Title: Robotic-Assisted Foregut Surgery is Associated with Lower Rates of Complication and Shorter Post-Operative Length of Stay

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Introduction

Two of the most common foregut operations are laparoscopic Heller myotomy (HM) and laparoscopic Nissen fundoplication (NF). Robotic assistance, compared to standard laparoscopic approach, may potentially grant surgeons advantages such as enhanced visualization and dexterity. This study compares patient outcomes for HM and NF when performed laparoscopically versus robotically.

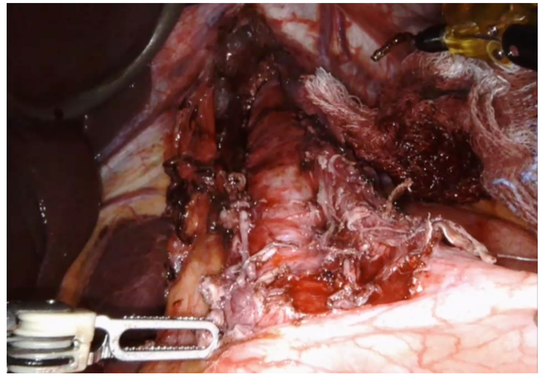


Figure 1. Image of Heller Myotomy taken from Robotic console

Methods

- Retrospective review of patients at Tampa General Hospital who underwent laparoscopic or robotic-assisted HM or NF from Jan 2019-Jun 2021
- 95 HM (72 lap, 23 robotic-assisted) and 86 NF (62 lap, 24 robotic-assisted) performed by 3 surgeons.
- Outcomes: operative time, hospital length of stay, pre- and post-operative imaging, resolution of symptoms at 30 days, resolution of symptoms at 90 days, and complications.

Results

- In HM cohorts, average operative time was longer in the robotic cohort (128 minutes robotic vs 108 minutes laparoscopic, $p<0.01$). However, overall complication rates ($p<0.05$) were lower and hospital length of stay was shorter in the robotic group (1.3 days compared to 2.7 days, $p<0.001$).
- In the NF cohorts, there was no significant difference in operative time. However, hospital length of stay was shorter in the robotic group (2 days compared to 2.8 days, $p<0.01$) with otherwise similar outcomes.
- No difference in the rate of post-operative resolution of symptoms or need for additional interventions in either HM or NF.

Table 1: Documented complications of LHM and RAHM patients.

	Laparoscopic n=72	Robotic n=23	Total n=95
Overall Complications	**13**	**0**	**13**
90 day reoperation	4	0	4
30 day readmission	6	0	6
30 day ICU admission	6	0	6
Conversion to open	2	0	2
Pneumonia	1	0	1
Unplanned Intubation	1	0	1
Sepsis	1	0	1
Superficial surgical site infection	1	0	1
Interoperative leak	1	0	1
Postoperative leak	4	0	4
Postoperative stent	3	0	3
Postoperative feeding tube	5	0	5
Postoperative endoscopic vacuum	1	0	1

Table 2: Documented complications of LNF and RANF patients.

	Laparoscopic n=62	Robotic n =24	Total n=86
Overall Complications	7	2	9
90 day reoperation	3	0	3
30 day readmission	1	0	1
30 day ICU admission	1	2	3
Conversion to open	3	0	3
Unplanned Intubation	0	1	1
Postoperative leak	1	0	1
Postoperative feeding tube	2	0	2

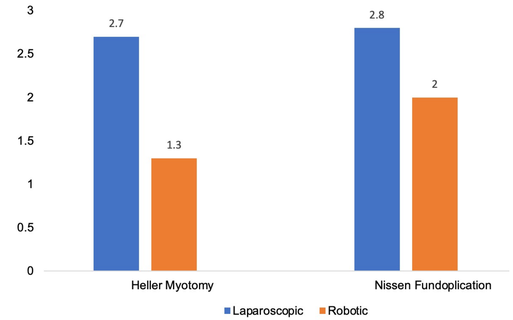


Figure 2. Post-operative length of stay (days)

Conclusion: Robotic-assisted HM and NF are associated with shorter hospital stays compared to their respective laparoscopic approaches. Robotic-assisted HM also has a lower rate of complications. There may be a benefit to robotic assistance for shortening hospital length of stay and decreasing complications for certain Foregut surgeries.