

Image Guided Navigation System for Flexible Internal Surgery

Summary

Vanderbilt researchers have developed a device which allows the performance of minimally invasive ophthalmic orbital surgery. The device is a flexible image-guided endoscope that provides access to the retrobulbar space. The device also provides instrumental access to the lesion site with minimal collateral tissue damage. The device is anticipated to improve visualization, and reduce complications and surgery time.

Addressed Need

- Saline flushing of orbit during traditional surgery leads to tissue inflammation and decreased field of view
- The use of steroids to reduce potential optic nerve injury during surgery leads to immunosuppression and potential reactivation of latent viruses and other systemic effects
- Existing endoscopic devices do not provide sufficient flexibility to access the difficult retrobulbar region

Technology Description

In minimally invasive surgery, especially in cramped areas of the body, imaging of the surgery site is a major challenge. Any visualization of the site during surgery provides the surgeon with real-time spatial information. By tracking images provided by an endoscope and overlaying them onto existing images of the surgical site, doctors can save time, operating costs, and avoid complications with the surgery.

This device is comprised of a flexible, multi-lumen tube housing (a) an optical fiber for imaging, (b) a fluid port (for purge fluid), and (c) conduits for ablation, coagulation, and medication delivery instruments. The tip of the endoscope is magnetically tracked, allowing for continuous localization during the procedure. The desirability of this device is further increased if the ablation instrument is a low-invasiveness laser.

Intellectual Property Status

[Issued US patent 8,403,828](#)

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