

# Two Decades of Trends in Acute Biliary Pancreatitis in Women and the Impact of Management Guidelines

Ayushi Jain MD<sup>1</sup>, Yevgeniya Gokun MS<sup>2</sup>, Georgios Papachristou MD<sup>3</sup>, Luis Lara MD<sup>3</sup>, Samuel Han MD<sup>3</sup>, Peter Lee MB/ChB<sup>3</sup>, Somashekar G Krishna MD, MPH<sup>3</sup>

1. Department of Internal Medicine 2. Department of Biomedical Informatics 3. Division of Gastroenterology, Hepatology & Nutrition, The Ohio State University Wexner Medical Center



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## Background

- Cholesterol secretion in the hepatic bile increases in pregnancy leading to supersaturated bile
- Fasting and postprandial gallbladder volumes are greater in pregnancy, with reduced rate and volume of emptying, leading to gallstones
- An estimated 12% of women will develop cholelithiasis during pregnancy
- Up to 70% of acute pancreatitis cases in pregnancy may be attributable to gallstone disease
- Current guidelines recommend early management with laparoscopic cholecystectomy and/or therapeutic ERCP for pregnant women when clinically indicated regardless of trimester

## Objective

- To study trends of acute biliary pancreatitis (ABP) and its management in pregnant women over the last two decades at a national level

