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Management of acute mild gallstone pancreatitis under acute care surgery: should patients be admitted to the surgery or medicine service?



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Abstract

BACKGROUND: We hypothesized that patients with acute mild gallstone pancreatitis (GSP) admitted to surgery (SUR; vs medicine [MED]) had a shorter time to surgery, shorter hospital length of stay (HLOS), and lower costs.

METHODS: We performed chart reviews of patients who underwent a cholecystectomy for acute mild GSP from October 1, 2009 to May 31, 2013. We excluded patients with moderate to severe and non-gallstone pancreatitis. We compared outcomes for time to surgery, HLOS, costs, and complications between the 2 groups.

RESULTS: Fifty acute mild GSP patients were admitted to MED and 52 to SUR. MED patients were older and had more comorbidity. SUR patients had a shorter time to surgery (44 vs 80 hours; $P < .001$), a shorter HLOS (3 vs 5 days; $P < .001$), and lower hospital costs ($\$11,492 \pm 6,480$ vs $\$16,183 \pm 12,145$; $P = .03$). In our subgroup analysis on patients with an American Society of Anesthesiologists score between 1 and 2, the subgroups were well matched; all outcomes still favored SUR patients.

CONCLUSIONS: Admitting acute mild GSP patients directly to SUR shortened the time to surgery, shortened HLOS, and lowered hospital costs.

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Several current reports in the literature¹⁻⁵ support an “early” cholecystectomy for patients who present with acute mild gallstone pancreatitis (GSP) because of an

associated 18% readmission rate¹ due to biliary-related diseases. An “early” cholecystectomy usually implies one within the same initial hospital admission or what is often referred to as an “index cholecystectomy” (vs delayed-interval cholecystectomy). Yet, many acute mild GSP patients have multiple concurrent comorbidities; these comorbidities may influence emergency department (ED) physicians’ decisions to choose the medicine service (MED) over the surgery service (SUR) for admission.

The authors declare no conflicts of interest.

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Two previous studies^{6,7} comparing outcomes for acute mild GSP patients admitted to SUR vs MED drew differing conclusions.

Since the establishment of the field of acute care surgery (ACS),⁸⁻¹² several studies have published its benefits of in terms of improving ED work flow,¹³ along with decreasing surgical evaluation time, shortening hospital length of stay (HLOS),¹⁴⁻¹⁸ and lowering hospital costs.^{14,18} With our current health care system's continued financial constraint, it is important for clinicians to not only provide high-quality of care but also improve efficiency and lower hospital costs.

The evidence in the literature is limited regarding the possible differences in outcomes for acute mild GSP patients seen in the ED and then admitted to MED vs SUR. In this study, we hypothesized that admission directly to SUR (instead of MED) will shorten the time to surgery, shorten HLOS, and perhaps lower hospital costs.

Methods

Study design and setting

We conducted this study at the University of Arizona (Tucson, AZ), a level I trauma center and a tertiary care center. The study was approved by our institutional review board. Using our ongoing prospective ACS database, we reviewed the charts of patients who underwent a cholecystectomy for acute mild GSP from October 1, 2009 through May 31, 2013. Our hospital has about 73,000 annual patient visits; our ACS service handles about 2,000 annual emergency general surgery consultations, both from the ED and on an inpatient basis.

Patients

Patients were diagnosed with acute GSP if they had, according to the definition of the International Symposium on Acute Pancreatitis in Atlanta in 1992,¹⁹ acute upper abdominal pain and tenderness, an elevated serum amylase level (ie, at least 3 times the normal level), and imaging evidence of gallbladder stones. Acute mild GSP was defined

as described previously plus minimal organ dysfunction with less than 3 Ranson criteria²⁰ or an Acute Physiology and Chronic Health Evaluation II score < 8.²¹

All the patients in our study were initially seen and evaluated through the ED and subsequently admitted to either MED or SUR. For patients admitted to MED, an ACS consultation was obtained after they were admitted to MED. Excluded from our study were patients with moderate to severe pancreatitis, as well as patients with pancreatitis that was not related to gallstones.

Variables and outcomes

The data we collected included baseline characteristics, such as demographics, body mass index, comorbidities (specifically a history of diabetes, hypertension, and coronary disease), Acute Physiology and Chronic Health Evaluation II score, American Society of Anesthesiologists (ASA) physical status score, and operative details and findings (including the rate of conversion to an open cholecystectomy). We also identified outcomes, including which patients underwent magnetic resonance cholangiopancreatography (MRCP) or endoscopic retrograde cholangiopancreatography (ERCP), either before or after their cholecystectomy.

We then compared outcomes between patients admitted to MED vs SUR. Our primary outcomes were time to surgery (ie, the time interval from ED arrival to operating room arrival) and HLOS. Our secondary outcomes were hospital costs and complications. We obtained hospital costs from our hospital cost accounting system (Eclipsys Corporation, Chicago, IL). These costs did not include third-party professional fee, which included daily evaluation and management fee, and/or procedural physician fees. We reviewed the charts for all clinic follow-up visits, return ED visits, and readmissions. For postoperative complications, we used the definition developed by Aboulian et al² in their randomized controlled study of acute mild GSP patients who underwent either an early cholecystectomy (<48 hours after ED arrival) or a delayed cholecystectomy; their definition of complications included bile duct injury,

Table 1 Baseline characteristics for all patients

Characteristic	MED (n = 50)	SUR (n = 52)	P
Age, mean ± SD (years)	58 ± 16	45 ± 22	.001
Male (%)	52	20	<.001
Body mass index, mean ± SD (kg/m ²)	32 ± 8	31 ± 8	.48
History of diabetes, yes (%)	20	23	.71
History of coronary disease, yes (%)	24	10	.05
History of hypertension, yes (%)	56	37	.02
APACHE II score, median (IQR)	7 (5-10)	5 (3-8)	.02
Cholecystectomy (%)	82	94	.10
ASA score, median (IQR)	3 (2-3)	2 (2-2)	<.001

APACHE II = Acute Physiologic and Chronic Health Score; ASA = American Society of Anesthesiologists physical status; IQR = interquartile range; MED = admission directly to medicine service; SD = standard deviation; SUR = admission directly to surgery service.

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