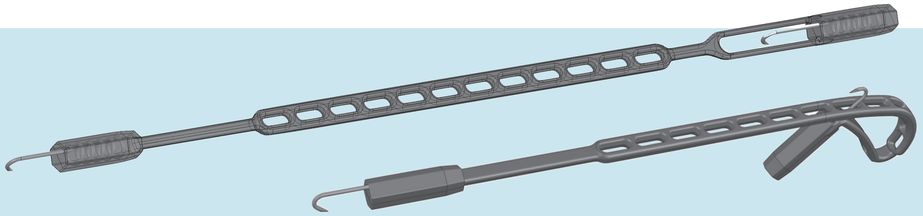
A novel intra-corporeal retractor for minimally invasive surgery and more

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Improving Patient & Surgical Outcomes

The device presented is a novel (Patented) single-use retractor which is ideally suited, but not limited to, minimally invasive surgery across a wide range of applications, and is named **"The Sling"**. It is is a fenestrated silicone band with a hook anchor at each end. The first hook is engaged at one site and the fenestrations enable the user to engage the second hook through any one of the fenestrations, thereby allowing adjustment of length akin to doing up a belt.



The elastic nature provides a variable degree of tension which ensures constant engagement of the two hooks, and therefore adjustable tension on the tissue being retracted. This tension also makes it easy to adjust the position of the second hook

It is designed to retract by:

- applying adjustable in-line elastic traction between two anchor points of varying distances, or
- by slinging it around structures such as mobilised bowel or oesophagus.

It can be inserted and removed through most 5mm laparoscopic ports.

Method

A limited run of devices was manufactured from biocompatible silicone and surgical steel hooks, using a 3D-printed moulding tool. Product development to achieve regulatory certification was progressed in conjunction with a contract manufacturer (Certificate not current at this time).

Qualitative assessment was gleaned from a range of minimally invasive procedures, including hiatus hernia repairs, primary and revisional bariatric surgery[1], cholecystectomy, a broad range of colorectal surgery and even retraction during axillary clearance. The uterus was retracted during some of the colorectal cases for access to the pelvis.

Preliminary Results

The 3D-printed moulding tool only allowed for a limited run of devices, which were packaged and gamma sterilised.

The Sling performed as intended, allowing assistant-free adjustable static retraction across a wide range of applications. Re-positioning was easy due to the elastic tension. The Slings provided excellent counter-traction for dissection, exposure of mesentery, uterus and pelvic inlet, as well as small liver retraction. Retraction for cholecystectomy was, however, modest. The Slings were easy to introduce via a 10-12mm port and were readily removed via a 5mm port.

No device-related patient complications occurred.

Conclusions / Future Directions

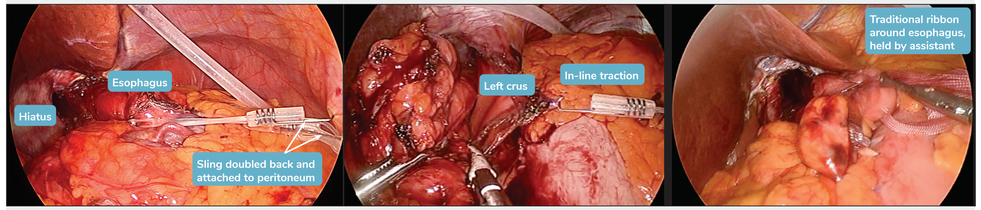
The Sling is a simple single-use device with short learning curve and wide-ranging applications which has proven safe to use so far.

Future modifications will include larger surgical hooks and simplification of the design, with the view to machined tooling for high volume production. The Patent allows for wider configurations.

The device is not presently commercially available.

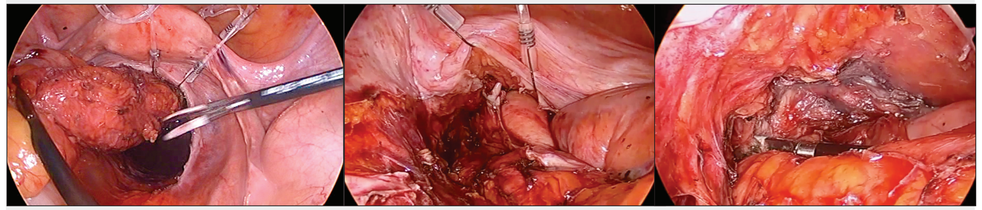
EXAMPLES

UPPER GI: Hiatus hernia repair

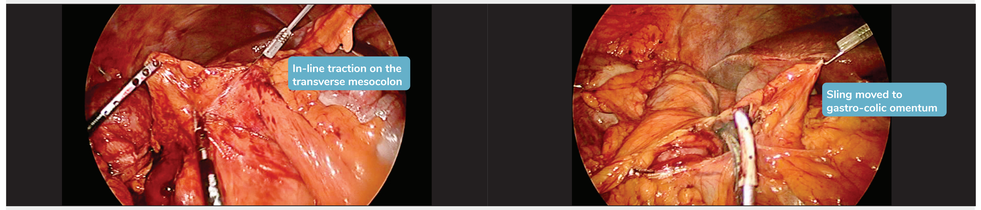


1. Sling drawn around esophagus
2. In-line traction on left crus
3. Compare with tape method

COLORECTAL:



4. Uterine and pelvic inlet retraction (F)
5 & 6. Male (M) pelvic inlet retraction – initial and deeper



7 & 8. (R) hemicolectomy – transverse mesocolon and gastro-colic omentum retraction

1. Data on File

Acknowledgements: Product development was co-funded with Livac Pty Ltd. Thank you to Melati Hewison for design work.