Table 1. Adverse Pregnancy Outcomes by Treatment Status and by Trimester of Presentation

Outcomes	Cholecystectomy	No cholecystectomy	Odds ratio, 95% CI
Trimester 1	N = 912	N = 991	
APO, % [95% CI]	35.6 [32.5–38.9]	36.9 [33.9–40]	0.9 [0.7–1.1]
Trimester 2	N = 528	N = 618	
APO, % [95% CI]	18.8 [15.6–22.4]	20.2 [17.2–23.7]	0.8 [0.6–1.1]
Trimester 2	N = 122	N = 734	
APO, % [95% CI]	7.4 [3.6–13.9]	21.8 [18.9–25]	0.2 [0.1–0.4]

The Impact of Guideline-Concordant Management of Cholecystitis During Pregnancy

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INTRODUCTION: Management of cholecystitis during pregnancy balances the risk of adverse pregnancy outcomes (APO; fetal loss and preterm delivery) with cholecystectomy vs nonoperative management, and this risk may vary across trimesters. Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) recommends cholecystectomy across trimesters. However, evidence on trimester-specific risk of APO and guideline adherence is limited. We assessed cholecystitis treatment–attributable risk of APO across trimesters and potential impact of guideline adherence.

METHODS: Retrospective study using the Truven MarketScan Databases (2007 to 2019). APO, trimesters (T1, T2, T3), and cholecystectomy were defined by administrative claims. Propensity score inverse probability weighting was used to calculate treatment-attributable risk of APO. National estimates of pregnancy and cholecystitis were used to model the impact of guideline adherence.

RESULTS: Among 3,905 pregnant patients (mean age 30 years) with cholecystitis, 40% underwent cholecystectomy (47.9% of those presenting in T1, 46.1% in T2, and 14.1% in T3). Unadjusted rate (Table 1) and adjusted odds of APO were 10% to 80% lower for patients who received cholecystectomy across trimesters (CI included 1 in T1 and T2). Based on current guideline concordance (40%) and the number needed to treat to avoid APO (1,562), with 100% guideline concordance modeled, estimates suggest there would be 1,302.9 additional cholecystectomies per year across the US to avoid 0.8 APO/y.

CONCLUSION: The small, incremental effect of cholecystectomy on APO across trimesters supports the SAGES guideline. However, given the infrequency of APO, greater adherence to this guideline would expose thousands of women to operation to avoid a relatively small number of APOs.

The Multitudinous Forms of Postoperative Multimodal Analgesia: A Pennsylvania NSQIP Program Study

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INTRODUCTION: Amid the opioid epidemic, policymakers have advocated for postoperative nonopioid (ie multimodal) analgesia to reduce opioid use, including through new Centers for Medicare & Medicaid Services quality measures. However, limited guidelines exist for multimodal analgesia. We sought to characterize postoperative multimodal regimens and identify predictors of multimodal therapy.

METHODS: A retrospective analysis was conducted of general, orthopaedic, vascular, and obstetric surgical procedures performed at Pennsylvania institutions in American College of Surgeons NSQIP from September 2019 to February 2020. Postoperative multimodal analgesia was defined as using ≥1 nonopioid analgesic; regimens including ≥2 nonopioid analgesics or a regional block were designated as "intensive" multimodal. Descriptive analyses were performed to characterize multimodal regimens. Multivariable logistic regression models adjusted for patient factors were used to identify predictors of any multimodal and intensive multimodal.

RESULTS: Of 2,608 patients, 1,842 (70.6%) received any multimodal and 59% received intensive multimodal. There were 126 different regimens (Fig. 1)**.** A median of 2 (interquartile range 0 to 3) multimodal agents were used, varying by procedure from 0 (aortoiliac/infrainguinal bypass, cholecystectomy) to 3 (colectomy, hysterectomy, total hip/knee replacement). Odds of multimodal use were lower among Hispanic vs non-Hispanic patients (odds ratio [OR] 0.38 [95% CI 0.21 to 0.70], p = 0.002). Procedures including total hip/knee replacement (OR 4.25 [95% CI 1.79 to 10.09], p = 0.001) had higher odds of multimodal use compared with appendectomy; others, including aortoiliac/infrainguinal bypass (OR 0.10 [95% CI 0.05 to 0.22], p < 0.001), had lower odds. Similar results were observed for intensive multimodal.

CONCLUSION: Adherence to postoperative multimodal use was high overall. However, approaches to achieving this varied widely across patients and procedures, highlighting the need for further research to understand the safety and efficacy of current approaches.

