A Novel Port Closure Device for Abdominal Laparoscopic Surgery

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Background

CLINICAL PROBLEM + SIGNIFICANCE

Inconsistent surgical techniques with suturing
Unhealed Abdominal Fascia
Inner organs push out
Visible anatomical lump (hernia)
Loss in blood circulation
Bowel Obstructions
Expensive
Longer Recovery Time
Painful

Laparoscopic hernia repair surgery

CURRENT TREATMENT METHODS

Manual Stitching
Medtronic VersaOne™ Fascial Closure System

PROBLEM STATEMENT / NEEDS

An novel method of laparoscopic port closure which effectively closes the incision in the abdominal wall fascia preventing the occurrence of port site hernias and improving the accessibility and consistency of the surgical procedure for surgeons.

Proposed Prototype Mechanism

NEEDLE GUIDES
Ensure ease of and precise needle insertion. Silicone rubber surrounds the holes on the lower wing, acting as a gasket that holds onto the suture.

MOVEMENT CONTROL
Track with slot mechanism resists unwanted inner shaft movements. Arrows on handle and outer shaft allows surgeon to track wing location.

BEND RESTRICTION
Extra lower wing volume prevents inward bending and guarantees consistent wing deployment.

ROTATOR BEARING
Allows for smooth rotation and efficient completion of a cross-stitch.

Technique Flowchart

Market Viability

MARKET RESEARCH

MACHINE 2.7 million laparoscopic surgeries annually
1 in 3 group in the U.S. States that are obese

MANUFACTURING

Section | Items | Price/Unit ($)
--- | --- | ---
Outsourced Components | Pins, Bearings, Adhesives | 12.93
In House Units (Injection Molding) | Molds, Material | 14.6
Machines | Injection Molding, Sterilization, Packaging | 13.5
People | Assemblers, Sterilization, Quality, Safety, Operators, Technicians | 11.8
Total Cost | 52.83
Wholesale Price | 66

MEDICAL REIMBURSEMENT

We believe the following reimbursement codes would be relevant to our device.
CPT 49320 - Under Laparos. Proc. on the Abdomen, Peritoneum, and Omentum
CPT 49322 - Laparoscopic, surgical; with aspiration of cavity or cyst
CPT 49900* - Repair of Abdominal Wall

CONCLUSIVE STATEMENT

With the information gathered through this project we feel confident in our product’s ability to positively influence the lives of patients and surgeons through its improved ease at suturing during laparoscopic surgery.

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References


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