**Publisher Name: ZenToks Publication**
**Editorial Book: Emerging Trends in Medical Research and Practice**
**ISBN: 978-81-986895-9-7**

**Chapter 10**

# Non-Operative Treatment for Acute Uncomplicated Appendicitis: Review

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## Abstract

Acute uncomplicated appendicitis has traditionally been managed by early appendicectomy; however, growing evidence has challenged this paradigm, highlighting the potential role of non-operative treatment (NOT), primarily with antibiotics, as a viable alternative. NOT is associated with reduced immediate postoperative complications, shorter recovery times, and a lower risk of surgical complications. Despite these advantages, concerns remain regarding recurrence, treatment failure, and the potential for missed complicated appendicitis. Recurrence rates following successful initial antibiotic therapy are reported to be between 20% and 40% within five years, necessitating careful patient selection and shared decision-making. This chapter also explores the role of NOT in the management of acute uncomplicated appendicitis in adults, children, and the elderly, looking especially at its efficacy, recurrence rate, and complications in these groups. While appendicectomy remains the definitive treatment with near-zero recurrence rates, NOT offers a safe and effective alternative for selected patients, particularly those wishing to avoid surgery or those with increased operative risk.

**Keywords:** Acute Appendicitis, Appendicolith, Antibiotics, Conservative treatment, Non-operative treatment, Uncomplicated Appendicitis, and Recurrence.

## Introduction

Acute Appendicitis is a common acute abdominal condition that is characterized by inflammation of the appendix. It is observed in patients in the 20- to 30-year age group, with a slightly higher incidence in males compared to females. The clinical presentation of acute appendicitis is that of central abdominal pain that radiates to the right iliac fossa, and it is associated with nausea and vomiting (Krzyzak, 2020). The diagnosis of acute appendicitis involves the clinical examination of the patient and the use of inflammatory markers, such as the presence of leukocytosis and raised inflammatory markers like C-Reactive Protein(CRP). Imaging modalities like ultrasound or computerized tomography are used if there is a doubt regarding the diagnosis of acute appendicitis. The management of acute appendicitis can be divided into non-operative treatment, which involves the use of antibiotics, and appendectomy, which can be performed as an open or laparoscopic method (Teng, 2021; Echevarria, 2023).

Non-operative treatment for uncomplicated acute appendicitis involves the use of intravenous antibiotics for the first 24 hours, with the patient being fasted for 12 hours followed by gradual oral intake. This is then followed by oral antibiotics. The selection of patients for non-operative treatment is crucial, with monitoring of the total white blood cell count and inflammatory markers, such as C-reactive protein (CRP). Imaging modalities like computerized tomography should document the absence of signs of complicated appendicitis and the absence of appendicolith (Gandy, 2016). Intravenous antibiotics are initially administered, followed by oral preparations, and treatment is continued for 7 to 10 days. Some of the common antibiotic regimes include a third-generation cephalosporin with metronidazole, or single-based regimes like co-amoxycillin, piperacillin-tazobactam, or meropenem (Baana, 2026; Bendib, 2024).

The World Society of Emergency Surgeons (WSES) guidelines for the management of acute appendicitis in 2020 recommend non-operative management for selected patients with acute, uncomplicated appendicitis. There should also be an absence of appendicolith, and the possibility of failure or missed complicated appendicitis should be explained to the patient. Non-operative treatment can be offered to both adult and pediatric patients, but it is not recommended for pregnant patients (Di Saverio, 2020). The Swedish National guidelines for the

**How To Cite:** K.H. Rajah. *Non-Operative Treatment for Acute Uncomplicated Appendicitis.* In J.E. Anieche (Ed). Emerging Trends in Medical Research and Practice. Pages 59-64, 2026. ZenToks Publication, India. ISBN: 978-81-986895-9-7

diagnosis and management of acute appendicitis in adults and children have not recommended non-operative treatment for the management of uncomplicated acute appendicitis (Salö, 2025).

