

# New Ergonomically Designed Swivel Ultrasonic Handpiece Exhibiting Advanced Human-Factors Design

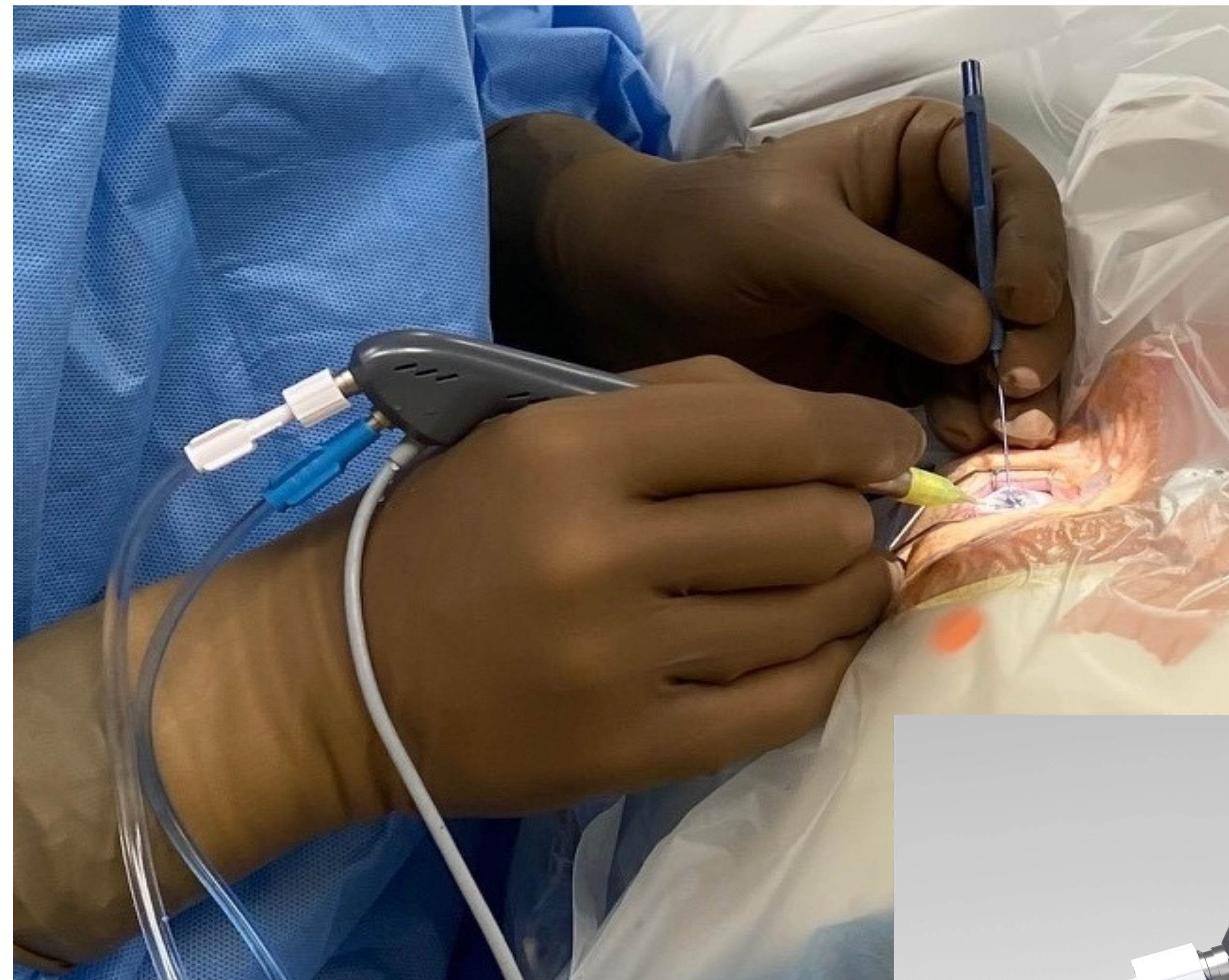
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Disclosure: Adam Toner and Leilei Ji are employees of Johnson & Johnson Surgical Vision, Inc.

## PURPOSE

To describe the design and evaluate the performance of a new ultrasonic handpiece, which incorporates advanced human-factor elements, for cataract surgery.

## HANDPIECE



## METHODS

- Design inputs of the novel handpiece were collected, and a formative study was executed
- Iterative prototyping including feedback from practicing surgeons was performed to optimize the design
- A clinical study was performed in which four surgeons treated a total of 107 eyes utilizing the novel ultrasonic handpiece
  - Following the completion of each case, the surgeons completed a questionnaire regarding the performance of the new handpiece
  - The proportion of cases successfully completed with the new handpiece were determined and satisfaction ratings\* on the handpiece were collected

\* Surgeon rating on a scale from 1 to 5, defined as 1 – unsatisfied, 2- somewhat unsatisfied, 3 – neither satisfied nor unsatisfied, 4 – satisfied and 5 – very satisfied. Surgeon acceptability will be considered favorable for scores of 4 and 5.

## RESULTS

- Novel design elements are explained, and engineering data are presented
- Outcomes from the clinical study on surgeon satisfaction and overall performance using the novel handpiece presented as the table

Questionnaire Items	Cataract Status				n/N (eyes with ratings of 4 or 5/eyes treated)	% for ratings of 4 or 5 (95% CI)
	Trace / Mild		Moderate / Severe			
	n	%	n	%		
• Rating of satisfaction with <u>weight and size</u> of VERITAS™ Swivel Handpiece					104/107	97.2% (0.92, 0.99)
Score of 3	1	1.7%	2	4.2%		
Score of 4/5	58	98.3%	46	95.8%		
• Satisfaction with <u>surgeon control</u> of VERITAS™ Swivel Handpiece					104/107	97.2% (0.92, 0.99)
Score of 3	1	1.7%	2	4.2%		
Score of 4/5	58	98.3%	46	95.8%		

## CONCLUSIONS

The new swivel handpiece addressed human-factor design targets and exhibits a high level of surgeon satisfaction in a clinical evaluation.

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