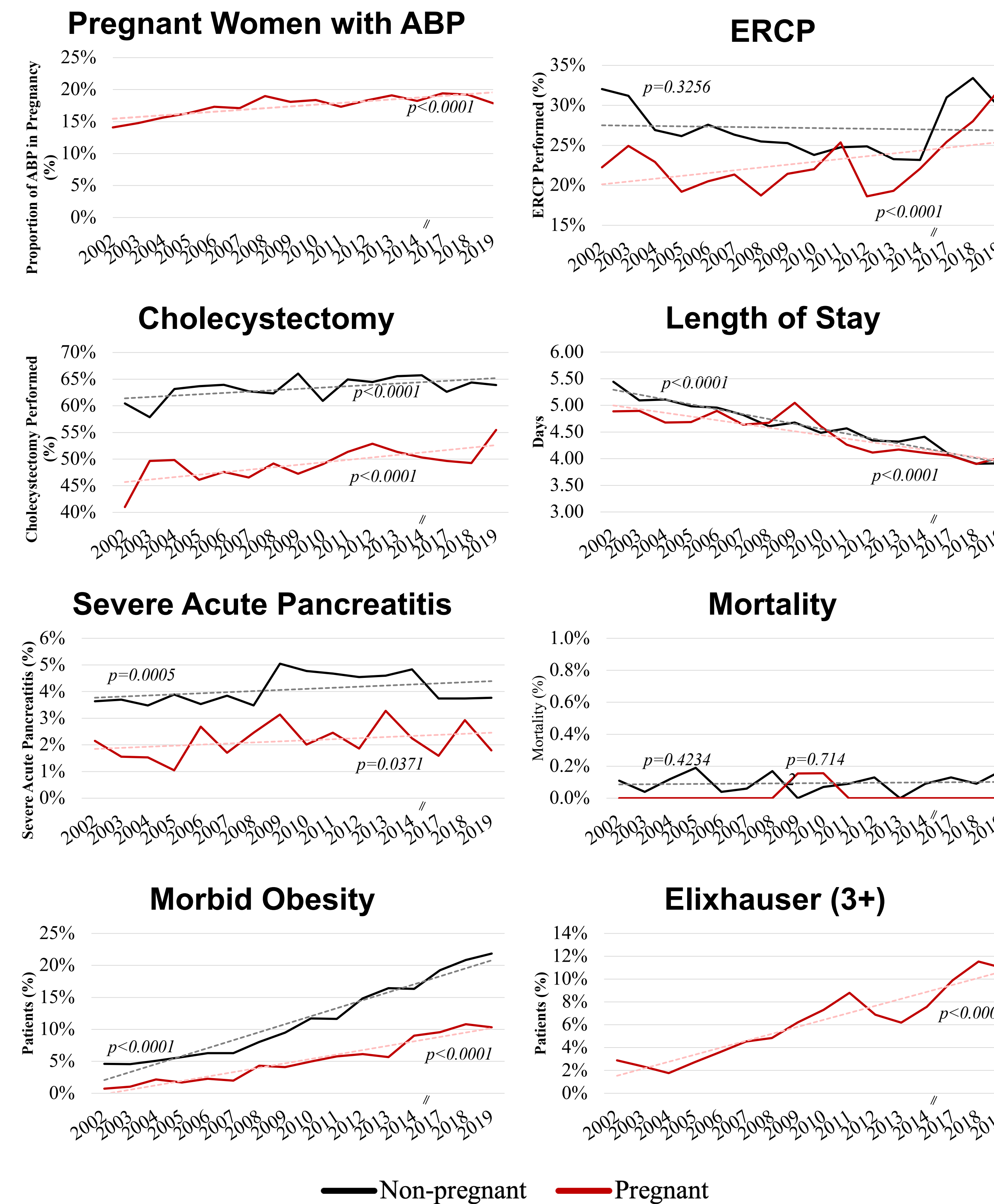
## Study Design

- The National (Nationwide) Inpatient Sample was utilized to identify all women of child-bearing age, defined as 18 to 50 years, with an inpatient admission for ABP in the United States from 2002 to 2019
- Primary outcome of interest was presence of severe acute pancreatitis. Additional outcomes included mortality, length of stay and total hospitalization costs.
- Trends in outcomes and management were analyzed using Cochran-Armitage and F-Tests
- Multivariable binary logistic regression was utilized for further evaluation of severe acute pancreatitis

## Results

- From 2002-2019, there was an increasing proportion of ABP admissions in pregnant women. An increasing trend was observed for ERCP and cholecystectomy (Figure 1).
- Compared to non-pregnant women, there was a significant, yet lower trend of severe acute pancreatitis in the pregnant cohort
- Mortality remained low and mean duration of hospitalization decreased for pregnant women with ABP
- Overall, an increasing trend was noted in morbid obesity and the Elixhauser Comorbidity Index among pregnant women
- Multivariate analysis (Table 1) for the outcome of severe acute pregnancy revealed the status of pregnancy was associated with a lower risk of severe acute pregnancy

## Trends



**Figure 1: Trends in Acute Biliary Pancreatitis in Pregnant and Non-Pregnant Women of Childbearing Age, NIS 2002-2019.**

Data from 2015-2016 was excluded due to less than expected incidence attributable to a transition from the ICD-9 to ICD-10 coding system.

## Results

Variable	OR	(95% CI)	p-value
Pregnant			
Yes	0.70	0.59-0.84	<0.0001
No	Reference		
Age			
1-year increase	1.01	1.01-1.02	<0.0001
5-year increase	1.07	1.04-1.11	
Race			
White	Reference		
Black	1.23	1.06-1.43	0.0068
Hispanic	0.84	0.73-0.98	0.0257
Other/Missing	1.11	0.96-1.29	0.1536
Insurance Type			
Medicare	2.65	2.23-3.15	<0.0001
Medicaid	1.21	1.07-1.38	0.0031
Private	Reference		
Other	1.02	0.87-1.19	0.8368
Type of Hospital			
Rural	Reference		
Urban non-teaching	1.48	1.21-1.81	0.0001
Urban teaching	1.50	1.23-1.84	<0.0001
Hospital bed size			
Small	Reference		
Medium	1.31	1.09-1.56	0.0038
Large	1.46	1.24-1.72	<0.0001
Hospital region			
Northeast	Reference		
Midwest	1.25	1.03-1.52	0.0213
South	1.24	1.04-1.47	0.0156
West	1.04	0.86-1.27	0.6714
AHRQ-Elixhauser Index			
< 3	Reference		
≥ 3	6.60	5.88-7.42	<0.0001
Morbid Obesity			
Yes	1.20	1.04-1.38	0.0125
No	Reference		
Cholecystitis			
Yes	1.00	0.87-1.14	0.9636
No	Reference		
Cholangitis			
Yes	1.68	1.27-2.22	0.0003
No	Reference		

**Table 1: Multivariate Analysis for Severe Acute Pancreatitis**

## Conclusions

- Over the last two decades, an increasing proportion of pregnant women were admitted with ABP, and therapeutic interventions (ERCP and cholecystectomy) are occurring more frequently with favorable hospital outcomes
- These national-level data strongly support current surgical and endoscopic management guidelines of ABP in pregnancy