# Robotic Assisted ReBAR of 111 Inguinal Hernias

Banaschak, C. and Szotek, P.

## Introduction

Surgical treatment of inguinal hernias has changed significantly over the past several years. The traditional open repairs, while still viable and effective, are gradually shifting to laparoscopic techniques. These minimally invasive options allow for faster recovery and less post-operative pain(1).

Traditionally, the laparoscopic and robotic repairs require placement of a mesh. The options vary, but most repairs are done with the less expensive, permanent, synthetic meshes. However, these aren't without complications. Occasionally the post-operative discomfort experienced by patients is attributed directly to the sensation of the mesh. Lighter mesh options have been introduced to combat this, but even so these patients still have a similar incidence of pain(2). The balance of strength of repair and patient comfort is ongoing.

With so many opportunities for improvement, surgeons continue to investigate different mesh systems. A reinforced biologic mesh provides a softer material, while allowing for a permeant scaffold to remain and combat recurrence. It also allows for both patients and surgeons to choose a hybrid of the permanent synthetic mesh and the completely resorbable mesh.

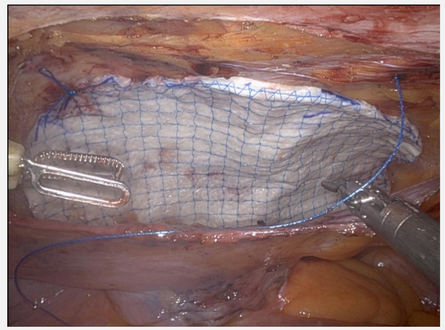
The goal of this study is to evaluate the outcomes of the reinforced biologic augmented repair (ReBAR) with the robotic transabdominal preperitoneal (rTAPP) technique. The primary outcome of the study is recurrence of the inguinal hernia.

## Methods

This study utilized a retrospective review of data from a single surgeon using the rTAPP ReBAR with patients over one year out from surgery.

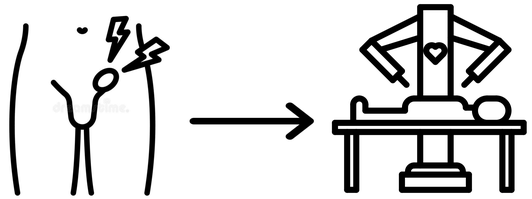
- All patients underwent the same rTAPP technique with a wide preperitoneal pocket dissection as well as complete exposure of the myopectineal orifice
- All patients received the same 10cm x 15 cm reinforced biologic mesh (Ovitex Core) which was shaped and placed into the abdomen through an 8mm robotic port (Figure A)
- The mesh was anchored with a permanent stitch in Cooper's Ligament and 2 interrupted sutures on the lateral aspect of the anterior abdominal wall

Follow-up was conducted through a HIPAA compliant smart phone application for communication directly with the surgeon. At several intervals, patients were contacted to inquire about complications or changes.



(A) placement of the reinforced biologic mesh into the preperitoneal pocket

ReBAR™
Reinforced Biologic Augmented Repair



111 Inguinal Hernias
- 6 with Prior Inguinal Hernia Repair
- 25 Bilateral

rTAPP ReBAR

374 Days Average Follow-up

3 Recurrences

1 SBO

1 Seroma

## Results

Between June of 2018 to September of 2019, 86 patients undergoing the rTAPP ReBAR were identified:
- 111 Inguinal Hernias
  - 30 Left, 31 Right, and 25 Bilateral Hernias
- Patients had previously undergone inguinal hernia repair

Some patients had simultaneous repairs of other conditions:
- 6 Hydrocelectomies
- 7 Ventral Hernia Repairs
- 2 Mesh Excisions

Follow-up duration was based upon the last correspondence with the patient through the HIPPA compliant application
- Average follow up was 374 days

The relevant complications identified were as follows:
- 3 Recurrences (2.7%)
- 1 SBO
- 1 Seroma

## Discussion

Inguinal hernias remain a common surgical problem. The use of minimally invasive techniques for hernia repair is growing substantially, and these techniques require a mesh reinforcement. Mesh options are growing, and choosing the right mesh is difficult. We continue to search for a balance of strength, durability, minimal foreign body reaction, and ease of use.

These 86 consecutive patients were chosen because they underwent the same robotic repair using the same reinforced biologic mesh. The patients were not always straightforward. In this group, 5% of the patients were undergoing a reoperation for their inguinal hernia. There were also 2 patients that required prior mesh excisions and 7 patients that underwent ventral hernia repair at the same time.

Only patients that were at least 1 year from  out from their operation were chosen to allow time for recurrence, of which there were 3. In this cohort, 2 hernias recurred almost immediately postoperatively. Interestingly, their initial operations were done within 3 days of each other. As every case was recorded, root cause analysis demonstrated technical variations of these two cases. One case had an improper mesh cut, and the other lacked a lateral fixation suture. The third recurrence took place 345 days postoperatively.

There was one significant complication of immediate postoperative small bowel obstruction. The patient underwent diagnostic laparoscopy which identified a loop of small bowel trapped in the running suture closure of the preperitoneal pocket. This was reduced, and the patient did well postoperatively.  The other complication was a seroma which required drainage.

Shortcomings of this study include the small number of patients and the average duration of follow-up. Complications are identified through a texting application, and not every patient is physically evaluated for recurrence.

In conclusion, the reinforced biologic  augmented repair (ReBAR) appears to be a viable option in the rTAPP repair. It provides patients an alternative in mesh choices while yielding acceptable recurrence rates within the first year.

## References


1. *Bullen NL, Massey LH, Antoniou SA, Smart NJ, Fortelny RH. Open versus laparoscopic mesh repair of primary unilateral uncomplicated inguinal hernia: a systematic review with meta-analysis and trial sequential analysis. Hernia. 2019;23(3):461-472. doi:10.1007/s10029-019-01989-7*
2. *Hu D, Huang B, Gao L. Lightweight Versus Heavyweight Mesh in Laparoscopic Inguinal Hernia Repair: An Updated Systematic Review and Meta-Analysis of Randomized Trials. J Laparoendosc Adv Surg Tech A. 2019;29(9):1152-1162. doi:10.1089/lap.2019.0363*