In this Chapter, we will look at the role non-operative treatment plays in the management of uncomplicated acute appendicitis in adults, the pediatric population, and the elderly population. We conducted a literature review using PubMed, the Cochrane Database of Systematic Reviews, Google Scholar, and Semantic Scholar, searching for randomized controlled trials, non-randomized trials, observational and cohort studies, clinical reviews, systematic reviews, and meta-analyses from 1990 to 2026. The following keywords were used: "non-operative treatment", "Conservative treatment", "appendicolith", "antibiotics ", "Acute appendicitis"," uncomplicated appendicitis", and "recurrence". All articles were in English, and all articles were assessed by manual cross-referencing of the literature. Commentaries, case reports, and editorials were excluded from this review. Adult and pediatric patients with acute appendicitis were included in this study, and pregnant patients with acute appendicitis were excluded.

## Discussion

### Non-operative treatment of acute uncomplicated appendicitis in adults

Non-operative treatment of acute appendicitis has seen a surge in its use over the past twenty years. The success rate of non-operative treatment of acute appendicitis is at 68% to 95% of the selected patients. It has the advantage of reduced morbidity, eliminating the risk of complications associated with anesthesia and surgery, and is associated with a shorter hospital stay and lower analgesic usage. It, however, is associated with missing other pathologies in the abdomen, the risk of adverse reactions to antibiotics, and the risk of recurrence (Sakorafas, 2011; M, 2011; S., 2021).A review by Pisano et al on the conservative treatment of acute uncomplicated appendicitis found that it was safe and effective for selected patients with acute uncomplicated appendicitis, but the risk of failure of therapy and the risk of complications like perforated appendix should be explained to the patient (Pisano, 2013).

The NOTA (Non-operative Treatment for Acute Appendicitis) study was a prospective study on the safety and efficacy of non-operative treatment for patients with suspected acute appendicitis, conducted by Di Saverio et al. A total of 159 patients with acute appendicitis underwent non-operative treatment, and they were followed for 2 years. The long-term efficacy of non-operative treatment was 83%, and the long -term recurrence rate was 13.8%. There were no major side effects from non-operative treatment, and this study showed that non-operative treatment was safe and effective in the management of acute appendicitis (Di Saverio S. S., 2014).The Appendicitis Acuta (APPAC) multicenter randomized clinical trial, which compared antibiotic therapy and appendectomy for acute appendicitis, was conducted by Salminen et al. A total of 530 patients were randomized to 257 who underwent antibiotic therapy and 273 who underwent appendectomies. The patients who underwent appendectomy had a success rate of 99.6%(95%CI,98%-100%), while the antibiotic treatment group had a success rate of 72.7% (95% CI,66.8%-78%). The recurrence rate in patients who had undergone antibiotic therapy was 27.3% (95% CI, 22%-32.3%). This study showed that antibiotic therapy was associated with an inferior outcome when compared to appendectomy for acute, uncomplicated appendicitis (Salminen, 2015). A randomized clinical trial comparing antibiotic therapy and appendectomy as the primary treatment of acute appendicitis was conducted by Hansson et al. A total of 260 patients were divided into 106 who underwent antibiotic therapy and 154 who underwent appendectomy. The treatment efficacy was 90.8% for antibiotic therapy and 89.2% for appendectomy. The recurrence rate from antibiotic therapy was 13.1% at 1 year follow up. This study showed that antibiotic therapy was a feasible first-line therapy for acute appendicitis (Hansson, 2009).

The Comparison of Outcomes of Antibiotic Drugs and Appendectomy (CODA) randomized trial to compare antibiotics and appendectomy for acute appendicitis was conducted by Flum et al. A total of 1552 patients were included in this study, with 776 undergoing antibiotic therapy and 776 undergoing appendectomies. There were more complications in the antibiotic group (2.28;95%CL,1.30-3.98), and this is attributed to the presence of appendicolith (5.69;95%CI,2.11-15.38). There was also a 29% recurrence rate at 90 days, and this study concluded that non-operative treatment was inferior to appendectomy in the management of acute appendicitis (Collaborative., 2020).

A systematic review and meta-analysis of randomized controlled trials comparing appendectomy and non-operative treatment for acute appendicitis was conducted by Ansaloni et al. A total of 4 studies with 741 patients were included in this study, and patients who had undergone appendectomy had better efficacy (OR=6.01,95%CI,4.27-8.46), but it was also associated with a higher rate of complications (OR=1.92,95%CI,1.30-2.85) (Ansaloni, 2011).Another systematic review and meta-analyses of randomized controlled trials comparing non-operative treatment and appendectomy for acute appendicitis was conducted by Poprom et al, and they also concluded that appendectomy was associated with better outcomes than non-operative treatment, and the recurrence rate in the non-operative treatment group was 18.2% (Poprom, 2019). A meta-analysis comparing non-operative treatment and appendectomy for acute appendicitis in adults was conducted by Yang et al. A total of 11 studies, involving 2751 patients, were included in this study, with 1463 patients undergoing non-operative treatment and 1288 undergoing appendectomy. Non-operative treatment was associated with a lower effective rate (OR-0.11-0.17), and a higher reoperation rate (5.6,95%CL,3.1%-10.2%), but non-operative treatment was associated with a reduced length of stay in the hospital (Yang, 2019).

