

Endoscopic Retrograde Cholangiopancreatography Outcomes in Inflammatory Bowel Disease Patients: A 12-Year Analysis of a National Database

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Introduction:

- Inflammatory bowel disease (IBD) patients undergoing ERCP have not been well studied, with few prior studies existing within the current literature with conflicting results.
- The purpose of this study is to evaluate the impact of IBD on the occurrence of adverse events (AE) relating to ERCP.

Methods:

- This project utilized the National Inpatient Sample (NIS) database, the largest inpatient database in the United States.
- All patients 18 years or older with and without IBD undergoing ERCP were identified from 2008 to 2019. Relevant patient characteristics were identified using ICD-9 and ICD-10 codes.
- The AEs of interest were pancreatitis, cholecystitis, infection, perforation, gastrointestinal (GI) bleeding, length of stay (LOS), and total inpatient cost. These post-ERCP AEs were analyzed using multivariate logistic or linear regression controlling for age, race, and existing comorbidities using the Charlson comorbidity index (CCI).
- The primary and secondary diagnoses were used as the procedure indication and the subsequent diagnoses as complications.

Results:

- IBD patients undergoing ERCP experienced decreased post-ERCP pancreatitis (PEP) (2.41% vs 3.56%, p=0.0242), GI bleeding (0.24% vs 0.96%, p=0.0093), mortality (0.35% vs 1.47%, p=0.0014), LOS (5.4 vs 6.4 days, p< 0.0001) and inpatient cost (\$53,848 vs \$70,096, p< 0.0001).
- There was no significant difference in cholecystitis, infection, or perforation. Adjusted logistic regression indicated that IBD patients remained less likely to experience post-ERCP bleeding (OR: 0.29, p< 0.0001).
- There was no difference between PEP or mortality after adjusting for covariates.

Discussion:

- There was no significant difference in PEP or mortality, except for an apparent lower risk of GI bleeding in the IBD group.
- Multiple factors may have contributed to these findings including significant advances in medical therapy for IBD.
- Additionally, the association of biliary disease with IBD does not necessarily parallel active intestinal inflammation.
- This is the largest study evaluating outcomes in IBD patients undergoing ERCP.

Outcome	IBD Status		p-value
	Yes (n=5993)	No (n=2,007,719)	
Age	52.6 (0.59)	59.5 (0.13)	<.0001
Race			<.0001
White	4,382 (73.1%)	1,257,759 (62.6%)	
Black	458 (7.6%)	169,493 (8.4%)	
Hispanic	412 (6.9%)	291,708 (14.5%)	
Asian or Pacific Islander	71 (1.2%)	70,233 (3.5%)	
Native American	20 (0.3%)	12,865 (0.6%)	
Other	147 (2.5%)	64,217 (3.2%)	
Unknown	503 (8.4%)	141,445 (7.0%)	
Gender			0.0006
Female	3,244 (54.13%)	1,181,239 (58.83%)	
Male	2,749 (45.87%)	825,269 (41.10%)	
Comorbidity Index	0.9 (0.03)	1.8 (0.01)	<.0001
Pancreatitis	144 (2.41%)	71,381 (3.56%)	0.0242
Cholecystitis	46 (0.76%)	20,878 (1.04%)	0.3501
Infection	388 (6.48%)	147,601 (7.35%)	0.2166
Perforation	6 (0.09%)	1,915 (0.10%)	0.9882
Bleeding	15 (0.24%)	19,369 (0.96%)	0.0093
Mortality during hospitalization	21 (0.35%)	29,580 (1.47%)	0.0014
Length of Stay (mean, SE)	5.4 (0.18)	6.4 (0.03)	<.0001
Total Charges (mean, SE)	\$53,848 (2,645.45)	\$70,096 (789.21)	<.0001

Independent Variable	Model 1. Pancreatitis	Model 2. Bleeding	Model 3. Mortality
	Odds Ratio (95% CI)	Odds Ratio (95% CI)	Odds Ratio (95% CI)
No IBD	1.38 (0.97-1.96) p=0.0711	3.47 (1.13-10.63) p=0.0297	2.14 (0.81-5.64) p=0.1262
Age at admission	1.00 (1.00-1.00) p<.0001	1.01 (1.01-1.01) p<.0001	1.03 (1.03-1.03) p<.0001
Race	p<.0001	p<.0001	p<.0001
White	ref	Ref	Ref
Black	1.03 (0.96-1.11)	1.30 (1.15-1.46)	1.39 (1.27-1.51)
Hispanic	1.45 (1.32-1.58)	1.13 (1.01-1.25)	0.93 (0.84-1.02)
Asian or Pacific Islander	1.83 (1.64-2.05)	1.91 (1.65-2.21)	1.26 (1.11-1.42)
Native American	0.95 (0.75-1.20)	1.20 (0.80-1.79)	1.28 (0.92-1.79)
Other	1.13 (1.01-1.26)	1.27 (1.06-1.52)	1.16 (1.00-1.35)
Unknown	0.78 (0.70-0.87)	1.17 (1.04-1.33)	1.19 (1.06-1.33)
Female Gender	0.99 (0.95-1.02) p=0.4110	0.81 (0.76-0.87) p<.0001	0.85 (0.80-0.89) p<.0001
Comorbidity Index	1.00 (0.99-1.01) p=0.5016	1.04 (1.03-1.05) p<.0001	1.30 (1.29-1.31) p<.0001

Independent Variable	Model 4. LOS	Model 5. Total Cost
	Regression Coefficient (SE)	Regression Coefficient (SE)
No IBD	0.40 (0.19) p=0.0308	\$8,649 (2544) p=0.0007
Age at admission	0.01 (0.001) p<.0001	\$43 (12) p=0.0003
Race	p<.0001	p<.0001
White	ref	ref
Black	1.46 (0.06)	\$9,597 (824)
Hispanic	0.34 (0.05)	\$18,894 (1061)
Asian or Pacific Islander	0.44 (0.08)	\$27,503 (1726)
Native American	0.45 (0.17)	\$2,408 (2113)
Other	0.81 (0.09)	\$16,078 (1368)
Unknown	-0.07 (0.09)	-\$15,371 (1156)
Female Gender	-0.63 (0.03) p<.0001	-\$9,717 (409) p<.0001
Comorbidity Index	0.51 (0.01) p<.0001	\$5,588 (160) p<.0001