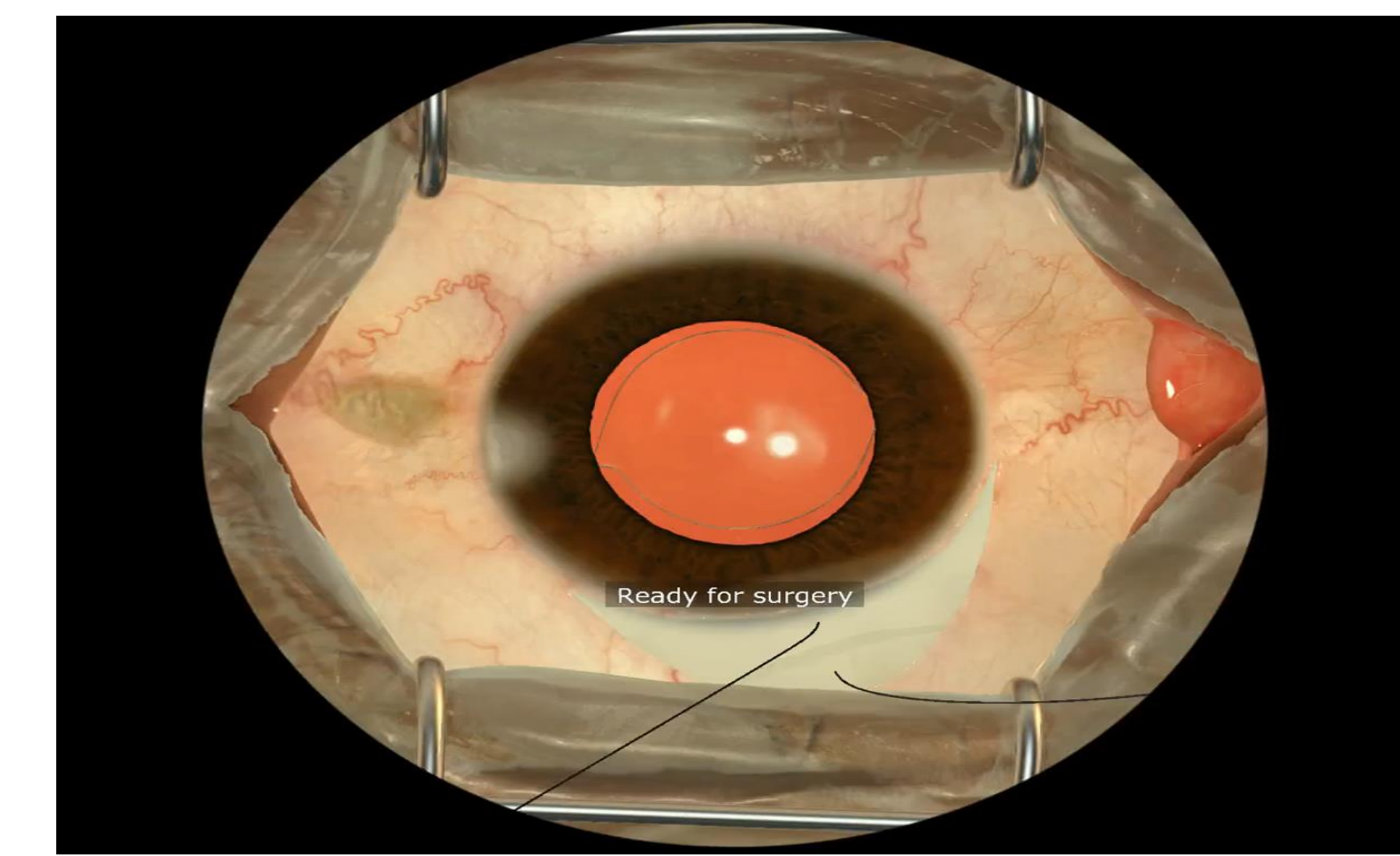


Ophthalmic Suture Simulator: Scleral wound suturing using a virtual reality 3D simulator

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INTRODUCTION

Suturing is the most important skill required in the management of anterior segment trauma. It is essential that we practice suturing well before one does suturing in real live surgery. However, there are limited eyes and training opportunities in the post Covid19 world. How will trainees master the basic skill in suturing in case of ocular trauma?

