Journal of Cataract & Refractive Surgery 50(7):p 693-697, 2024 July 1
DOI: 10.1097/j.jcrs.0000000000001446

Methodology & Setup

Set up

12 Surgeons operating in ambulatory surgical centers.

Sample size

Retrospective consecutive study consisting of 665 eyes undergoing cataract surgery.

Evaluation Criteria

Successful nuclear fragmentation, lens extraction, cortical removal and respective time with different cataract grades.

Results and observations

The ZEISS MICOR 700 handheld lensectomy system was able to successfully complete lens fragmentation and extraction in all cases across the spectrum of cataract grades 1 to 4 without requiring the use of phacoemulsification.

Lens Extraction Time

The MICOR® 700 from ZEISS had results which are comparable with the reported phacoemulsification times for lens extraction, with mean durations ranging between 1 minute and 3.4 minutes depending on the technique used.

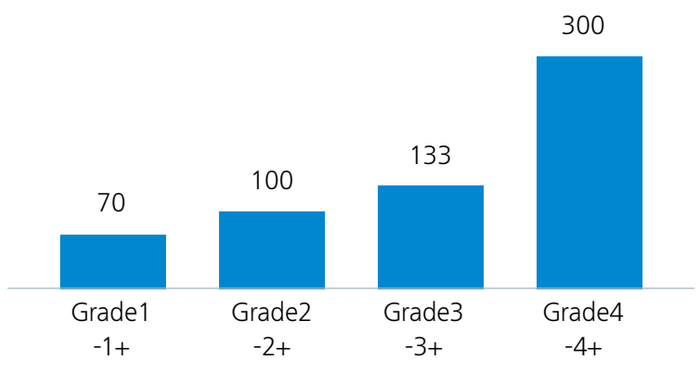
Ultrasound Free

The tip's frequency is much lower at 40 Hz compared with standard phacoemulsification's frequency of 40,000 Hz.

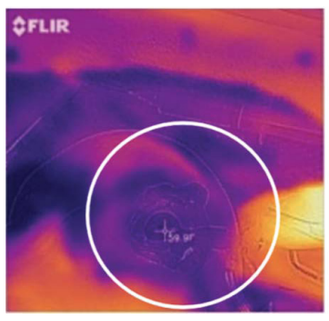
Fluid Use

ZEISS MICOR 700 uses a smaller amount of fluids than phacoemulsification, regardless of the cataract grade. The volume used for phacoemulsification typically falls within the range of 70 to 130 mL while ZEISS MICOR 700 fluid usage averaged 50 mL.

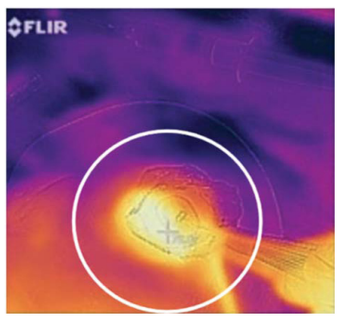
ZEISS MICOR 700 Lens Removal Time (sec)



ZEISS MICOR 700



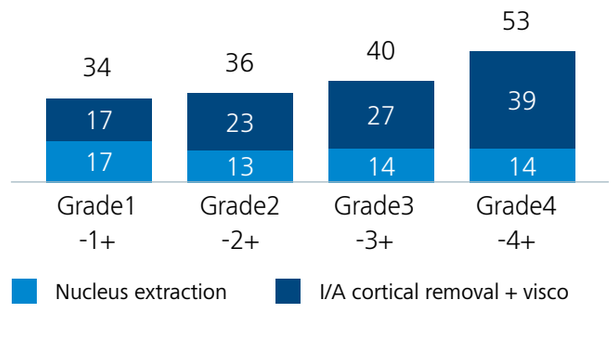
Phacoemulsification



The ZEISS MICOR 700 tips are seen to generate minimal heat, whereas the phacoemulsification tip generates more heat.

(Preliminary thermal studies, using the FLIR system (Teledyne FLIR LLC) performed on the ZEISS MICOR 700 and a phacoemulsification system in porcine eyes.)

ZEISS MICOR 700 Fluid Used (ml)



Ultrasonic phacoemulsification needs to be cooled more with irrigating fluid than the ZEISS MICOR 700 because of thermal energy generating from intermolecular friction and friction with their surroundings.

Additional author's opinion…

ZEISS MICOR 700

- has reduced footprint since it has no foot pedal and no large machinery.
- significantly reduces the operating costs beyond the upfront capital expense related to the phacoemulsification machine.

en-INT_32_200_0212I © Carl Zeiss Meditec AG, 2024. All rights reserved.