Docket #: S21-002

Catheter sensing technology that eliminates need for X-ray imaging during angiography

Stanford researchers have developed a novel catheter technology for sensing embolic delivery and reflux as a strategy to eliminate need for X-ray imaging during angiography.
Currently, angiographers must monitor the delivery of embolic or contrast material using X-rays. However, X-rays are ionizing radiation that are dangerous for the patient and the physicians performing the procedure. To reduce or eliminate the need for X-rays, an impedance sensor is embedded just proximal to the tip of the angiography catheter. The sensor detects impedance changes in injected embolic or contrast material, allowing embolization to be monitored without reliance on X-rays. This closed loop control system will sense reflux and automatically reduce injection rate, eliminating off-target embolization, preserving the health of adjacent organs.

Stage of Development

- **In-vitro Proof-of-Concept**
- Successful demonstration of techniques to assess reflux in lieu of X- ray imaging
- Continued work to achieve successful clinical translation

Applications

- **Diagnostic angiography**
- Specifically, monitoring of embolic/contrast material delivery through angiography catheters

Advantages

- **Decreased radiation** required during angiography and embolization procedures, leading to enhanced safety for patient and physician
- **Safer embolization procedures with less risk of off-target embolization**
- Closed loop control system to sense reflux and automatically reduce injection rate
- Potential ability to target more tumors if less radiation is required for each tumor
- Potentially, in the future, the impedance sensor could be used for navigation of the catheter to target organs

Patents

- Published Application: 20220233770

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