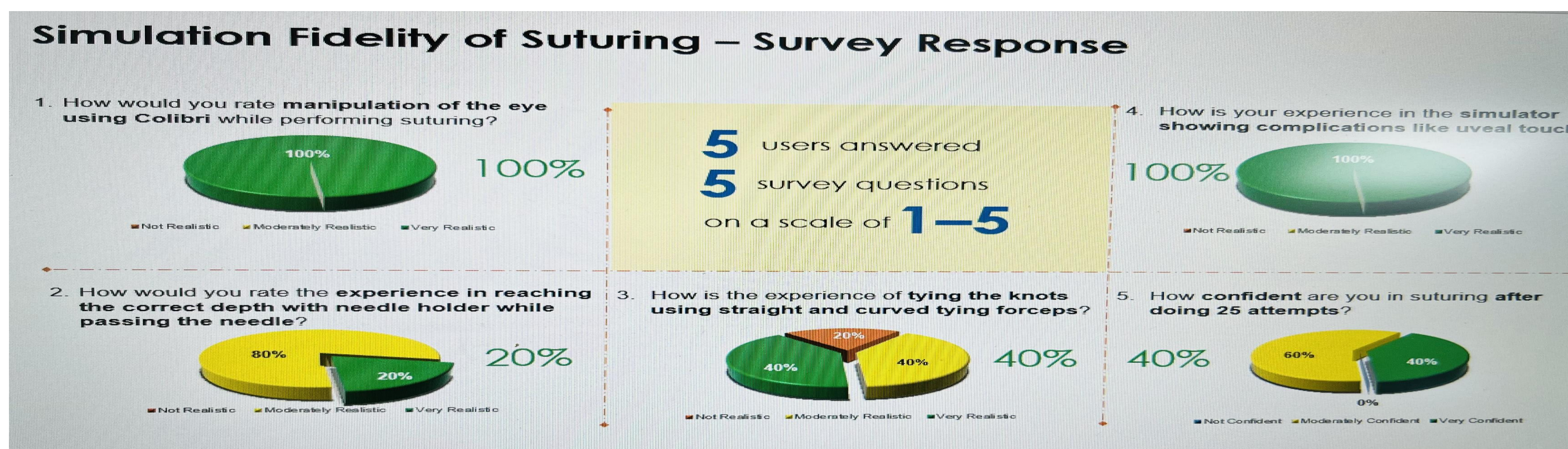
OBJECTIVES

- To evaluate the trainee performance on suturing using a virtual reality haptic feedback-based simulator
- To identify if a training source around simulation on suturing, as a proof of concept, will help in acquiring skills on suturing

METHODOLOGY

- Using a virtual reality haptic feedback-based simulator for learning suturing of scleral wound. (HelpMeSee), 5 trainees underwent a structured course for suturing the scleral wound.
- They received an intensive suture training program consisting of one theory class, orientation session and practical sessions on the simulator which were Instructor led.
- The suturing tasks consisted of:
 - A. Passing the needle
 - B. Tying the knot
- Each trainee completed 25 attempts on each task
- A feedback questionnaire was filled out by each trainee after completion of required no of attempts.
- The trainees were assessed subjectively and objectively from the feedback on the simulator.

RESULTS



DISCUSSION

- All participants felt that manipulation of the eye was as real as in real life surgery. The visuals and haptic feedback on the simulator helps in understanding the IOP better.
- Needle depth within the sclera was realistic for 80% of the trainees. The simulator helped them understand hand eye co-ordination and depth perception.
- Use of straight tying as well as curved tying forceps had a mixed response. This can be attributed to preference as well as ease of handling of certain instruments.
- All trainees felt the simulator was able to alert them in case of complications like uveal touch. This feature is useful in avoiding complications while training.
- All trainees felt that the simulation-based training increased their confidence, and they felt their skills were enhanced.

CONCLUSION

- The use of a virtual reality high fidelity simulator affords an opportunity for the beginning surgeon to obtain the "feel" of normal human tissue along with immediate recognition of a penetrating needle placement.
- It helped reduce the learning curve for learning suturing.
- Use of this device in a teaching situation has demonstrated that the instrumentation is useful in learning suturing in case of anterior segment trauma.

REFERENCES

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