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# Postoperative antibiotics are not associated with decreased wound complications among patients undergoing appendectomy for complicated appendicitis



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## KEYWORDS:

Appendicitis;  
Complicated;  
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Postoperative  
Antibiotics;  
Complications

## Abstract

**BACKGROUND:** The objective of this study was to determine the role of postoperative antibiotics in reducing complications in patients undergoing appendectomy for complicated appendicitis.

**METHODS:** We performed a 5-year retrospective cohort study of adult patients who underwent appendectomy for acute appendicitis. Patients with complicated appendicitis (perforated or gangrenous) were analyzed on the basis of whether they received postoperative antibiotics. Main outcome measures were wound complications, length of stay (LOS), and readmission to hospital.

**RESULTS:** Of 410 patients with complicated appendicitis, postoperative antibiotics were administered to 274 patients (66.8%). On univariate and multivariate analyses, postoperative antibiotics were not associated with decreased wound complications or readmission, but independently predicted an increased LOS ( $P = .01$ ).

**CONCLUSIONS:** Among patients with complicated appendicitis, postoperative antibiotics were not associated with a decrease in wound complications but did result in an increased hospital LOS.

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Acute appendicitis is one of the most common acute surgical emergencies worldwide. In the United States alone, acute appendicitis affects 250,000 individuals annually, and the overall lifetime risk for acute appendicitis is estimated to be 6% to 20%.<sup>1,2</sup> Complicated appendicitis, defined as the intraoperative finding of gangrenous or perforated appendicitis, may occur in up to one-third of patients

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**Table 1** Baseline characteristics of patients

Variable	Postoperative antibiotics (n = 274)	No postoperative antibiotics (n = 136)	P value
Age	38 ± 14	35 ± 14	.09
Male sex	193 (70)	101 (74)	.42
Comorbidities			
Diabetes mellitus	23 (8)	15 (11)	.39
CAD	0	3 (2)	.01
HIV/AIDS	5 (2)	1 (.7)	.39
Duration of pain, h	48 (24–72)	48 (24–72)	.99
Admission vitals			
Temperature, °F	99.0 ± 1.4	98.8 ± 1.3	.22
Heart rate, bpm	89 ± 17	87 ± 16	.26
Systolic BP	118 ± 14	119 ± 14	.51
Respiratory rate	19 ± 1	19 ± 2	.76
Physical examination			
Guarding	185 (68)	49 (58)	.06
Peritonitis	4 (2)	1 (.7)	.53
Admission laboratory			
WBC count, ×10 <sup>6</sup> /L	16.1 ± 5.3	15.7 ± 4.5	.37
Bands, %	12 (6–20)	10 (6–22)	.93
Lactate, mmol/L	1.8 ± 1.2	1.8 ± .9	.91
Sepsis	45 (16)	22 (16)	.95
Severe sepsis	34 (12)	19 (14)	.66
Time to surgery, h	17 ± 9	17 ± 8	.90

BP = blood pressure; bpm = beats per minute; CAD = coronary artery disease; HIV/AIDS = human immunodeficiency virus/autoimmune deficiency syndrome; WBC = white blood cell.

presenting with acute appendicitis.<sup>3–5</sup> Complicated appendicitis has been associated with worse outcomes including an increased incidence of postoperative surgical site infections (SSIs).<sup>6</sup> As a result, postoperative antibiotics are commonly administered for a variable duration of time in patients who have undergone appendectomy for complicated appendicitis.

There are limited data regarding the efficacy of postoperative antibiotic use in decreasing the incidence of postoperative SSIs in patients undergoing appendectomy for complicated appendicitis. We hypothesized that postoperative antibiotics would not be associated with a decrease in the incidence of postoperative wound complications among patients undergoing appendectomy for complicated appendicitis.

## Methods

This study was approved by the Human Subjects Committee of the Los Angeles Biomedical Research Institute at Harbor–UCLA Medical Center and the Institutional Review Board at Olive View–UCLA Medical Center. All adult patients (age ≥ 18 years) undergoing appendectomy for acute appendicitis at either Harbor–UCLA or Olive View–UCLA medical centers over a 5-year study period (July 2009 to February 2014) were considered for inclusion in the study. Both institutions are academic, university-affiliated county hospitals. Patients were excluded if they were undergoing an interval appendectomy, pregnant, or diagnosed with an

appendiceal malignancy. Patients were also excluded if pathology reports indicated that the appendix was either not inflamed or had evidence of subacute or chronic inflammation. Complicated appendicitis was defined as the intraoperative identification of perforated or gangrenous appendicitis. Perforated appendicitis was defined as the presence of an appendiceal luminal disruption, visible hole in the appendix, or evidence of a fecalith outside the appendix, whereas gangrenous appendicitis was defined as the presence of gray or black discoloration of the appendiceal wall in the absence of perforation. Patients with complicated appendicitis were compared with patients with uncomplicated or simple appendicitis. As per institutional protocol and in accordance with Surgical Care Improvement Project measures, all patients undergoing appendectomy were administered appropriate prophylactic antibiotics within 1 hour of incision.

Variables analyzed included patient age, sex, comorbidities, duration of pain, associated symptoms, physical examination findings, admission laboratory values, radiographic findings, time from admission to operation, operative approach (laparoscopic vs open), and intraoperative as well as pathologic findings. The primary outcome measure was the incidence of postoperative wound complications defined as superficial SSIs (sSSIs) or deep SSIs (dSSIs). Secondary outcomes included length of stay (LOS) and readmission to hospital.

Statistical analyses were conducted using SPSS (SPSS, Chicago, IL). Descriptive statistics were calculated for all variables. Bivariate analysis was performed to determine the association between postoperative antibiotic use and

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