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Air-Based Force Sensor for Surgical Applications

Tech ID: 33948 / UC Case 2024-981-0

BRIEF DESCRIPTION

An innovative air-based force sensor designed to enhance the safety and precision of surgical instrument insertions.

FULL DESCRIPTION

This novel air-based force sensor is a pneumatic system designed to measure the force a surgeon applies when inserting instruments into the lumen of a vessel during surgical procedures, such as ureteral access sheaths (UAS) and endoscopes, ensuring that invasive procedures are conducted safely, and preventing perforations caused by too much force during instrument insertion. Unlike its complex, electronic predecessors, this sensor utilizes a simple, air-tight syringe system, making it accessible, budget-friendly, and easy to assemble with standard operating room materials.

SUGGESTED USES

- » Ureteral access sheath (UAS) deployment during retrograde intrarenal surgery (RIRS).
- » Safe insertion of flexible ureteroscopes.
- » Various surgical procedures requiring guided instrument insertion, such as laparoscopic trocar placement and percutaneous renal access.
- » Deployment of surgical retractors and passage of endoscopes into bodily orifices.

ADVANTAGES

- » Simpler and more affordable than electronic force sensors.
- » Enhances patient safety by preventing high-grade ureteral injuries.
- » Adaptable to various surgical instruments via a Luer lock connection.
- » Not prone to electronic or Bluetooth connectivity issues.

PATENT STATUS

Patent Pending

RELATED MATERIALS

- » Gao, B. M., et al. Clayman, R. V. (2024). Development and Initial Evaluation of a Cost-Effective Force Sensor for Ureteroscopic Application. J. Endourol. 38.

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OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
 - » Devices
 - » Disease: Kidneys and Genito-Urinary System
- » **Sensors & Instrumentation**
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