Anemia Resolution following Paraesophageal Hernia Repair

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Introduction

- Anemia can be the result of many etiologies such as an underlying pathologic lesion, malnutrition, iron deficiency, etc.
- The association between paraesophageal hernias and anemia is well known and discussed in literature[1-3]
- There are mixed findings in the literature regarding the resolution of anemia following paraesophageal hernia repair and the timing for which it occurs[4]

Purpose

- This study aims to assess the improvement and resolution of preoperative anemia in patients undergoing paraesophageal hernia repair in our high-volume center

Methods

- Retrospective chart review, approval obtained by institutional IRB
- Anemic patients >18 years old underwent laparoscopic paraesophageal hernia repair between 2010 – 2020
- Preoperative anemia within 30-days of surgery (<14 g/dL men, <13 g/dL women)
- Data abstracted included patient demographics, preoperative lab work, endoscopic discoveries, intraoperative findings, hospital course, complications, and post-operative lab work up to 12 months following surgery
- Statistical tests were performed using appropriate parametric and non-parametric tests to determine statistical differences with p<0.05

Results

- 108 patients met inclusion criteria for the study; 31 male and 77 female
- Cameron's ulcers +/- gastritis/esophagitis identified in 43 patients preoperatively
- Statistically significant increase in hemoglobin across all 108 patients post-op, though not all returned to 'normal' by 12 months
- 27 patients (25%) completely resolved their anemia (p<0.0001), while the other 81 had a significant improvement from their starting hemoglobin (p=0.0156; average 11.0 to 11.3 g/dL)
- There was no difference regarding anemia resolution to the presence of esophagitis, gastritis, or Cameron's ulcerations (p=0.5089), or the fundoplication performed

Characteristic	Overall Statistics N=108	Anemia Resolved N=27	Anemia Improved N=81	P-Value
Sex (Male)	31 (28.7)	7 (25.9)	24 (29.6)	0.7126
Average BMI	29.6 [25.6, 33.7]	29.8 [25.5, 35.9]	29.5 [25.6, 33.5]	0.3809
Anticoagulant / Antiplatelet Use	46 (42.5)	13 (48.1)	33 (40.7)	0.5486
Tobacco Use				
Never Smoker	65 (60.2)	16 (59.3)	49 (60.5)	0.9096
Former/Current	43 (39.8)	11 (40.7)	32 (39.5)	
Reflux Med Taken	105 (97.2)	25 (92.6)	74 (94.9)	0.8728
Previous hiatal hernia repair	16 (14.8)	2 (7.4)	14 (17.3)	0.3481
Preoperative EGD Findings				
Gastritis/Esophagitis	33 (40.2)	6 (28.6)	27 (44.3)	
Benign Findings Only	21 (25.6)	7 (33.3)	14 (23.0)	0.5089
Cameron Ulcers	10 (12.2)	2 (9.5)	8 (13.1)	
Other	18 (22.0)	6 (28.6)	12 (19.7)	
Fundoplication Performed				
Nissen	53 (54.6)	14 (56)	39 (54.2)	0.0807
Toupet	33 (34.0)	11 (44)	22 (30.6)	
Other	11 (11.3)	0	11 (15.3)	

Table 1: Baseline patient demographics, pre-operative workup, and fundoplication performed in relationship to pre-operative and post-operative anemia in patients undergoing paraesophageal hernia repair. Categorical data expressed as count (percent). Numeric data expressed as median [25th,75th percentile].

Patient Cohort	Number of Patients N=108	Baseline Hemoglobin (g/dL)	Final Hemoglobin (g/dL, up to 12-months post-op)	P-Value
Anemia Improved	81	11.0 ± 1.3	11.3 ± 1.2	0.0156
Anemia Resolved	27	11.4 [10.5, 11.9]	14.3 [13.6, 15.0]	<0.0001
Within 30 days	*2 (7.4%)*	--	--	--
Between 1-6 months	*4 (14.8%)*	--	--	--
Between 6-12 months	*21 (77.8%)*	--	--	--

Table 2: Perioperative hemoglobin changes in patients undergoing paraesophageal hernia repair. Also included is post-operative timing breakdown for when anemia resolution identified. Categorical data expressed as count (percent). Numeric data expressed as median [25th,75th percentile].

Discussion

- Anemia is likely multifactorial in patients with a paraesophageal hernia
- Hernia repair in all 108 patients demonstrated statistically significant improvement from baseline hemoglobin (p=0.0156), with 27 patients (25%) resolving their anemia within 12 months following surgery (p<0.0001)
- Anemia improved regardless of patient sex, BMI, endoscopic findings, or fundoplication performed
- Timing for anemia resolution identified more often in 6–12-month range following surgery (77.8%)

Conclusions

- Anemic patients had statistically significant improvement of their hemoglobin levels after undergoing paraesophageal hernia repair
- Paraesophageal hernia repair should be considered in patient's presenting with underlying anemia in an appropriate operative candidate

References

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