

## #143 - THE USE OF ERCP DURING THE EARLY COVID-19 PANDEMIC

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### Introduction

The early rapid spread of COVID-19 impacted access to healthcare for elective, subacute and acute medical conditions across the US and resulted in associated worse outcomes in infected patients undergoing procedures compared to pre-pandemic.

### Objective

To explore the use and outcomes of inpatients undergoing ERCP for any indication during the early months of the COVID-19 pandemic.

### Methods

Retrospective observational study conducted by querying the National Inpatient Sample for the year 2020. Patients with ERCP procedural ICD-10 codes were included. Primary outcome included inpatient odds of ERCP for all indications. Secondary outcomes included inpatient odds of mortality, morbidity, resource utilization, as well a crude numbers and odds of intra-procedural interventions. The month of January (pre-pandemic) was used as comparator. Multivariate regression was used to adjust for gender, age, insurance status, Charlson Comorbidity Index, income in patient zip code, hospital region, location, size and teaching status.

### Results

The study included 152,125 patients, 54.6% females, mean age 61.3 years. There were decreased ERCP odds in March, November-December and increased ERCP odds in May-June and September compared to January (pre-pandemic). There was no significant difference in odds of mortality compared to January (pre-pandemic). Morbidity and resource utilization measures are shown in Table 1. Regarding intra-procedural instrumentation, there were increased odds of biliary sphincterotomy and lithotripsy throughout April-June compared to January. There were no significant differences in odds of ERCP complications compared to pre-pandemic levels.

### Conclusion

While there was a decreased number and odds of ERCP early in the pandemic, the subsequent months up to October 2020 saw non-different and increased odds of ERCP compared to pre-pandemic levels. Interestingly, there were increased odds of lithotripsy and biliary sphincterotomy throughout April-June. No significantly different odds of ERCP-related complications, mortality or resource utilization were noted in early pandemic months compared to pre-pandemic standards.

**Table 2. Adjusted Odds Ratios and Adjusted Means of Primary and Secondary Outcomes of Use of ERCP during the Pandemic**  
Adjusted Odds Ratio; (95% Confidence Interval)

Month	1	2	3	4	5	6	7	8	9	10	11	12
ERCP	Reference	0.97 (0.92-1.03)	<b>0.91 (0.86-0.96)</b>	1.06 (0.99-1.12)	<b>1.10 (1.04-1.16)</b>	<b>1.08 (1.02-1.14)</b>	1.01 (0.95-1.07)	1.04 (0.99-1.10)	<b>1.07 (1.01-1.13)</b>	1.04 (0.98-1.09)	<b>0.93 (0.88-0.99)</b>	<b>0.91 (0.86-0.96)</b>
Mortality	Reference	1.17 (0.75-1.82)	1.03 (0.62-1.73)	0.86 (0.51-1.45)	1.20 (0.76-1.89)	1.13 (0.71-1.78)	1.19 (0.75-1.88)	0.84 (0.52-1.36)	1.34 (0.87-2.06)	1.27 (0.85-1.92)	1.12 (0.71-1.78)	1.30 (0.84-2.01)
<b>Morbidity Measures (Adjusted Odds Ratio; 95% Confidence Interval)</b>												
Acute Kidney Injury	Reference	1.06 (0.92-1.24)	0.98 (0.84-1.15)	0.99 (0.83-1.16)	1.06 (0.91-1.22)	1.04 (0.90-1.21)	1.07 (0.93-1.24)	1.00 (0.86-1.17)	0.93 (0.80-1.07)	1.06 (0.91-1.23)	1.03 (0.91-1.22)	0.96 (0.82-1.12)
Shock	Reference	0.93 (0.74-1.18)	0.94 (0.74-1.20)	<b>0.71 (0.54-0.93)</b>	0.99 (0.78-1.25)	<b>0.78 (0.61-0.99)</b>	0.93 (0.73-1.20)	0.83 (0.64-1.06)	0.99 (0.79-1.23)	0.94 (0.74-1.19)	1.02 (0.81-1.27)	0.93 (0.73-1.21)
SIRS	Reference	1.45 (0.80-2.63)	<b>2.06 (1.21-3.51)</b>	1.02 (0.52-2.02)	<b>1.78 (1.02-3.03)</b>	<b>2.09</b>	1.59 (0.90-2.78)	1.53 (0.88-2.73)	1.46 (0.82-2.61)	1.27 (0.71-2.26)	1.06 (0.56-1.99)	0.75 (0.38-1.50)
Intensive Care Unit	Reference	1.23 (0.88-1.55)	1.27 (0.89-1.63)	1.14 (0.88-1.46)	1.08 (0.86-1.37)	1.23 (0.97-1.55)	0.97 (0.76-1.24)	1.23 (0.98-1.54)	1.16 (0.92-1.48)	1.21 (0.95-1.53)	1.17 (0.92-1.48)	1.27 (0.99-1.63)
Multi-Organ Failure	Reference	1.07 (0.93-1.23)	0.98 (0.85-1.14)	1.03 (0.89-1.19)	1.06 (0.92-1.22)	1.10 (0.96-1.25)	1.06 (0.93-1.22)	1.07 (0.93-1.24)	1.02 (0.89-1.17)	1.09 (0.95-1.26)	1.13 (0.98-1.30)	0.99 (0.85-1.14)
ARDS	Reference	1.69 (0.28-10.18)	2.60 (0.47-14.33)	2.78 (0.50-15.36)	4.02 (0.77-20.86)	3.82 (0.79-18.43)	0.54 (0.05-6.01)	3.39 (0.69-18.79)	2.17 (0.39-12.06)	2.10 (0.38-11.58)	3.70 (0.74-18.40)	3.67 (0.74-18.28)
Sepsis	Reference	1.02 (0.88-1.18)	1.02 (0.88-1.18)	1.14 (0.98-1.33)	1.15 (0.99-1.34)	1.11 (0.97-1.27)	1.08 (0.93-1.26)	1.10 (0.95-1.27)	1.25 (1.09-1.43)	1.10 (0.95-1.27)	<b>1.19 (1.03-1.37)</b>	1.00 (0.86-1.16)
<b>Healthcare Utilization (Adjusted Means; 95% Confidence Interval)</b>												
Additional LOS	Reference	-0.13 (-0.50-0.25)	-0.39 (-0.90-0.13)	-0.51 (-0.90-0.11)	-0.31 (-0.67-0.05)	-0.38 (-0.72-0.06)	-0.44 (-0.80-0.07)	-0.15 (-0.60-0.30)	0.08 (-0.29-0.46)	0.08 (-0.31-0.47)	0.23 (-0.15-0.64)	0.14 (-0.32-0.60)
Additional Total charges	Reference	-6,320 (-12,446-5)	-6,837 (-14,850-1,137)	-3,833 (-12,507-4,842)	-1,484 (-8,376-5,409)	-2,446 (-9,323-4,434)	-5,809 (-12,607-990)	3,374 (-6,273-13,023)	2,918 (-4,648-10,484)	5,074 (-2,946-13,094)	3,268 (-3,471-10,007)	5,159 (-4,206-14,524)
Additional Total costs	Reference	-739 (-2,226-788)	-649 (-3,006-1,709)	-85 (-2,342-2,171)	-90 (-1,569-1,389)	-659 (-2,113-800)	-681 (-2,213-851)	1,327 (-987-3,640)	1,000 (-676-2,676)	1,591 (-1,246-3,427)	980 (-559-2,510)	997 (-1,014-3,007)

