Researchers at the University of South Florida have developed an endoscopic sheath with a biomimetic retractor and inflatable balloon to remove specific organs and tissues during endoscopic procedures.

The field of endoscopic surgery has been advancing rapidly in recent years. In this form of surgery, procedures are performed inside the body of a patient using instruments inserted through small incisions. The surgery utilizes an endoscope which is a thin, tube-like instrument featuring a light source, viewing lenses, and other attachments such as scissors, brushes or forceps. Typical endoscopes are 5 to 12 mm in diameter and may be flexible or rigid. Endoscopic surgery has particular utility in the field of neurosurgery where it is necessary to disrupt as little tissue as possible. Traditional neuroendoscopic procedures use flexible endoscopes which can be difficult to maneuver in the brain. Therefore, a more rigid endoscope needs to be developed for various endoscopic surgeries in narrow spaces including neurosurgeries.

Our inventors have designed an endoscopic sheath with an inflatable balloon for improved endoscopic retraction procedures of both internal organs and tissues. It is designed to fit around a rigid endoscope to allow manipulation and retraction in narrow spaces. The sheath has rigid outer and inner tubes fabricated from either silastic, rubber, vinyl, or polyethylene. It is sufficiently soft and flexible enough to avoid damage to internal organs and tissues during use, yet is inelastic and rigid enough to provide retraction when inflated. This invention is applicable for neurosurgical applications as well as for kidney, bladder, pancreas and liver endoscopic surgeries.

**ADVANTAGES:**
- Effective tissue retraction
- More rigid than current devices
- Many surgical applications
- Protects delicate structures during surgery

**A Sheath Which Allows for Safe Endoscopic Manipulation in Narrow Spaces**

**The Balloon Retractor with an Endoscope**