

# Increasing Utilization of Arterial Embolization and Surgeries in Patients Admitted With Lower GI Hemorrhage: Insight Into the U.S. Population



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## INTRODUCTION

- ❖ Lower gastrointestinal hemorrhage (LGIH) is one of the common reasons for hospitalization.
- ❖ In majority of the cases, bleeding stops spontaneously, however, older patients are at risk of high mortality and morbidity.
- ❖ Many diagnostic and therapeutic modalities are being utilized in the management of LGIH including upper gastrointestinal endoscopy, colonoscopy, CT angiogram (CTA), tagged RBC, laparoscopic and open surgeries.
- ❖ We aimed to evaluate the trends and utilization of these modalities in LGIH management.

## METHODS

- ❖ All adult patients with a primary diagnosis and/or secondary diagnosis of LGIH were included in study using nationwide inpatient sample database from January 2016 to December 2019.
- ❖ Wilcoxon rank sum-test was used for comparing continuous variables, Chi-square tests for categorical variables and linear regression to evaluate the trend over time.
- ❖ The primary outcome was to examine the utilization trend of imaging studies and procedures in patients admitted with LGIH.

## RESULTS

- ❖ The sample size included 3,050,044 adult patients, of which 1,543,627(50.61%) were females.
- ❖ The mean age of patients was  $70 \pm 0.2$  years.
- ❖ The utilization rates of upper gastrointestinal endoscopy and colonoscopy were the highest which has remained constant over the years. (Table)
- ❖ Similarly, the trend of CTA and nuclear scan use have been insignificant.
- ❖ Rate of arterial embolization has increased from 2% to 3.1% since 2016,  $p < 0.001$  (Figure 1)
- ❖ Rate of laparoscopic surgery increased from 1.19% to 1.31% ( $p=0.02$ ) Figure 2.
- ❖ Rate of open surgery increased from 3.84% to 4.5% ( $p < 0.001$ ) from 2016 to 2019 (Figure 3).

## RESULTS

	2016	2017	2018	2019	p-value
Upper GI endoscopy	32.85%	32.58%	32.98%	33.18%	0.25
CT angiography	0.04%	0.06%	0.05%	0.03%	0.17
Nuclear bleeding scan	0.04%	0.04%	0.03%	0.03%	0.36
Colonoscopy	27.83%	27.17%	27.29%	27.26%	0.16
<b>Arterial embolization</b>	<b>2%</b>	<b>2.4%</b>	<b>3%</b>	<b>3.1%</b>	<b>&lt; 0.001</b>
Laparoscopic surgery	1.19%	1.22%	1.22%	1.31%	0.02
<b>Open surgery</b>	<b>3.84%</b>	<b>4.36%</b>	<b>4.47%</b>	<b>4.5%</b>	<b>&lt; 0.001</b>

Figure 1. Trends of Arterial Embolization in LGIH patients

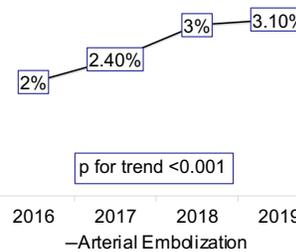


Figure 2. Trends of Laparoscopic surgeries in LGIH patients

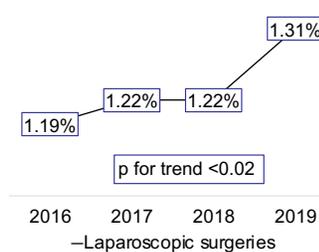
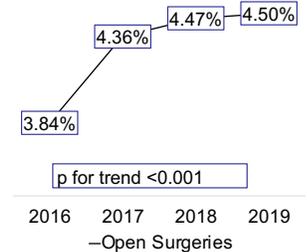


Figure 3. Trends of Open Surgeries in LGIH patients



## DISCUSSION

- ❖ This study illustrates a significant uptrend utilization of surgical modalities that indicates increasing rate of complex cases of LGIH and higher rate of complications requiring more invasive approach.
- ❖ Recent trend of increased utility of arterial embolization and its efficacy in the management of LGIH are promising.
- ❖ It may be used as alternative to more invasive surgical modalities.