NATIONAL DISPARITIES IN MINIMALLY INVASIVE SURGERY FOR HEPATIC TUMORS

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Introduction

- For patients with hepatic tumors, disparities have been shown to impact access to care, including surgery, and subsequently adversely affect long-term oncologic outcomes.
- The aim of this study was to investigate national disparities in access to Minimally Invasive Surgery (MIS) across different demographic characteristics for patients with hepatic tumors.

Methods

- The National Cancer Database (NCDB) was queried for patients diagnosed with Liver Tumors who underwent surgical resection through either open or MIS approach (robotic or laparoscopic), between 2010 - 2020.
- Patients who were offered a MIS but were converted during surgery, were analyzed in the MIS group since the primary goal was to determine disparities in access to MIS.
- Patients undergoing total hepatectomy for transplant were excluded.
- Univariate and Multivariate logistic regression analyses were performed to assess the relative impact of different factors on receiving MIS.

Table 1: Logistic regression for factors predicting MIS for Hepatic Tumors

Factors	Univariate			Multivariate		
	OR	95% CI	P-value	OR	95% CI	P-value
Age	1.050		0.803			
Sex (female)	0.961		0.248			
Race						
White	Ref	Ref	1			
Black	0.914		***0.045***	0.912	0.83 – 0.91	***0.048***
Asian/Other	1.015		0.729			
Ethnicity						
Non-Hispanic	Ref	Ref	1			
Hispanic	1.008		0.884			
Insurance Type						
Government	Ref	Ref	1			
Private	1.041		0.232			
None	0.930		0.477			
Median Income						
< $40,227	Ref	Ref	1			
$40,227 - $50,353	0.948		0.313			
$50,354 - $63,332	1.015		0.774			
> $63,333 +	1.249		0.000			
Median Income <$40,227 vs >$40,227	1.095		***0.030***	1.010	0.91 – 1.12	0.849
Residence Type						
Metropolitan	Ref	Ref	1			
Urban	0.803		0.000			
Rural	0.974		0.859			
Metropolitan vs urban/rural	0.819		***0.000***	0.811	0.72 – 0.90	***<0.001***
No High School Degree Region						
> 17.6%	Ref	Ref	1			
10.9% - 17.5%	1.037		0.449			
6.3% - 10.8%	1.143		0.004			
< 6.3%	1.239		0.000			
No High School Degree > 17.6% vs < 17.6%	1.132		***0.002***	1.124	1.03 – 1.23	***0.011***
Facility Type						
Community	Ref	Ref	1			
Comprehensive Community	0.849		0.301			
Academic/Research	0.884		0.425			
Integrated Network	0.886		0.444			
Tumor Size	1.002		0.229			
Charleson-Deyo Comorbidity Score						
0	Ref	Ref	1			
1	0.913		0.055			
2	0.911		0.075			
≥ 3	0.938		0.221			

Results

- The NCDB search identified 18779 patients.
- The initial surgical approach included 12953 (69%) patients in the Open group and 5826 (31%) in the MIS group [978 (17%) robotic and 4848 (83%) laparoscopic]. Of note, MIS for liver tumors increased from 19% in 2010 to 42% in 2020.
- Factors associated with receiving MIS included: higher education [OR 1.124 (p=0.011)].
- Factors associated with receiving an Open approach included: Black race (vs White) [OR 0.912 (p=0.046)] and urban/rural residence (vs metropolitan) [OR 0.811 (p<0.001)].
- After Multivariate Logistic Regression analysis, Higher income was not associated with receiving MIS.

Conclusions

- While the utilization of MIS is overall increasing in hepatic surgery, there are significant demographic and socioeconomics disparities in the utilization of it compared to the Open approach.
- The benefits of MIS should not be limited to specific socioeconomic cohorts of the population.
- Recognizing these disparities is a necessary first step in providing equal care.