

EFFECTS OF GASTROINTESTINAL SURGERY ON POST-ERCP COMPLICATIONS:



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A NATIONAL INPATIENT SAMPLE DATABASE ANALYSIS

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Introduction

- Endoscopic retrograde cholangiopancreatography (ERCP) is a diagnostic and therapeutic tool for pancreaticobiliary diseases.
- Surgery on the gastrointestinal tract can alter the anatomy and lead to challenges for ERCPs performed.
- This has necessitated different types of scopes, cannulas, and the use of fluoroscopy to access parts of the GI tract.
- One study looked at ERCP after Roux-en-Y gastric bypass surgery and found no post-procedural complications.
- Another study evaluated ERCP complications in patients with modified GI anatomy and noted 12% of patients had pancreatitis, bleeding, and perforation with ERCP.
- There is currently no data on the association between ERCP complications and post-operative patients with specific types of GI tract surgeries.

Methods

- National Inpatient Sample database was used to identify hospitalized patients over 18 years old who had an ERCP procedure between 2007-2017.
- Patients were divided into two groups: those who had GI tract surgeries and those who did not – matched by age, gender, race, and Elixhauser Comorbidity Index, then separated into types of surgery (artificial opening, bariatric, bypass/anastomosis).
- Primary outcomes were rates of post-ERCP pancreatitis, cholangitis, cholecystitis, infection, hemorrhage, and perforation.
- The types of GI tract surgeries were then specified to evaluate their rates of complications as secondary outcomes.
- Multivariate analyses were performed to assess outcomes.

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Results

Post-ERCP Complication	GI Tract Surgeries	
	P-Value	Odds Ratio (95% CI)
Pancreatitis	0.020	1.3 (1.0-1.7)
Cholangitis	0.044	0.7 (0.5-1.0)
Cholecystitis	0.397	0.7 (0.4-1.5)
Infection	0.013	1.3 (1.1-1.6)
Hemorrhage	0.001	5.0 (1.9-13.0)
Perforation	0.044	1.5 (1.0-2.3)

Table 1. Outcomes of Patients who undergo Endoscopic Retrograde Cholangiopancreatography (ERCP) with GI Tract Surgeries, CI = Confidence Intervals

Post-ERCP Complication	Artificial Opening		Bariatric Surgery		Intestinal Bypass/Anastomosis	
	P-Value	Odds Ratio (95% CI)	P-Value	Odds Ratio (95% CI)	P-Value	Odds Ratio (95% CI)
Pancreatitis	0.001	1.9 (1.3-2.8)	0.039	1.4 (1.0-2.0)	0.002	0.3 (0.2-0.7)
Cholangitis	0.272	1.3 (0.8-2.0)	< 0.001	0.3 (0.1-0.6)	0.027	0.5 (0.3-0.9)
Cholecystitis	0.997	1.0 (0.3-3.4)	0.958	NS	-	-
Infection	0.005	1.4 (1.1-1.8)	0.625	1.1 (0.8-1.5)	0.027	0.5 (0.3-0.9)
Hemorrhage	0.938	1.0 (0.5-2.1)	0.355	0.7 (0.3-1.5)	-	-
Perforation	0.122	1.7 (0.9-3.1)	0.006	2.3 (1.3-4.3)	-	-

Table 2. Outcomes of Patients who undergo Endoscopic Retrograde Cholangiopancreatography (ERCP) with Artificial Opening, Bariatric Surgery, and Intestinal Bypass/Anastomosis, CI = Confidence Intervals

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Results

- There were 79,335 patients admitted from 2007-2017 who underwent an ERCP procedure and had GI tract surgeries.
- Primary outcomes were significant (p< 0.05) for post-ERCP pancreatitis (OR 1.3), cholangitis (OR 0.7), infection (OR 1.3), hemorrhage (OR 5.0), and perforation (OR 1.5).
- Patients were then separated into those who had procedures:
 - Artificial opening - significant (p< 0.05) for post-ERCP pancreatitis (OR 1.9) and infection (OR 1.4)
 - Bariatric surgery - significant for pancreatitis (OR 1.4), cholangitis (OR 0.3), and perforation (OR 2.3),
 - Intestinal bypass/anastomosis - significant for pancreatitis (OR 0.3), cholangitis (OR 0.5), and infection (OR 0.5).

Discussion

- We postulate that the post-operative anatomical changes, type of surgery performed, and equipment limitations can lead to increased risks of post-ERCP pancreatitis, infection, hemorrhage, and perforation.
- Patients with artificial openings such as gastrostomy tubes have a tract for pathogens that can predispose them to infections.
- Those with bariatric surgeries have a decrease in post-ERCP cholangitis rates that could be due to the technique used which can minimize bile duct obstruction.
- Decrease in post-ERCP pancreatitis, cholangitis, and infection in patients with intestinal bypass surgeries may depend on the indication and extent of the bypass surgery.
- Patients who had GI tract surgeries will need to understand these risks associated with ERCP procedures.
- Endoscopists should review the anatomical changes with surgeons and radiologists to improve technical success rate and minimize complications.