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APPENDECTOMY OR ANTIBIOTICS:
A COMPARATIVE REVIEW OF THE TREATMENT METHODS

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For over a century, appendectomy has been the standard treatment for acute appendicitis, the most common abdominal surgical emergency. But recent studies suggest antibiotics alone might be a safe alternative for selected patients. This literature analysis focuses on the two trials that have defined the modern basis for clinical decision making: the CODA (Comparison of Outcomes of Antibiotic Drugs and Appendectomy) trial, which examined short-term patient-centered outcomes, and the 10-year follow-up of the APPAC (Appendicitis Acuta) trial, which offers the longest available data on recurrence and complications. The aim is to compile and compare findings from these trials and other relevant literature to improve clinical decision-making for uncomplicated acute appendicitis.

The CODA trial (2020) was a non-blinded, non-inferiority effectiveness randomized controlled trial conducted across 25 U.S. centers (1,552 patients) which found that an antibiotics-first strategy was non-inferior to appendectomy based on 30-day health status. Benefits included fewer missed workdays (5.3 vs. 8.7) and 47% direct discharge from the emergency department. However, 29% of antibiotic-treated patients required appendectomy within 90 days—41% among those with an appendicolith. Overall complication rates were higher with antibiotics (8.1 vs. 3.5 per 100 participants), of which the appendicolith subgroup accounted for a greater proportion (20.2 vs. 3.6). A meta-analysis of six trials involving 2,101 patients revealed lower confirmed one-year treatment success with antibiotics (73.8% vs. 98.1% for surgery), with appendicolith linked to failure rates up to 46%.

Now turn to the APPAC 10-year follow-up (2026). This study involved 530 adults with Computed Tomography (CT)-confirmed uncomplicated appendicitis (2009–2012). With 98.4% retention in the antibiotic group (253 patients), it showed a true recurrence rate of 37.8% and a cumulative appendectomy rate of 44.3% over 10 years. Notably, the overall complication rate was significantly lower with antibiotics (8.5% vs. 27.4% for surgery), while quality of life remained equivalent. A 2025 cost-utility analysis found antibiotics to be a cost-saving strategy compared to surgery, and an impact analysis projected that broader use of antibiotics in selected patients would reduce overall healthcare costs and prevent many appendectomies. It is worth noting that an antibiotics-first strategy initiated at the first day of pain may prove more costly than immediate surgery, particularly for patients who experience recurrence or complications that necessitate subsequent hospital readmission and intervention. Also, it is important to note that a 2025 pediatric systematic review highlights that adult findings may not translate to children, where antibiotic failure rates are higher (~36.6% at one year).

CODA and APPAC trials are complementary. While APPAC reveals long-term trade-offs, CODA demonstrates that antibiotics-first offers short-term safety and patient benefits: over half avoid surgery over a decade, but recurrence reaches approximately 38% (cumulative appendectomy approximately 44%). In Belarus, 16.2% of cases involve open surgery (complicated or impractical), 83.6% involve laparoscopy (uncomplicated cases) and antibiotics-first is not routine. In Belarusian practice, laparoscopy leads to 0.9% complications vs. open surgery's 13.1%. In Belarusian practice, 16.2% of cases involve open surgery (complicated or impractical), 83.6% involve laparoscopy (uncomplicated cases). Only 20–30% of *E. coli* strains are fully sensitive, which raises concerns about local resistance. Therefore, antibiotics-first is appropriate for adults without appendicolith who prioritize avoiding surgery and accept the risk of recurrence, while appendectomy is preferred for those with appendicolith or a strong need for certainty. However, given children's higher failure rates and resistance, all factors should be carefully evaluated.