A meta-analysis comparing antibiotic treatment and appendectomy for acute appendicitis was conducted by Scheijmans et al. A total of 8 studies with 2101 patients were included in this study, with 1050 undergoing antibiotic therapy and 1051 undergoing appendectomy. At 1-year follow-up, the patients in the antibiotic therapy group had a recurrence rate of 33.9%, and the presence of an appendicolith on imaging was associated with a higher complication rate in the antibiotic therapy group compared to the appendectomy group (15% vs6.3%, OR 2.82, 95% CL 1.11-7.18) (Scheijmans, 2025). A systematic review and meta-analysis comparing antibiotic therapy and appendectomy for acute appendicitis was conducted by Podda et al. A total of 5 randomized controlled trials with 1351 patients were included in this study, with 632 undergoing antibiotic therapy and 719 undergoing appendectomies. Patients who had undergone appendectomy had a higher efficacy rate than those who had received antibiotic therapy (98.3% vs 75.9%), and the recurrence rate following antibiotic therapy was 22.5%. This study concluded that appendectomy was associated with a higher efficacy in the management of acute appendicitis (Podda, 2017). A systematic review and meta-analysis of antibiotic therapy for acute appendicitis was conducted by Prechal et al. Five randomized controlled trials with 1430 patients were included in this study, and the treatment efficacy of antibiotic therapy was 62.2% compared to 96.3% in the appendectomy group. The recurrence rate following antibiotic therapy was 37.4% in 1 year (Prechal, 2019). Another systematic review and meta-analysis comparing non-operative treatment and operative treatment for acute, uncomplicated appendicitis was conducted by De Almeida Leite et

al. A total of 8 studies were included in this study, and there was no significant difference in treatment success between the groups (RR 0.85;95%CL,0.66-1.11), but non-operative treatment was associated with a higher length of hospital stay (RR,1.48;95%CI,1.26-1.70) (de Almeida Leite, 2022).

**Table 1:** Outcomes of Non-Operative Treatment in Acute Appendicitis: Success and Recurrence Rates

| Study Design | Study | Year | Success Rate (%) | Recurrence Rate (%) |
|---|---|---|---|---|
| Randomized Controlled Trial (RCT) | APPAC study-Salminen et al | 2015 | 72.7% (95% CI, 66.8%-78%). | 27.3% (95%CL, 22%-32.3%). |
| Randomized Controlled Trial (RCT) | CODA trial-Collaborative et al | 2020 | 71% | 29% |
| Systematic review & meta-analysis of RCTs | Poprom et al | 2019 | 80% | 18.20% |
| Systematic review & meta-analysis | Prechal et al | 2019 | 62.20% | 37.40% |

Table showing the success and recurrence rate of non-operative treatment in the management of acute appendicitis

## Non-operative treatment of acute uncomplicated appendicitis in children

Non-operative treatment has been introduced for the management of acute, uncomplicated appendicitis in children. The diagnosis of acute, uncomplicated appendicitis should be confirmed by clinical, laboratory investigations, and imaging modalities like ultrasound or computerized tomography. The recurrence rate and risk of complicated appendicitis are factors that can reduce the efficacy of non-operative treatment of acute appendicitis in children (Jumah, 2022; Svensson, 2012). The efficacy of non-operative treatment for children with acute, uncomplicated appendicitis was assessed prospectively by Rodriguez et al. A total of 24 children had undergone non-operative treatment, and the initial success rate was 100%, and the recurrence rate after 12 months was 12.5% (Rodríguez, 2025).A multi-center randomized trial comparing appendectomy and antibiotic therapy for acute uncomplicated appendicitis in children was conducted by St Peter et al. A total of 936 patients were randomized to 459 who underwent an appendectomy and 477 who underwent conservative treatment. The failure rate following non-operative treatment was at 33.8% in 12 months of follow-up compared to 7.1% in the appendectomy group. This study concluded that non-operative treatment was inferior to appendectomy in the management of acute, uncomplicated appendicitis in children (St Peter, 2025).

