Robotic Availability, Not Payor Status, Determines Access to Robotic Emergency Hernia Repair in California and Florida

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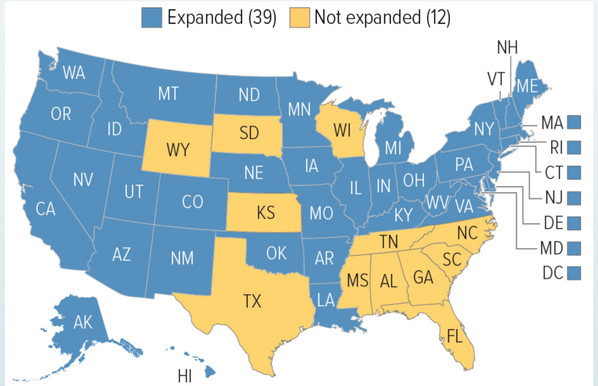
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Introduction

Previous studies have demonstrated that access to robotic surgery, including for hernia repair, is influenced by socioeconomic factors, including insurance status.[1]

The 2010 Affordable Care Act (ACA) established an avenue for states to expand Medicaid coverage to more people. Over the last decade, 40 states have expanded coverage. This has resulted in increased access to surgical care including for cancer and bariatric conditions.[2,3] In emergency general surgery (EGS), it has led to increased insurance rates and higher hospital reimbursement for EGS conditions.[4]

Map of State Medicaid Expansion in 2021[5]



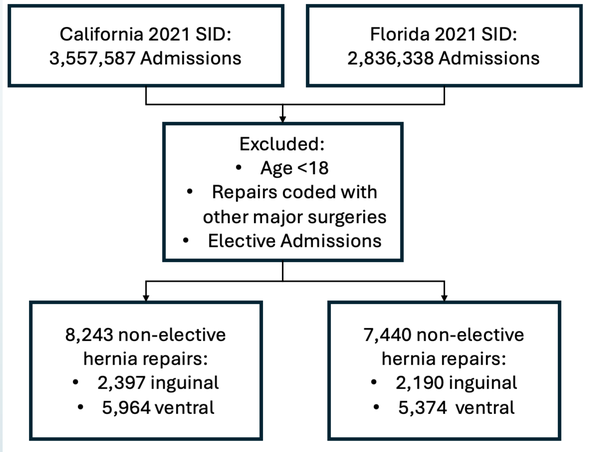
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3. Mesquita-Neto JWB, Cmorej P, Mouzaihem H, Weaver D, Kim S, Macedo FI. Disparities in access to cancer surgery after Medicaid expansion. Am J Surg. 2020 Jan;219(1):181-184. doi: 10.1016/j.amjsurg.2019.06.023. Epub 2019 Jun 26. PMID: 31266630.
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Hypothesis

Socioeconomic disparities in access to robotic repair for nonelective (EGS) hernias are less prevalent in California, a Medicaid expansion state, compared to Florida, which has not adopted Medicaid expansion.

Methods

A retrospective observational study using the 2021 California and Florida State Inpatient Databases. Hernia admissions were identified with ICD-10 Procedure codes.



Patients of Black race, Medicare insurance, and lower income were less likely to undergo robotic repair in California, but not in Florida.

Results

There were 15,683 EGS hernia repairs of which 10.8% underwent robotic hernia repair: 14.4% in Florida and 7.6% in California.

Robotics in EGS Hernia Surgery

	California (n=629)	Florida (n=1070)	p-value
Medicare	45.9%	50.5%	0.067
Medicaid	26.0%	10.7%	<0.001*
Uninsured	2.1%	10.5%	<0.001*
Bottom Income Quartile	24.4%	32.8%	<0.001*
Trauma Center	53.3%	21.7%	<0.001*
EGS Center	51.7%	94.5%	<0.001*

Robotic surgery in Florida was more likely to occur in high volume EGS centers and less likely in trauma centers compared to California.

Predictors of EGS Robotic Hernia Repair

	California			Florida			Overall		
	OR	CI	p-value	OR	CI	p-value	OR	CI	p-value
California State	-	-	-	-	-	-	-	-	-
Florida	-	-	-	-	-	-	**1.96**	1.73 - 2.24	**<0.001***
Age	**1.01**	1 - 1.02	**0.015***	1.00	0.99 - 1.00	0.375	1.00	1.00-1.01	0.234
Female Sex	1.2	0.99 - 1.44	0.058	0.96	0.83 - 1.11	0.557	1.06	0.94 - 1.19	0.345
Elixhauser Index	**0.98**	0.97 - 0.99	**<0.001***	0.98	0.98 - 0.99	**<0.001***	0.98	0.98 - 0.99	**<0.001***
White Race	-	-	-	-	-	-	-	-	-
Black	**0.61**	0.41 - 0.88	**0.011***	1.03	0.85 - 1.24	0.762	0.93	0.78 - 1.10	0.392
Hispanic	0.88	0.72 - 1.06	0.179	0.91	0.76 - 1.09	0.300	0.90	0.78 - 1.02	0.111
Private Insurance	-	-	-	-	-	-	-	-	-
Medicare	**0.74**	0.57 - 0.96	**0.022***	1.06	0.87 - 1.29	0.580	0.90	0.76 - 1.06	0.189
Medicaid	0.85	0.66 - 1.11	0.232	1.11	0.87 - 1.41	0.417	0.96	0.80 - 1.14	0.645
Uninsured	0.97	0.51 - 1.71	0.924	0.96	0.75 - 1.23	0.776	0.96	0.76 - 1.20	0.709
Highest Income Quartile	-	-	-	-	-	-	-	-	-
Lowest	**0.73**	0.57 - 0.94	**0.016***	1.09	0.90 - 1.32	0.383	0.94	0.81 - 1.09	0.425
Ventral	-	-	-	-	-	-	-	-	-
Inguinal	**1.87**	1.55 - 2.27	**<0.001***	**1.50**	1.28 - 1.75	**<0.001***	**1.62**	1.44 - 1.84	**<0.001***
Trauma Center	**1.22**	1.03 - 1.44	**0.024***	**0.67**	0.57 - 0.79	**<0.001***	**0.87**	0.77 - 0.97	**0.015***
High EGS Volume	**0.77**	0.65 - 0.91	**0.002***	**1.67**	1.27 - 2.22	**<0.001***	1.02	0.89 - 1.17	0.797

Conclusion

- There were **fewer** disparities in access to EGS robotic surgery repair in Florida compared to California.
- This suggests that robotic surgery access for EGS hernia repairs is determined by institutional adoption of robotic surgery, not payor status.
- Florida appears to have greater market penetration of robotic surgery compared to California, which has increased access for all patients.