

Aliquot Delivery System

Summary

Vanderbilt researchers have developed a novel device for accurately delivering a small aliquot of liquid pharmaceutical agent to a treatment site. This system enables more precise dosage and eliminates expensive waste found in conventional methods.

Addressed Need

- With the growth of image-guided interventions, technology is becoming increasingly effective at guiding devices precisely where treatments need to be applied.
- With these advancements, there is a rising need for the ability to deliver very specific doses of fluid agents to a small surgical site
- Conventional methods use long catheters to pump the fluid to the site inside the body, but this method causes significant waste as liquid residue remains on the catheter walls
- The delivery of precise doses is also made very difficult because of this residual waste

Technology Description

This novel technology consists of a method for delivering precise doses of fluid agents to a specific treatment site during a minimally invasive procedure. The device consists of a catheter that is slid down a guidance device (e.g. the working channel of an endoscope) from the surgical port to the treatment site. The distal end of the catheter contains a preloaded dose of the fluid agent and is separated from the rest of the saline-filled catheter by a flexible membrane attached to the catheter walls at the distal end of the tube. A saline-filled syringe is

attached to the proximal end of the catheter, and when the operator pushes the syringe, the membrane is driven toward the distal opening thereby releasing the fluid agent onto the treatment site. Precise operation of the syringe pump is unnecessary as the membrane keeps any saline from being released and only allows the preloaded quantity of fluid to be released. This method results in a precise dose administered to the treatment site, without the expensive waste that comes with conventional methods.

Unique Features and Competitive Advantages

- A precise dosage of pharmaceutical agent can be transported down a flexible endoscopic channel and delivered precisely to the target
- Low cost design can easily be modified to accommodate different doses
- Helps prevent wasting costly drugs by only requiring a small amount of the pharmaceutical agent to be captured at the tip of the device

Technology Development Status

The technology is a concept, with preliminary drawings of the technology available. Additional funding and technical partnership is sought for developing a prototype.

Intellectual Property Status

Issued US patent 10,610,406

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