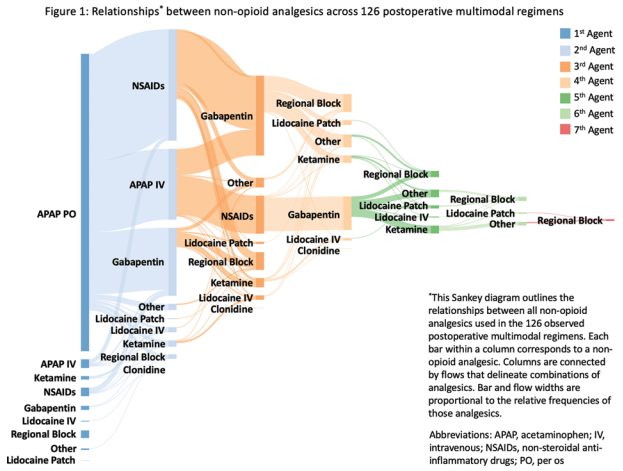

Figure 1.

The Prevalence of Umbilical Hernia in Adult Surgically Naive Patients

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INTRODUCTION: Umbilical hernia in adults is most commonly acquired in patients with conditions that increase intra-abdominal pressure, such as pregnancy, obesity, ascites, or chronic abdominal distention. Although the incidence of umbilical hernia is known, the prevalence in patients who are surgically naive has not been reported.

METHODS: Retrospective chart review of all patients with a CT abdomen and pelvis from September to October 2017 was performed. Patients with an abdominal surgical history were excluded. CT reports and images were reviewed for evidence of a fascial defect at the umbilicus and prevalence was calculated. Past medical and social history was analyzed to identify independent factors that increase a patient's odds of having an umbilical hernia.

RESULTS: A total of 500 patients with CT abdomen and pelvis scans were reviewed: 183 of 500 were included in the study; 119 of 183 had evidence of fascial defect at the umbilicus. Univariate analysis revealed independent statistically significant risk factors that included age, hypertension, diabetes, congestive heart failure, coronary artery disease, asthma, alcohol use, and BMI. Using a multivariate logistic regression model, age, asthma, and BMI were significant risk factors for the presence of an umbilical hernia.

CONCLUSION: The estimated prevalence of umbilical hernia in this small population of surgically naive patients is 65% based on CT findings. Statistically significant risk factors after multivariate logistic regression include age, history of asthma, and increasing BMI (Table 1). Given that this is a small, retrospective observational study, further research is needed to elucidate the true prevalence in the general adult population.

Table 1. Multivariate Logistic Regression Analysis

Variable	Odds ratio (95% CI)	p Value
Age	*1.026 (1.002–1.052)*	*0.0334*
Hypertension	0.801 (0.33–1.93)	0.6211
Diabetes	1.083 (0.40–3.07)	0.8768
Congestive heart failure	5.547 (0.89–108.72)	0.1235
Coronary artery disease	5.802 (0.86–119.59)	0.1274
Asthma	*6.464 (1.77–31.83)*	*0.0094*
Alcohol	0.742 (0.34–1.60)	0.4474
BMI	*1.097 (1.04–1.16)*	*0.0007*

The Risk of Mortality in Elderly Patients with Emergently Admitted Appendicitis Is Approximately 22 Times Higher Than That in Nonelderly Adult Patients: A Retrospective Analysis of 339,917 Patients

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INTRODUCTION: Our goal was to identify risk factors for mortality in patients admitted emergently with appendicitis.

METHODS: The data set for the patients admitted emergently with appendicitis was obtained from the National Inpatient Sample, 2005 to 2014. Predictors of mortality were evaluated using multivariable logistic regression with backward elimination.

RESULTS: A total of 339,917 patients were studied. Mean age was 37.7 and 73.8 years in nonelderly adult and elderly patients, respectively; 97.3% of nonelderly adults and 94.2% of elderly patients underwent an operation. The mortality rate in the elderly patients (1.04%, n = 402/38,509) was 22 times higher ($p < 0.0001$) than that in nonelderly adult patients (0.047%, n = 144/301,408). Mean (SD) hospital length of stay (HLOS) was 2.6 (2.9) days in nonelderly adults and 4.9 (5.2) days in elderly patients ($p < 0.0001$). It means 99% of nonelderly adult and elderly patients were discharged within 11 and 20 days after emergent hospitalization, respectively. In final regression model (Table 1), every 1 year older increased the odds of mortality by 5% (odds ratio [OR] 1.05, 95%CI 1.04 to 1.06, $p < 0.001$) and every 1-day longer HLOS increased the odds of mortality by 1% (OR 1.01, 95% CI [1.001 to 1.02], $p < 0.001$, Table 1). Cardiac disease (OR 5.33, 95%CI 4.13 to 6.89, $p < 0.001$), respiratory disease (OR 4.23, 95% CI 3.39 to 5.29, $p < 0.001$), trauma/burn/poisoning (OR 2.88, 95% CI 2.33 to 3.56, $p < 0.001$), bacterial infection (OR 2.83, 95% CI 2.31 to 3.47, $p < 0.001$) and liver disease (OR 2.23, 95% CI 1.60 to 3.10, $p < 0.001$) were the strongest predictors of mortality in decreasing order of strength. Operation reduced the odds of mortality by 62% (OR 0.38, 95% CI 0.28 to 0.53, $p < 0.001$; Table 1).

CONCLUSION: Elderly patients admitted emergently with appendicitis are at significantly increased risk of mortality due to age and HLOS.