Device and Methods for Transrectal Ultrasound-Guided Prostate Biopsy

Published date: March 8, 2019

Technology description

Unmet Need

Prostate cancer is the most common non-cutaneous malignancy. Additionally, it is the second leading cause of cancer related deaths among men in the United States with nearly 1 in every 6 men predicted to be diagnosed with the disease at some point in their lives. Currently, the most common biopsy method is a transrectal ultrasound (TRUS) guided from a core needle biopsy. Ultrasound rarely identifies prostate cancer visually, which causes the use of freehand biopsy for diagnosis to be used more often. However, freehand biopsy is highly inconsistent, subjective, and causes uneven sampling that leaves large regions of the prostate to go unsampled. There is a need for an improved methodology that removes the use of freehand to diagnosis prostate cancer. Furthermore, this method needs to be cost effective and easily implementable in current operating room workflow.

Technological Overview

There is a movement towards the use of multiparametric MRI as a targeted biopsy approach. This is preferred as it allows the biopsy needle to be guided to sample areas that have suspicions for being cancerous, rather than freehand. The inventors have developed a robot-assisted approach for transrectal ultrasound guided prostate biopsy. This hands-free TRUS operation causing minimal prostate deformation is significantly safer, easier, and is feasible for operating room performance. The use of accurate needle targeting against cancerous regions removes the subjectivity and inconsistency found in freehand and automates a process that has plagued the biopsy process with under-sampling of clinically significant cancer and under-staging of diagnosis.

Institution

Johns Hopkins University

Inventors

Dan Stoianovici

Professor
Urology SOM
Misop Han
Associate Professor
Urology
Sunghwan Lim
PhD Student
Urology SOM

联系我们

叶先生

电 话：021-65679356
手 机：13414935137
邮 箱：yeyingsheng@zf-ym.com