Temporal and Institutional Trends in Robotic Surgery

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Background

- Robotic surgery has become increasingly prevalent in general surgery practice.
- While previous studies have shown the safety and efficacy of robotic assistance in laparoscopic general surgery procedures, few studies have evaluated the temporal and regional trends in implementation.
- In our retrospective population-based study, we aim to evaluate the national trends in robotic surgery..

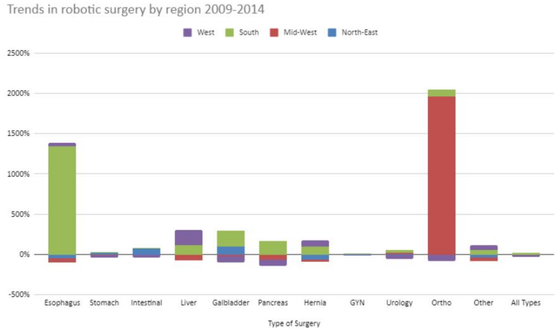
Methods

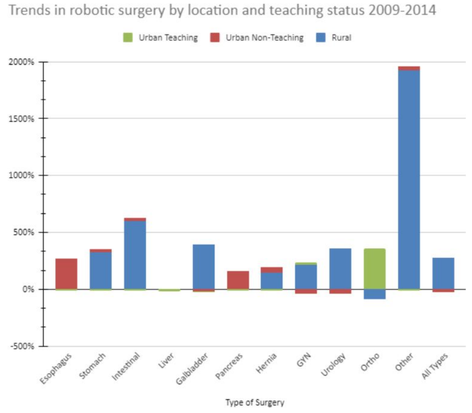
- National Inpatient Database (NIS 2009-2014) was used to identify adults who underwent robotic assisted surgery (ICD 9 codes 17.41 to 17.49).
- Robotic procedures related to seven abdominal organ systems were compared against the trends of Urology, Gynaecologic, and Orthopedic robotic procedures,
- Discharge weights were applied to calculate national temporal trends separated by hospital size, teaching status and US geographic region.

Discussion

- Our study highlights the increase in use of robotics for both general and specialty surgery, with an increase in utilization over time.
- Increased incidence of robotic surgery in smaller, rural institutions with overall decrease in larger, urban teaching hospitals suggests increasing comfort in robotic surgery in the community setting.
- Further studies are necessary to evaluate the factors associated with increased utilization in smaller institutions.

Results





- 894,163 patients received a robotic assisted procedure between 2009 and 2014 with 64% increase in utilization.
- The largest percent change was witnessed in **biliary robotic procedures with 2984% change in utilization, followed by hernia (1376%).** Lowest percent change was witnessed in **esophageal procedures with only 114%** increase
- Medium sized hospitals had the largest change in robotic utilization (41%), with large institutions seeing 18% decrease
- South region of the nation had the largest increase in robotic procedures (23%)

% Yearly Change in Robotic Procedures Performed in the US from the NIS Database 2009-2014 (%)

	Hospital size			Location and teaching status			Region			
	Small	*Medium*	*Large*	*Rural*	*Urban Non-Teaching*	*Urban Teaching*	*North-East*	*Mid-West*	*South*	*West*
Esophagus	89%	145%	-17%	-81%	273%	-10%	-48%	-49%	1343%	43%
Stomach	316%	329%	-45%	328%	24%	-12%	19%	-15%	9%	-21%
Intestinal	-30%	136%	-16%	599%	27%	-11%	71%	2%	10%	-39%
Liver	0%	52%	-7%	0%	0%	-17%	0%	-75%	114%	188%
Galbladder	215%	5%	-21%	392%	-17%	-10%	99%	-25%	198%	-71%
Pancreas	347%	-42%	4%	0%	163%	-11%	0%	-63%	167%	-76%
Hernia	198%	94%	-26%	144%	53%	-14%	-63%	-28%	95%	77%
GYN	116%	44%	-25%	212%	-42%	20%	2%	-7%	9%	-6%
Urology	-6%	37%	-10%	356%	-36%	6%	1%	24%	28%	-53%
Ortho	4886%	-30%	-54%	-85%	-4%	361%	0%	1960%	89%	-82%
Other	41%	67%	-20%	1923%	34%	-12%	-37%	-48%	52%	63%
All Types	25%	41%	-18%	274%	-29%	5%	0%	-4%	23%	-22%

