Docket #: S23-122

Flexure-based Mechanisms for Laparoscopic Surgical Devices

Stanford researchers at the Woo Lab have designed and manufactured a flexible, compact laparoscopic device for knot tying during cardiac, thoracic, and ENT operations.

This new design integrates a flexure mechanism into non-clamping devices which enhances laparoscopic tools by eliminating bulky components from intricate designs. This modification streamlines the tool, significantly improving maneuverability within the operating cavity. The flexure mechanisms are finely tuned to offer optimal force feedback, and the incorporation of modular, variable catch/teeth designs enables versatile applications.

Stage of Developement
This Class 1 medical device class will be soon undergoing a straightforward and simple FDA approval process. This is an immediately translatable medical device that has been extensively tested and used in clinical cardiac operations.

Figure



Figure description:Prototype (*Image Credit – Woo Lab*)

Applications

- Laparoscopic functions and operations including knot pushing applications for small operating cavities
- For cardiac, thoracic, and ENT operations

Advantages

- Flexible, compact, and streamlined design
- Precisely tuned
- Provides correct response and feedback
- Immediately translatable medical device

Patents

- Published Application: WO2024254351
- Published Application: 20260083453

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