Video Bronchoscopes and Cell Phone Applications

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Introduction: A recent survey of obstetrical units in the UK revealed only 8% had a designated fiberoptic bronchoscope, but only 37% of anesthetists were proficient with the device (only 8% in the previous decade). Can these deficiencies be corrected?

Methods: (1) We created a cell phone application using the Unity 3D Game Engine to simulate the view seen from a fiberoptic bronchoscope as it is eased through the larynx. The iPhone’s built-in accelerometers are used to intuitively duplicate the twisting of a fiberscope, which can be performed by rotating the phone, to align the laryngeal inlet. The device’s multi-touch screen is utilized to simultaneously allow thumb-control over the deflection of the tip, while the virtual bronchoscope is moved down into the trachea using the opposing hand. There are no set pathways, the novice must navigate around the uvula and under the epiglottis to have a view of the vocal cords. (2) We built a video bronchoscope with an off-the-shelf CCD chip that plugs into a portable monitor. The device has no expensive fiberoptic bundles since the chip is at the proximal end (see figure insert).

Results: (1) During a period of two months, over one thousand iLarynx applications have sold worldwide (figure) through the iPhone app store making this the most popular virtual reality airway simulator ever created. (2) Disposable video bronchoscopes are making their way to market and cost $200.

Discussion: Attendance at airway workshops cost $500, airway mannequins $2000, virtual reality simulators $50,000. For a fee of $1, the application can be downloaded. Every obstetric operating room should be equipped with its own bronchoscope and staff should become facile with its use.

World Wide Distribution of iLarynx