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**Reference Article:** Khalil, Mazhar et al. Antibiotics for appendicitis! Not so fast. Journal of Trauma and Acute Care Surgery June 2016, Vol 80, No. 6, 923-932.

**Question:** How is patient outcome affected by nonoperative management of acute appendicitis with antibiotics compared to operative management?

**Introduction:** Although this study comes from acute care surgery, it has high utility for Emergency Physicians as we deal with abdominal pain complaints with high frequency in the ED. Appendicitis is frequently on our differential as it often requires surgical intervention for definitive management due to progression of disease course-specifically advancement to abscess formation and perforation with risk of systemic infection. However, there has been a resurgence of antibiotic therapy alone as definitive treatment for acute appendicitis. This study sought to compare antibiotic therapy alone vs operative intervention for acute appendicitis and patient outcome.

**Methods:** This study was a retrospective analysis of National Inpatient Sample (NIS) database from 2004-2011. The study included all patients admitted to hospital with appendicitis using ICD 9 coding. Those with appendiceal abscess or who underwent any other major surgery during admission were excluded. The study population was divided into two groups: operative and nonoperative. These groups were further broken down into subgroups for purpose of subanalysis into pediatrics (less than or equal to 18), adult (19-64), and elderly (65 and older). Data such as race, gender, mode of presentation, operative approach, length of stay, and complications were later abstracted. Complications were defined as UTI, pneumonia, sepsis, DVT or PE, respiratory dysfunction, C. diff, reoperations, and acute renal failure.

**Results:** A total of 436,400 patients were included in the study. Of those 95% underwent operative intervention and 5% were managed conservatively with antibiotics. Those that received operative intervention were younger, likely to be male, and had less severe progression of disease. Across the entire study population, 8% developed complications with UTI (1.7%) and acute renal failure (1.6%) accounting for the most common complications and the non-operative group had higher rate of complications (7% vs 27.8%). However, the sicker and more elderly patients tended to be those receiving a trial of conservative management. The total length of stay and in hospital complications were higher in the non-operative group but in hospital charges were higher in the operative group.

**Discussion:** The idea of antibiotics alone for appendicitis can be dated back to 1956. Since that time early surgical intervention has remained the preferred method of definitive treatment for acute appendicitis. However, many recent studies have compared the two options head to head and found that conservative management alone seems to be a plausible solution. The RCT's that have been performed show about 2/3 of those who receive antibiotics alone achieve complete resolution while 1/3 or so fail and require appendectomy within one year. This study was very interesting in that it had a very large sample size and was able to show many intriguing variables such as an increase in the use of non-operative management from 2004-2011. While the study did show increased complications and hospital stay in the non-operative group vs operative

group these patients tended to be older and sicker. Also, it is interesting that despite the higher rate of complications and hospital stays those with non-operative management tended to have lower in hospital charges. It is important to note that this is a retrospective study and not an RCT. As for the effect on my clinical practice, I do not feel that this changes what I do. I will still obtain a CT of the abdomen/pelvis to confirm diagnosis of appendicitis as well as rule out complicated appendicitis. I will leave the choice of surgery vs antibiotics alone to the surgeon. However, I hope that the consulted surgeon is considering the option of antibiotics alone in a patient with uncomplicated appendicitis.

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