

Quick Shots 6 (cont.)

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A NOVEL COMBINED CAUTERY-SUCTION DEVICE: THE FIRST PRODUCT OF A SURGICAL DEVICE INNOVATION FELLOWSHIP

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Tweet it! A novel device that combines electrocautery and suction capabilities into a single instrument, allowing surgeons to toggle between these essential modalities efficiently and seamlessly.

Purpose

Surgeons constantly alternate between electrocautery and suction, which can result in suboptimal operative conditions. Repeated instrument exchange is both time-consuming and frustrating, and was identified as a clinical need by members of our Surgical Innovation Fellowship(SIF). We describe the process of conceptualizing and developing a novel surgical device that can rapidly toggle between electrocautery and suction, while maintaining the full function of each modality.

Methods

The SIF consisted of a multidisciplinary team of mentors that guided the surgical fellow through the process of ideation and device development. Initial designs were developed using Solidworks® (Dassault Systemes, France) and subsequent rapid prototyping was done using an Eden 260VS 3-D printer (Stratasys, Eden Prairie, MN). Functional and ergonomic prototypes were later created in partnership with Smithwise (Newton, MA), a medical device development company.

Results

A single-use combined cautery-suction device was created in which a suction tip can be deployed and retracted with the push of a button. In order to avoid the need for an additional power source, we hypothesized that the device could utilize power from standard operating room suction to deploy and retract the suction tip. In the retracted position, the suction tip is proximal to the cautery tip allowing unimpeded use of the cautery, yet remaining active as a smoke evacuator [Figure 1A]. In the deployed position, the suction tip is mechanically locked in place beyond the cautery tip to allow for both fluid suction and blunt dissection capabilities [Figure 1B]. A provisional patent application for this device was filed in May 2018(C1233.70143US00).

Conclusion

This novel device combines electrocautery and suction capabilities into a single instrument, allowing the surgeon to toggle between these essential modalities efficiently and seamlessly. Our hospital based SIF may be a useful model to train surgical residents to successfully navigate the surgical device innovation pipeline.

Quick Shots 6 (cont.)