A meta-analysis on the efficacy and safety of non-operative treatment for acute uncomplicated appendicitis in children was conducted by Georgiou et al. A total of 10 studies with 430 patients were included in this study, and non-operative treatment was effective in 79% of children(95%CL73%-86%), and the recurrence rate was 14%(95%CI,7%-21%). The complications and length of hospital stay were similar between the groups (Georgiou, 2017). A systematic review and meta-analysis on non-operative treatment of acute appendicitis was conducted by Maita et al. A total of 21 studies with 5727 patients were included in this study, and non-operative treatment had a success rate of 92%(95%CI,88;96), and a recurrence rate of 16%(95%CI,10;22). This study concluded that non-operative treatment was safe for the management of acute appendicitis in children (Maita, 2020). A systematic review and meta-analysis comparing the long-term and short-term outcomes of non-operative treatment and appendectomy for acute appendicitis in children was conducted by Decker et al. This study included 4 randomized controlled trials and 10 case-control studies, with a total of 70326 patients with 5048 underwent non-operative treatment and 66,988 underwent appendectomy. The failure rate of non-operative treatment at 30 days was 20%(95%CI,11%-29%), and in one year was 32%(95%CI,25%-38%). This study showed that non-operative treatment is safe but is associated with a higher recurrence rate over time (Decker, 2024).

A meta-analysis comparing non-operative treatment and appendectomy for acute appendicitis in children was conducted by Bi et al. A total of 8 studies with 64,540 patients, with 2687 patients undergoing non-operative treatment and 61,853 undergoing appendectomies. The success rate of non-operative treatment in one month was 90%, but at year 1, it dropped to 66%. The recurrence rate at 1 year was 44%. The presence of an appendicolith was associated with a higher risk of treatment failure of non-operative treatment (Bi, 2019). A systematic review comparing non-operative treatment and appendectomy for acute appendicitis in children was conducted by Mosuka et al. A total of 12 studies with 6673 patients were included in this review, and the success rate of non-operative treatment was at 92%, and the recurrence rate was at 15%-20%. This study showed that non-operative treatment for acute, uncomplicated appendicitis was safe and feasible in children (Mosuka, 2021).

An Umbrella review of systematic reviews and meta-analyses on the safety and efficacy of non-operative treatment in acute uncomplicated appendicitis compared to appendectomy was conducted by Emile et al. A total of 18 studies were included in this review, and the median failure rate was 25%, and the recurrence rate was 18.3% for non-operative treatment. The median complication rate for non-operative treatment was 6.9%. This review concluded that non-operative treatment for acute, uncomplicated appendicitis was associated with a higher treatment failure rate, but it had a lower complication rate (Emile, 2022).

## Non-Operative treatment for acute uncomplicated appendicitis in the elderly

A comparison between non-operative treatment and appendectomy for acute uncomplicated appendicitis in the elderly was assessed by Aslan et al. In this retrospective study, a total of 300 patients were divided into 83 who underwent non-operative and 217 who underwent appendectomy. The treatment failure rate of non-operative treatment was 24.1%, and the recurrence rate at 1 year was 25.3%. This study showed that the selection of patients was important when considering non-operative treatment for acute appendicitis in the elderly (Aslan, 2026). The outcomes of non-operative treatment of acute appendicitis in the elderly were assessed by Meier et al. In this retrospective study, 61,481 elderly patients were treated for acute appendicitis, with 11,373 undergoing non-operative treatment and 50,108 undergoing appendectomies. Non-operative treatment was associated with a 3.72% reduced risk of complications(95%CI,2.99-4.46), and a 1.82%

increased mortality(95%CI,1.49-2.15). This study showed that non-operative treatment for acute appendicitis in the elderly should be used with caution, with proper selection of patients who would benefit from this treatment (Meier, 2023).

A review on the role of non-operative treatment for acute appendicitis in the geriatric age group by Farah et al concluded that non-operative treatment was associated with an initial success rate, but due to a higher recurrence rate, and the subsequent appendectomy that is performed for recurrence is associated with a higher mortality rate (Farah, 2024).The World Society of Emergency Surgeons(WSES), in their guidelines for the diagnosis and management of acute appendicitis in the elderly, have recommended that non-operative treatment be offered to selected elderly patients with acute uncomplicated appendicitis, with confirmation on computerized tomography, and there should be no clinical features of complications like perforation or abscess formation. The patients should also be counseled about the risk of recurrence and its complications (Fugazzola, 2020).

