Imperial College London

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# Simulation-Based Training Enhances Confidence in Glaucoma Laser Procedures (PI and SLT)

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## Background:

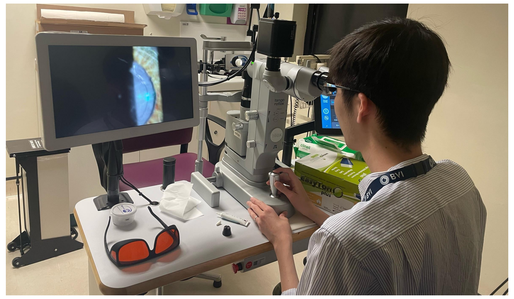
- Laser procedures such as peripheral iridotomy (PI) and selective laser trabeculoplasty (SLT) are critical components of glaucoma management.
- Proficiency in these procedures is essential for ophthalmologists in the acute and outpatient setting.
- In various industries and medical specialities, simulation-based education has emerged as a valuable tool, offering a 'risk free' environment for skill acquisition[1].

## Aim:

- This study assessed the efficacy of simulation training on the confidence of residents in the United Kingdom in performing peripheral iridotomy (PI) and selective laser trabeculoplasty (SLT), essential glaucoma laser procedures.

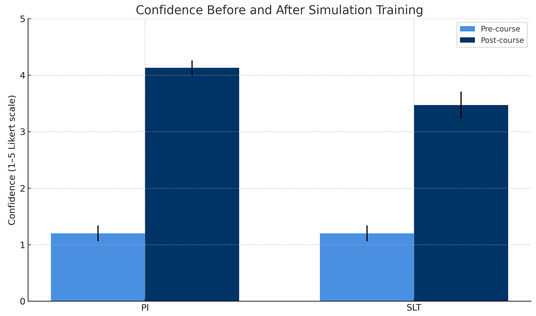
## Method:

- Fifteen ophthalmology residents participated in a structured blended-learning course that included:
  - E-learning modules and instructional videos covering PI and SLT procedures.
  - Hands-on practice using Altomed simulation eyes during an in-person session, supervised by consultant ophthalmologists.
- Confidence levels were self-reported using a 1–5 Likert scale, both before and after the training.
- Paired Student's t-tests were used to assess changes in mean confidence scores.
- Descriptive statistics summarized the cohort's prior experience and feedback.



## Results:

- For PI, pre-course confidence averaged 1.20 ± 0.14, rising to 4.13 ± 0.13 post-course ($p < 0.0001$, paired students t-test).
- For SLT, pre-course confidence increased from 1.20 ± 0.14 to 3.47 ± 0.24 post-course ($p < 0.0001$, paired students t-test).
- Notably, 12 out of 15 residents had no prior laser simulation training experience.
- All residents expressed a desire for additional simulation-based laser training opportunities.




## Discussion:

- The significant improvement in confidence levels highlights the value of structured simulation in glaucoma laser training. For residents with minimal or no prior experience, simulated practice—paired with digital learning—offers a scalable solution to skill acquisition. These findings align with growing evidence supporting simulation as a complement to traditional clinical training, particularly in technically demanding procedures.

## Conclusion:

- Simulation-based training including e-learning, instructional videos, and hands-on practice significantly improved confidence in performing PI and SLT among early-stage ophthalmology residents. These results highlight the value of simulation in accelerating skills acquisition, fostering clinical competency, and promoting patient safety in glaucoma management.

1. Cardoso SA, Suyambu J, Iqbal J, Cortes Jaimes DC, Amin A, Sikto JT, Valderrama M, Aulakh SS, Ramana V, Shaukat B, Patel T. Exploring the Role of Simulation Training in Improving Surgical Skills Among Residents: A Narrative Review. Cureus. 2023 Sep 4;15(9):e44654. doi: 10.7759/cureus.44654. PMID: 37799263; PMCID: PMC10549779.