

## The Application of Immersive Technologies as a Distraction Technique to Improve Office Laryngoscopy Exam Success Rates in Pediatric Patients

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**Background/Introduction:** Awake indirect laryngoscopy is an integral part of the assessment of voice and swallowing disorders. Traditional flexible nasolaryngoscopy can be uncomfortable, anxiety provoking, and require physical restraint in children. Transoral 70-degree rigid laryngoscopy is a non-painful, alternate, approach to visualization of the larynx which can be achieved in cooperative children as young as 3 years of age<sup>1</sup>. Inconclusive in office exam may escalate patients to a perioperative setting involving tremendous financial consequence for the patients and increasing operating room resources.

Distraction methods have been shown to decrease patient anxiety and discomfort during invasive procedures<sup>2,3,4</sup>. Recent technologies have elevated the level of immersion, enhancing distraction intensity with the use of a video projectors and immersive virtual reality (VR) headsets equipped with age-appropriate games and media. We aim to apply these immersive technologies as a novel distraction technique during in-office transoral 70-degree rigid laryngoscopy exams in order to improve success rates in a pediatric voice clinic.

**Methods:** Patients were identified as requiring an awake office laryngoscopy exam. If an exam was indicated, they were approached to use the distraction devices, either video projector or VR headset. If consented, patients were oriented to the games on the device, and then coached with laryngoscopy exam prompts for a "practice session". The patient continued to receive supplementary distraction coaching during the laryngoscopy exam.

**Results:** Eleven out of fifteen patients (73%) successfully completed transoral rigid laryngoscopy with the aid of distraction using immersive technologies. In particular, of those who were ages 3 to 5 years, 83% of the patients completed the exam successfully with this distraction technique, versus a 65% previously published without its use<sup>1</sup>. The use of immersive technologies during rigid laryngoscopy exams showed equal efficacy across our patient cohort, with an increased benefit to our 3 to 5 years age group. The application of this distraction technique allowed for more exam attempts, despite some that were diagnostically insufficient. Families who chose to use immersive technologies as a distraction technique during their child's exam, expressed satisfaction with its application.

**Conclusions:** Using immersive technologies as a distraction technique enhances office laryngoscopy exam success rates in pediatric patients, particularly in those aged 3-5 years. Achieving increased office exam success rates decreases the concern for escalation to a perioperative setting.

### References:

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