Outcomes After Minimally Invasive Ventral Hernia is Converted to Open Approach

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Background

- Minimally invasive ventral (MIS) hernia repair (VHR) has been quickly adopted with evidenced benefit on wound morbidity.
- Scarce literature on the impact of a conversion from an MIS approach to open VHR exists.
- This study compared outcomes of VHR converted (MIS-C) to those performed robotically (R-VHR), laparoscopic (L-VHR), or open (O-VHR) to those open approach.

Methods

Population

- Patients > 18 undergoing VHR from 2016-2023 from ACHQC

Analysis

- Three propensity score matched analyses (1:3) compared MIS-C VHR to: 1) R-VHR 2) L-VHR 3) O-VHR.
- Balanced covariates included age, BMI, hernia width, ASA score, prior mesh, recurrent hernia, and incisional hernia
- Clinical outcomes at 30 days of follow were compared.

Figure 1. Propensity Score Matching Analysis for MIS-C Compared to R-VHR, L-VHR, and O-VHR

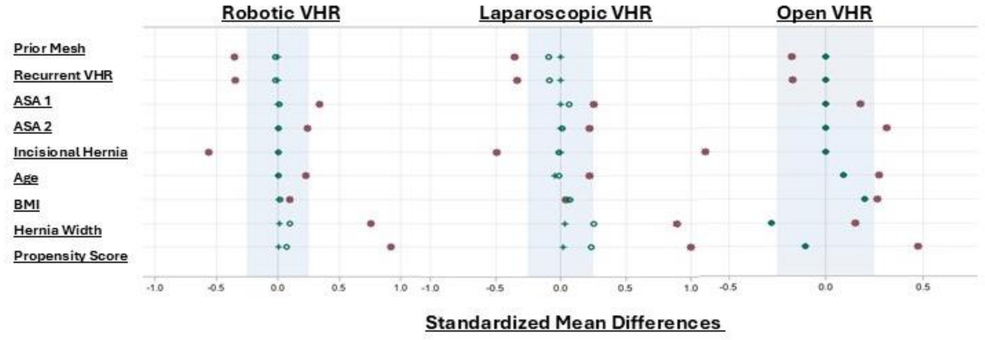


Table 1. Demographics, comorbidities, and perioperative characteristics of PSM cohorts

Baseline / Operative Characteristics	MIS-C *n*=484	R-VHR *n*=1401	*p*	MIS-C *n*=461	L-VHR *n*=1192	*p*	MIS-C *n*=484	O-VHR *n*=1473	*p*
Age, median (IQR)	61 (52-68)	61 (50-70)	0.556	61 (52-69)	61 (51.5-69.5)	0.687	61 (52-68)	60 (50-68)	0.160
Female sex, % (*n*)	61.6 (298)	53.8 (754)	0.003	62.6 (288)	54.2 (646)	0.0023	60.9 (299)	49.5 (729)	<0.001
ASA III, % (*n*)	65.7 (318)	65.2 (913)	0.976	65.7 (303)	62.4 (744)	0.627	65.2 (320)	65.1 (959)	1
Incisional Hernia, % (*n*)	87.0 (421)	85.9 (1203)	0.540	86.3 (398)	85.0 (1013)	0.486	87.0 (427)	87.8 (1293)	0.636
Hernia width, median cm (IQR)	6 (4-10)	6 (4-10)	0.7563	6 (4-10)	5 (4-8)	0.001	6 (4-10)	8 (4-15)	<0.001
Myofascial release, % (*n*)	65.3 (318)	65.2 (913)	0.4618	65.7 (303)	62.4 (744)	<0.001	65.2 (320)	65.1 (959)	0.032

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Table 2. Univariate analysis of postoperative complications within 30 days of surgery.

30-day Outcomes	MIS-C *n*=484	R-VHR *n*=1401	*p*	MIS-C *n*=461	L-VHR *n*=1192	*p*	MIS-C *n*=484	O-VHR *n*=1473	*p*
LOS, median (IQR)	3 (1-5)	1 (0-2)	<0.001	3 (1-5)	1 (0-3)	<0.001	3 (1-5)	3 (1-5)	<0.001
SSOIPI, % (n)	8.7 (42)	2.4 (33)	<0.001	8.5 (39)	2.0 (24)	<0.001	9.0 (44)	6.0 (88)	0.022
Readmission, % (n)	8.3 (40)	3.7 (52)	<0.001	8.2 (38)	4.4 (53)	0.002	8.6 (42)	6.0 (89)	0.053
SSI, % (n)	6.8 (33)	1.6 (22)	<0.001	6.5 (30)	1.6 (19)	<0.001	6.9 (34)	4.2 (62)	0.016
Reoperation, % (*n*)	3.5 (17)	1.5 (21)	0.007	3.5 (16)	1.7 (20)	0.025	3.7 (18)	1.6 (23)	0.005
Hematoma, % (*n*)	2.3 (11)	1.1 (15)	0.051	2.2 (10)	0.8 (9)	0.016	2.2 (11)	1.0 (15)	0.040

Results

After PSM

- A total of 484 patients with MIS-C were included and matched with 1401 R-VHR, 1192 L-VHR, and 1473 O-VHR patients (Table 1).
- Patients in MIS-C had more females compared to their R-VHR, L-VHR, and O-VHR counterparts.

Postoperative outcomes.

- Patients that underwent MIS-C were more likely than O-VHR to have a longer length of stay (p<0.001), more surgical site occurrence requiring procedural intervention (9.0% vs 6.0%; p=0.022), surgical site infection (6.9% vs 4.2%; p=0.016), reoperation (3.7% vs 1.6%; p=0.005), and hematomas (2.2% vs 1.0%; p=0.040).
- Stronger associations were observed when comparing MIS-C to R-VHR or L-VHR (Table 2).

Conclusions

In this study, deciding to convert a MIS VHR was associated to worse clinical outcomes than performing an open, robotic, or laparoscopic VHR.