

Endoscope Steering Mechanism with Everted Tube Introducer

This technology is a teleoperated bladder scanning robot to perform cystoscopies in rural settings. This system is a soft balloon-like tube pressurized and placed into the urethra to allow endoscope travel to the bladder opening.

What is the Problem?

Bladder cancer requires ongoing screenings in order to identify recurrence in time for effective removal. These bladder scans, called cystoscopies, are performed by trained urologists in hospitals using rigid or flexible endoscopes inserted into the urethra. Multiple scopes may be used in order to ensure total screening coverage of the inside of the bladder. This insertion and movement within the bladder is often painful and uncomfortable, which, in addition to other factors, can lead to patients going further between cystoscopy procedures or stopping them altogether. This presents significant risk to the patient, as bladder cancer can be specifically aggressive if not caught early. Regionalization of bladder cancer care has steadily increased over the past few decades, resulting in the majority of bladder cancer care occurring in urban centers. Even though a cystoscopy is a procedure that all urologists can perform outside of specialty centers, the changing demographics of urologic practices has made access to this procedure difficult for patients living in rural areas. Therefore, an improved system and methods of use that enable the use of a teleoperated robot to perform cystoscopies in rural settings may be desirable.

What is the Solution?

The solution is a bladder scanning robot that can be teleoperated by remote experts and set up by nurses. A soft balloon-like tube is pressurized and allowed to evert (roll from the inside) into the urethra in order to act as a protective sheath for a flexible endoscope to gently travel through. The endoscope can provide feedback about the tube insertion as it everts along the urethra without sliding or the endoscope can be inserted after the tube has reached the opening of the bladder. Once inside the bladder, the flexible endoscope is controlled by the doctor or autonomously to inspect the inside 3D surface of the bladder. Other associated technologies may be attached to or inserted through the endoscope to provide interventional capabilities in order to further diagnose or treat abnormalities found in the initial scan. Any of these functions could be performed manually, autonomously, or via teleoperation.

What is the Competitive Advantage?

Technology ID

BDP 8706

Category

Device/Other

Selection of Available Technologies

Authors

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Existing solutions cause discomfort and are regionalized in urban centers, making access to care difficult for all. Performing cystoscopies in rural clinics will minimize the travel burden on patients, lower travel reimbursements for single-payer health systems, and free up clinical space and resources at urban hospitals.

Patent Information:

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