

Management of Hemorrhage following Retromuscular Hernia Repairs

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Introduction

- The large raw muscle surface and even larger potential space created during retromuscular hernia repairs make post-operative (PO) hemorrhage a feared complication. Despite a number of recent case series detailing retromuscular hernia repair outcomes, there is a paucity of literature regarding the management of retromuscular hemorrhage. This multicenter study reviews the management of a cohort of patients with this complication.

Methods

- Two prospectively maintained databases were retrospectively reviewed for PO hemorrhage in patients who had undergone retromuscular (retrorectus and/or transversus abdominus release) ventral hernia repairs with microporous reduced weight polypropylene mesh.
- Hemorrhage was defined as clinical symptoms associated with a hematoma identified on CT.
- Demographic, operative, and surgical outcome data were analyzed with univariate statistics.

Results:

Table 1: Demographics

	N=11
Surgeon	
Surgeon A	6 (54.5%)
Surgeon B	5 (45.5%)
Age Mean (SD)	54.3 (15.41)
Sex	
Female	3 (27.3%)
Male	8 (72.7%)
BMI	
18.5 to <25	2 (18.2%)
25 to <30	3 (27.3%)
>=30	6 (54.5%)
ASA Class	
1	1 (9.1%)
2	4 (36.4%)
3	6 (54.5%)
Comorbidities	
Hypertension	6 (54.5%)
Hyperlipidemia	2 (18.2%)
Cardiac Disease	3 (27.3%)
Pulmonary disease	4 (36.4%)
Renal disease	1 (9.1%)

Table 2: Operative Details

	N=11
Pre-op therapeutic anticoagulation	
Heparin	2 (18.2%)
Lovenox	2 (18.2%)
None	7 (63.6%)
Wound Class	
Clean	10 (90.9%)
Clean-contaminated	1 (9.1%)
Operative Approach	
Laparoscopic	4 (36.4%)
Open	7 (63.6%)
Retromuscular drain left at index operation	7 (63.6%)
Estimated blood loss (cc)	
Mean (SD)	152.6 (193.6)
Range	50.0-700.0
LOS index admission	
Mean (SD)	6.1 (7.4)
Range	0.0-23.0
Post-op prophylactic anticoagulation	
Heparin	2 (18.2%)
Lovenox	2 (18.2%)
Post-op prophylactic anticoagulation started	
POD1	2 (18.2%)
POD2	2 (18.2%)
Post-op therapeutic anticoagulation	1 (9.1%)
Heparin drip	2 (18.2%)
Lovenox	
Post-op therapeutic anticoagulation started	
POD1	1 (9.1%)
POD2	1 (9.1%)
POD4	1 (9.1%

- Median day of hemorrhage was POD6
- For patients requiring surgery (54.5%, N=6) mean re0operation was performed on POD5. All were performed via laparoscopic access to the retromuscular space. Only one patient had an identifiable bleeding source.
- All patients underwent clot evacuation (mean 1305cc, range 400-3575cc), irrigation, fibrin sealant application, and retromuscular drain placement.
- Treatment with anticoagulation was not associated with need for operative intervention (42/8% vs 75.0%, P=0.303).
- There was no statistically significant difference in transfusion requirements (2.0 vs 8.0 units, P=0.351), or complications including seroma formation, SSI, SBO, bowel obstruction, respiratory complication or mortality in patients managed medically vs operatively).

Table 3: Management

	Nonoperative management (N=5)	Operative management (N=6)	p value
Seroma	2 (40%)	0 (0%)	0.087
SSI	0	0	.
Ileus	0	0	.
SBO	0	0	.
Cardiac Complication	1 (20%) (CHF exacerbation)	0 (0%)	0.251
Respiratory complication	1 (20%) (PE)	0 (0%)	0.251
Readmission	4 (80%)	3 (50%)	0.303
LOS at Readmission			0.276
Mean (SD)	4.7 (2.08)	3.0 (2.83)	
Range	(3.0-7.0)	(1.0-7.0)	
Mortality	0	0	.

Conclusions

- Hemorrhage following retromuscular hernia repair can be successfully managed both nonoperatively or with a minimally invasive surgical approach.
- Perioperative AC or antiplatelet therapy is not associated with a greater need for operative intervention when PO hemorrhage occurs.