## Conclusion

Non-operative treatment for acute, uncomplicated appendicitis can be used as an alternative to appendectomy in selected patients. The diagnosis of acute, uncomplicated appendicitis should be confirmed by assessing the leukocyte count and inflammatory markers like CRP, and imaging modalities like computerized tomography should rule out complications like perforation and abscess formation. The high recurrence rate and failure of non-operative treatment should be explained to the patient so as not to delay performing an appendectomy. Non-operative treatment should also be used with caution to treat acute, uncomplicated appendicitis in pediatric and elderly patients.

### Declaration

**Conflict of interest:** There is no conflict of interest

## References

[1] Ansaloni, L., Catena, F., Coccolini, F., Ercolani, G., Gazzotti, F., Pasqualini, E., & Pinna, A. D. (2011). Surgery versus conservative antibiotic treatment in acute appendicitis: a systematic review and meta-analysis of randomized controlled trials. Digestive surgery, 28(3), 210-221.https://doi.org/10.1159/000324595.

[2] Aslan, F., Binici, S., Beger, B., Bozkurt, H. A., Oner, M. O., Eryılmaz, I., ... & Eryılmaz, M. (2026). Acute appendicitis in geriatric population: a clinical and prognostic comparison of surgical intervention and conservative management. BMC Geriatrics.https://doi.org/10.1186/s12877-026-07499-3.

[3] Baana, M., Singh, M., Banfa, M., Tariq, L., Antoni Barbaroux, T., Ali, F., Mahmood, A., Prieto, J. J., Alhajeri, S., Youssef, J. W., & Ramapriya, S. (2026). Non-operative Management of Uncomplicated Appendicitis: A Review of Indications, Safety, and Clinical Algorithms. Cureus, 18(3), e105154. https://doi.org/10.7759/cureus.105154

[4] Barie P. S. (2021). Non-Operative Management of Appendicitis: Evolution, not Revolution. Surgical infections, 22(10), 991–1003. https://doi.org/10.1089/sur.2021.059

[5] Barría Rodríguez, A. G., Romero, E., Guillen, A., Fábrega, L., & Serrano Fernández, P. (2025). Efficacy of non-operative management of uncomplicated acute appendicitis: initial experience in a resource-limited setting. BMJ Paediatrics Open, 9(1), e003141. https://doi.org/10.1136/bmjpo-2024-003141.

[6] Bendib, H. (2024). Is non-operative treatment of acute appendicitis possible: A narrative review. African Journal of Emergency Medicine, 14(2), 84-90.

[7] Bi, L. W., Yan, B. L., Yang, Q. Y., & Cui, H. L. (2019). Comparison of conservative treatment with appendectomy for acute uncomplicated pediatric appendicitis: a meta-analysis. Journal of Comparative Effectiveness Research, 8(10), 767–780. https://doi.org/10.2217/cer-2019-0036

[8] CODA Collaborative, Flum, D. R., Davidson, G. H., Monsell, S. E., Shapiro, N. I., Odom, S. R., Sanchez, S. E., Drake, F. T., Fischkoff, K., Johnson, J., Patton, J. H., Evans, H., Cuschieri, J., Sabbatini, A. K., Faine, B. A., Skeete, D. A., Liang, M. K., Sohn, V., McGrane, K., Kutcher, M. E., … Talan, D. A. (2020). A Randomized Trial Comparing Antibiotics with Appendectomy for Appendicitis. The New England journal of medicine, 383(20), 1907–1919. https://doi.org/10.1056/NEJMoa2014320

[9] De Almeida Leite, R. M., Seo, D. J., Gomez-Eslava, B., Hossain, S., Lesegretain, A., de Souza, A. V., Bay, C. P., Zilberstein, B., Marchi, E., Machado, R. B., Barchi, L. C., & Ricciardi, R. (2022). Nonoperative vs Operative Management of Uncomplicated Acute Appendicitis: A Systematic Review and Meta-analysis. JAMA Surgery, 157(9), 828–834. https://doi.org/10.1001/jamasurg.2022.2937

