Effects of Hospital Teaching Status on Percutaneous Endoscopic Gastrostomy Placement in Ascites Patients: A Population Based Study

Amrita Chawla[1], Faiz Afridi[2], Reza Hashemipour[2], Sushil Ahlawat[2]
1. Department of Medicine, Rutgers New Jersey Medical School
2. Department of Gastroenterology and Hepatology, Rutgers New Jersey Medical School

RUTGERS

Introduction & Aim

- Ascites is viewed as a relative and often absolute contraindication to the insertion of a percutaneous endoscopic gastrostomy (PEG) tube
- Nonetheless, PEG tube placement may be required in certain circumstances to ensure proper nutrition.
- Aim: Assess teaching versus nonteaching hospital inpatient outcomes in PEG tube placement in ascites patients

Methods

Data & Cohort
- 2001-2014 National Inpatient Sample (NIS)
- Cases of Ascites and associated procedure of PEG tube placement in teaching and nonteaching hospitals

Baseline Characteristics Observed / Covariates
- Patient Demographics: Age, Race, Sex, Income, Payer
- Hospital Characteristics: Size, Region
- Clinical Features: Elixhauser comorbidities, Admission Status, liver disease
- Assessed with Rao-Scott Chi-Squared and Mann-Whitney tests

Outcomes Assessment
- Primary Outcomes: complications rates of pneumonia, respiratory failure, shock, peritonitis, and blood transfusion
- Secondary Outcomes: mortality, total charges, and length of stay
- Multivariable Poisson and logistic regression
- Controlled for baseline characteristic differences

Results

Table 1 : Baseline Characteristics Of the Study Cohort Pre and Post Propensity Score Matching

Variable	Group	Raw Cohort				Propensity Matched Cohort[2]		
		Nonteaching N = 8713	Teaching N = 14926	PValue	SMeanDiff	Nonteaching N = 6990	Teaching N = 7183	SMeanDiff
Age[1]		67 (57 - 78)	64 (54 - 74)	<0.001*	-0.21	67 (56 - 78)	65 (55 - 76)	-0.10
Sex	Female	50.0%	55.3%	<0.001*	0.11	50.3%	52.4%	0.04
	Male	49.9%	44.7%		-0.11	49.7%	47.6%	-0.04
Race	Asian/Pacific Islander	3.1%	3.1%	<0.001*	-0.02	3.4%	4.2%	0.03
	Black	12.1%	17.0%		0.16	13.8%	16.1%	0.07
	Hispanic	8.6%	6.5%		-0.10	8.2%	8.2%	-0.01
	Other	3.4%	4.0%		0.01	3.9%	3.9%	-0.02
Elixhauser Comorbidity Index[1]		27 (19 - 35)	25 (18 - 34)	0.003*	-0.08	26 (19 - 35)	27 (19 - 36)	-0.01
Admission Status	Elective	11.5%	12.8%	0.43	-0.04	10.1%	13.8%	0.04
	Non-elective	88.0%	87.1%		0.04	89.9%	86.2%	-0.04
Hospital Size	Small	8.8%	11.0%	0.4	-0.02	7.5%	11.3%	0.02
	Medium	21.7%	21.2%		0.00	21.9%	21.3%	-0.01
	Large	69.5%	67.8%		0.02	70.6%	67.4%	-0.01
Hospital Region	Midwest	18.9%	25.4%	<0.001*	0.15	17.4%	17.0%	0.00
	Northeast	12.5%	26.3%		0.34	15.2%	22.1%	0.15
	South	39.7%	34.2%		-0.08	40.6%	37.9%	-0.04
	West	29.0%	14.1%		-0.40	26.8%	23.1%	-0.11
Primary Payer	Medicaid	11.9%	14.5%	<0.001*	0.06	13.1%	14.3%	0.05
	Medicare	58.5%	52.2%		-0.14	58.0%	54.6%	-0.08
	Other	2.5%	2.3%		0.01	3.9%	3.9%	-0.02
	Private insurance	24.4%	27.6%		0.10	24.2%	25.9%	0.04
	Self-pay	2.3%	3.1%		0.05	2.5%	2.6%	0.01
Income Quartile	0-25th	26.3%	25.0%	0.12	-0.01	26.2%	25.9%	-0.01
	26th-50th	24.7%	21.4%	0.12	-0.08	23.4%	23.3%	-0.01
	51st-75th	23.6%	23.9%	0.12	0.00	25.1%	24.4%	-0.01
	76th-100th	23.7%	26.5%	0.12	0.08	25.3%	26.4%	0.03

1 Median (Interquartile Range)
2 Counts weighted with NIS trend weights post propensity matching
SMeanDiff = Standardized Mean Difference for balance assessment
** Pvalue < 0.05*

Table 2: Complications and In-Hospital Outcomes

	Teaching N = 7183	Nonteaching N = 6990	Adj Odds Ratio[1]	95% Conf Interval	Pvalue
Complications					
Peritonitis/Intestinal Abscess	11.4%	11.4%	0.987	(0.78 - 1.26)	0.912
Pneumonia	29.0%	34.5%	0.779	(0.65 - 0.93)	0.006*
Shock	23.9%	27.8%	0.833	(0.7 - 1)	0.046*
Respiratory Failure	48.5%	53.8%	0.827	(0.7 - 0.98)	0.027*
Blood Transfusion	39.1%	45.2%	0.777	(0.65 - 0.93)	0.007*
In-Hospital Outcomes					
Total Charges[2,3]	$179,379 ($80,536 - $397,328)	$188,905 ($83,878 - $381,537)	1.039	(0.95 - 1.14)	0.429
Mortality	17.5%	17.8%	0.981	(0.8 - 1.2)	0.852
Disposition	9.0%	6.8%	1.275	(0.92 - 1.76)	0.143
Length of Stay[2,4]	23 (13 - 38)	22 (13 - 35)	1.126	(1.04 - 1.21)	0.002*

1. Adjusted for age, sex, race, liver disease, comorbidities, payer, income, hospital size, hospital region, admission type
2. Median (Interquartile Range)
3. Gamma GLM regression coefficient
4. Incident Rate Ratio from Poisson regression
Counts weighted with National Inpatient Sample trend weights post propensity match
**P<0.05*

Results

- 15,251 weighted PEG tube placement in Ascites in teaching hospitals vs. 9,305 for non-teaching hospitals were identified
- Pre-match, teaching hospitals had a higher rate of PEG tube placement than nonteaching hospitals (0.94% vs 0.73%, OR: 1.28, 95% CI 1.18 - 1.4, P<0.001)
- Post propensity match, teaching hospitals had lower complication rates of pneumonia (aOR: 0.78, 95% CI 0.65 - 0.93, P=0.006), respiratory failure (aOR: 0.83, 95% CI 0.7 - 0.98, P=0.03), blood transfusion (aOR: 0.78, 95% CI 0.65 - 0.93, P=0.007), and shock (aOR: 0.83, 95% CI 0.7 - 1, P=0.046)After matching to controls, the mortality rate of HCC with HT was significantly lower at 7.6% versus 9.9% without HT (aOR 0.76, 95% CI 0.67–0.86, P<0.001)
- Teaching hospitals had a higher median LOS (23 vs 22 days, aIRR: 1.13, 95% CI 1.04-1.21, P=0.002)

Conclusion

- PEG tube placement in ascites patients is associated with fewer severe complications at teaching hospitals compared to nonteaching hospitals
- Further review is needed to understand the drivers of worse outcomes in nonteaching hospitals in order to ensure consistent care and adherence to best practice