

Augmented Reality as Sole Anxiolytic for Pediatric Inhalational Induction of General Anesthesia

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Summary:

We present the feasibility and effectiveness of a unique cost-effective holographic head mounted display (HMD) as a sole anxiolytic for mask induction of general anesthesia. The DreamGlass AR 4K HMD allows viewers to see 2D or 3D images superimposed onto the real environment, projected onto the equivalent of a 200-inch screen with 90-degree field of vision optics. Unlike virtual reality HMDs, a glass visor sits approximately 2 inches away from the patient's face, allowing the provider to visualize the patient's eyes and provide a face mask seal during induction.

A 12 year-old female with trisomy 21 and a complex neuropsychiatric history was recruited to pilot this device. With the patient's favorite movie playing on the headset, separation from the patient's mother was achieved in the preoperative area. Uninterrupted by changes in position or perioperative location, the patient continued to be aware of her surroundings while simultaneously enjoying her projected movie. As the patient watched the movie in the operating room, she was compliant with monitor placement (Image A) and introduction of the anesthesia mask (Image B) until induction of general anesthesia (Image C). Video of the induction was later shared with the patient's mother, who expressed gratitude and high satisfaction for how calm her daughter appeared during mask induction of anesthesia.

The DreamGlass AR 4K headset offers a practical, affordable tool for addressing preoperative anxiety, and may be an alternative to pharmacological anxiolysis for appropriate patients. In comparison to other virtual and augmented reality HMDs, the headset is quite cost-effective. Additionally, it allows for provider control with a tethered mobile device with access to mixed media content. With wireless internet connectivity and online streaming services, we are now able to provide our patients with semi-immersive experiences during mask induction while overcoming the typical barriers associated with immersive technologies.

