Clinical Implications and Cost Effectiveness of Index Admission Cholecystectomy in Acute Biliary Pancreatitis; A Study in an Inner City Minority Population

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Introduction

Acute Pancreatitis (AP) in the United States is a common gastrointestinal cause of hospitalization, which is associated with significant morbidity and healthcare expense. Epidemiological data from National Hospital Discharge Survey has shown previously that from 1988 to 2003, hospital admissions for AP had increased from 40 per 100,000 in 1998 to 70 per 100,000 in 2002.

Alcohol ingestion and gallstones account for over 80% of acute pancreatitis. The timing of laparoscopic cholecystectomy after an attack of acute biliary pancreatitis (ABP) is controversial. Those diagnosed with mild AP are strongly recommended to have cholecystectomy which ideally should be performed before discharge to prevent recurrence.

We conducted a single center retrospective study on patients who presented with AP secondary to gallstones/microlithiasis addressing the impact of early same-admission cholecystectomy (SAC) on recurrence of AP , healthcare costs and readmissions to hospital- when compared to deferred cholecystectomy (DC)]. Our aim was to further validate performing index cholecystectomy in patients with acute pancreatitis

Methods

We performed a chart review of 350 patients admitted with diagnosis of AP between 2011 to 2016. The study population (n=57) included those diagnosed with ABP. Patients who were classified as having severe AP (as per the revised Atlanta Classification), patients with other possible etiologies of AP (like alcohol, hypertriglyceridemia, iatrogenic/ drugs, malignancy) and those who underwent prior cholecystectomy were excluded from the study. The primary aim of the study was to look at the impact of SAC on preventing recurrence of AP and readmissions to the hospital - when compared to DC. We also looked at the cost of hospitalization and lengths of stay in cases of readmissions. Statistical analysis of the included; t-test analysis for continuous variables and fisher exact test for categorical variables.

Variable	Same Admission Cholecystectomy (SAC)	Deferred Cholecystectomy (DC)	P-Value
Age (± SD)	51.77 (± 14.55)	64.59 (± 19.25)	**0.0068**
Sex Male (%) Female (%)	13 (48.2%) 14 (51.8%)	11 (36.6) 19 (63.3)	**0.3806**
Ethnicity Hispanic (%) African American (%) Caucasian (%)	12 (44.4%) 10 (33.3%) 5 (16.6%)	15 (50%) 13 (43.3%) 2 (6.7%)	**0.3950**
Duration of Admission	6.30 (± 2.65)	5.92 (±3.96)	**0.6755**

Table 1: Variables of Study Groups SAC and DC; Age, Sex, Ethnicity, Duration of Admission, Calculated using T-test Analysis and Fisher Exact test.

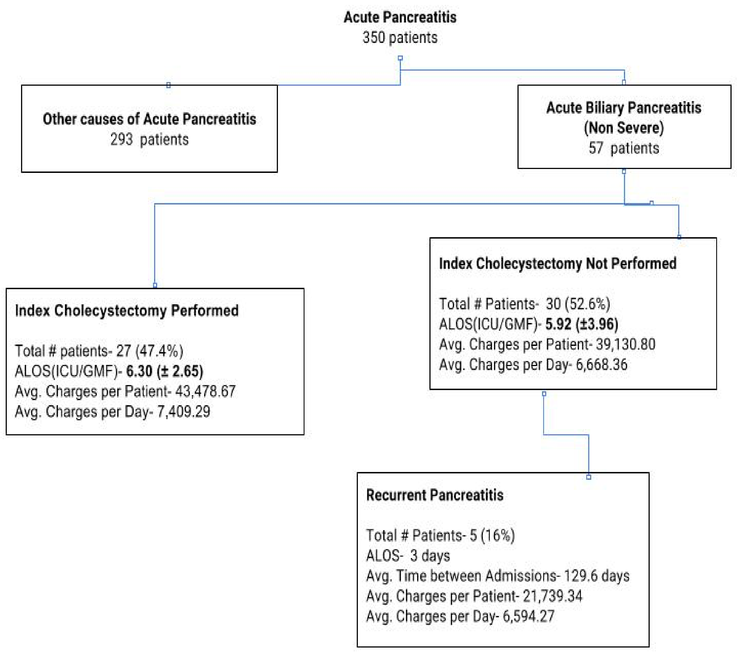

Table 2: Flow Chart of Study Groups; Average Length of Stay(ALOS), Healthcare Charges- Per Patient and Per Admission (length of stay adjust to NYSHD data).

Results

The average length of stay in the SAC group was **6.30 (SD± 2.65)** days while it was **5.92 (SD±3.96)** days in the DC group (p-Value 0.6755). The average cost of the index admission in SAC group was 43,478.67, while the DC group average cost was 38,696. The cost of admission was calculated using average diagnosis related group as reported by New York State Health Department (NYSHD), adjusted to incorporate average between all types of payee options nationwide and adjusted according to length of stay for same DRG as reported by NYSHD. Our DC group underwent elective outpatient cholecystectomy with average time from discharge being 24 days. None of the patients in the SAC group had readmissions for acute pancreatitis, while 5 patients in the DC group were admitted to the hospital with recurrent BAP. The average time to readmission for these patients was 129.6 days. Those who had been re-admitted had average length of the stay of 3 days, with an average cost of the readmission of 21,739.34 dollars per patient.

Conclusion

Our study addresses the need to perform index cholecystectomies to prevent recurrent ABP. As seen in our study population there had been no reported complications after index laparoscopic cholecystectomy. Those who had been referred for outpatient gallbladder removal- 16% were readmitted on average four months (129.6 days) after discharge with recurrent pancreatitis requiring to stay on average 3 days inpatient. We strongly believe, as shown, performing index cholecystectomies reduces readmission rates for recurrent pancreatitis, decreasing overall morbidity, and decreasing overall healthcare cost.

Citations

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