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## Reconsidering Perioperative Antibiotic Use in Elective Laparoscopic Cholecystectomy

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# Reconsidering Perioperative Antibiotic Use in Elective Laparoscopic Cholecystectomy

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 **Resident/Psychology Intern ( $\leq 1$  month of dedicated research time)**  
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**IRB Number:** STUDY00001490

**Describe role of Submitting/Presenting Trainee in this project (limit 150 words):**

**Kayla Briggs was responsible for project design, creation of data collection forms, data collection, data analysis, and abstract preparation.**

**Background, Objectives/Goal, Methods/Design, Results, Conclusions limited to 500 words**

**Background:** As rates of antimicrobial resistance increase, the use of prophylactic perioperative antibiotics (PPA) has been questioned in cases with a low risk of surgical site infection (SSI). In laparoscopic cholecystectomy performed for biliary dyskinesia, hyperkinetic gallbladder, and gallbladder polyps, the use of PPA varies with no widely accepted practice pattern.

**Objectives/Goal:** We examined institutional PPA usage and SSI rates for elective laparoscopic cholecystectomy to determine if PPAs are indicated.

**Methods/Design:** Following IRB approval, children  $<18$  years old who underwent outpatient laparoscopic cholecystectomy between 7/2010 and 8/2020 for symptomatic cholelithiasis, biliary dyskinesia, hyperkinetic gallbladder, and/or gallbladder polyps were included. Several surgeons changed practice to selective PPA use in 2016, decreasing the overall rate of use for elective laparoscopic cholecystectomies. SSI was defined as clinical signs of infection, requiring antibiotics within 30 days of surgery. Outcomes were compared between patients who did not receive PPA. Data were analyzed with STATA®; a p-value  $\leq 0.05$  was significant.

**Results:** In total, 537 patients met the inclusion criteria. Baseline characteristics, including age (15.2 years [13.4,16.7] versus 15.9 years [13.7,17.6],  $p=0.3$ ), gender ( $p=0.9$ ), BMI ( $p=0.3$ ), ethnicity ( $p=0.7$ ), preoperative diagnosis ( $p=0.8$ ), and type of PPA used ( $p=0.3$ ), were not different between those who did and did not develop SSI. Twelve of 209 patients (5.7%) who did not receive PPA developed SSI compared to 5 of 328 (1.5%) who received PPA. From 2016, the SSI rate was 0% with PPA use versus 4% in those who did not receive PPA. One child required readmission for SSI, two required incision and drainage (11.8%), and the remainder were treated with outpatient antibiotics (88.2%). On multivariate analysis, the use of PPA was shown to decrease the rate of SSI by 83% ( $p=0.003$ , Table 1).

**Conclusions:** Children who do not receive perioperative prophylactic antibiotics for elective laparoscopic cholecystectomy are more likely to develop an SSI. However, most were successfully managed as outpatients. Therefore, the risk of routine antibiotic administration should be carefully weighed when compared to the rate of SSI.

**Table 1. Logistic Regression for Surgical Site Infection in Elective Laparoscopic Cholecystectomy.**

Variable	Odds Ratio	Confidence Interval (95%)	p-value
Age (years)	1.00	[0.97,1.02]	0.82
Gender	0.86	[0.26,2.83]	0.81
Ethnicity (Caucasian as reference)			
African American	1	-	-
Hispanic	0.64	[0.32,8.23]	0.55
Asian	1	-	-
Other	3.13	0.62,15.89]	0.17
BMI (kg/m <sup>2</sup> )	0.99	[0.93,1.06]	0.86
Pre-operative diagnosis (symptomatic cholelithiasis as reference)			
Biliary dyskinesia	1.56	[0.52,4.68]	0.43
Hyperkinetic gallbladder	1	-	-
Gallbladder polyps	1	-	-
Surgery before or after 2015	0.42	[0.14,1.25]	0.12
Case duration (minutes)	1.01	[0.98,1.03]	0.54
Perioperative antibiotic administration	0.17	[0.05,0.55]	<b>0.003</b>