[10] Decker, E., Ndzi, A., Kenny, S., & Harwood, R. (2024). Systematic Review and Meta-analysis to Compare the Short- and Long-term Outcomes of Non-operative Management With Early Operative Management of Simple Appendicitis in Children After the COVID-19 Pandemic. Journal of Pediatric Surgery, 59(6), 1050–1057. https://doi.org/10.1016/j.jpedsurg.2023.12.021

[11] Di Saverio, S., Podda, M., De Simone, B., Ceresoli, M., Augustin, G., Gori, A., Boermeester, M., Sartelli, M., Coccolini, F., Tarasconi, A., De' Angelis, N., Weber, D. G., Tolonen, M., Birindelli, A., Biffl, W., Moore, E. E., Kelly, M., Soreide, K., Kashuk, J., Ten Broek, R., … Catena, F. (2020). Diagnosis and treatment of acute appendicitis: 2020 update of the WSES Jerusalem guidelines. World journal of emergency surgery: WJES, 15(1), 27. https://doi.org/10.1186/s13017-020-00306-3

[12] Di Saverio, S., Sibilio, A., Giorgini, E., Biscardi, A., Villani, S., Coccolini, F., Smerieri, N., Pisano, M., Ansaloni, L., Sartelli, M., Catena, F., & Tugnoli, G. (2014). The NOTA Study (Non Operative Treatment for Acute Appendicitis): prospective study on the efficacy and safety of antibiotics (amoxicillin and clavulanic acid) for treating patients with right lower quadrant abdominal pain and long-term follow-up of conservatively treated suspected appendicitis. Annals of surgery, 260(1), 109–117. https://doi.org/10.1097/SLA.0000000000000560

[13] Echevarria, S., Rauf, F., Hussain, N., Zaka, H., Farwa, U. E., Ahsan, N., Broomfield, A., Akbar, A., & Khawaja, U. A. (2023). Typical and Atypical Presentations of Appendicitis and Their Implications for Diagnosis and Treatment: A Literature Review. Cureus, 15(4), e37024. https://doi.org/10.7759/cureus.37024

[14] Emile, S. H., Sakr, A., Shalaby, M., & Elfeki, H. (2022). Efficacy and Safety of Non-Operative Management of Uncomplicated Acute Appendicitis Compared to Appendectomy: An Umbrella Review of Systematic Reviews and Meta-Analyses. World journal of surgery, 46(5), 1022–1038. https://doi.org/10.1007/s00268-022-06446-8

[15] Farah, A., Tatakis, A., Obeid, A., & Sayida, S. D. (2024). Nonoperative Management of Acute Appendicitis in the Geriatric Population: A Review. Cureus, 16(11). https://doi.org/10.7759/cureus.73331.

[16] Fugazzola, P., Ceresoli, M., Agnoletti, V., Agresta, F., Amato, B., Carcoforo, P., Catena, F., Chiara, O., Chiarugi, M., Cobianchi, L., Coccolini, F., De Troia, A., Di Saverio, S., Fabbri, A., Feo, C., Gabrielli, F., Gurrado, A., Guttadauro, A., Leone, L., Marrelli, D and Ansaloni, L. (2020). The SIFIPAC/WSES/SICG/SIMEU guidelines for diagnosis and treatment of acute appendicitis in the elderly (2019 edition). World journal of emergency surgery: WJES, 15(1), 19. https://doi.org/10.1186/s13017-020-00298-0

[17] Gandy, R. C., & Wang, F. (2016). Should the non-operative management of appendicitis be the new standard of care?. ANZ journal of surgery, 86(4), 228–231. https://doi.org/10.1111/ans.13506

[18] Georgiou, R., Eaton, S., Stanton, M. P., Pierro, A., & Hall, N. J. (2017). Efficacy and safety of nonoperative treatment for acute appendicitis: a meta-analysis. Pediatrics, 139(3), e20163003.https://doi.org/10.1542/peds.2016-3003.

[19] Grönroos J. M. (2011). Clinical suspicion of acute appendicitis - is the time ripe for more conservative treatment?. Minimally invasive therapy & allied technologies: MITAT: official journal of the Society for Minimally Invasive Therapy, 20(1), 42–45. https://doi.org/10.3109/13645706.2010.496958

[20] Hansson, J., Körner, U., Khorram-Manesh, A., Solberg, A., & Lundholm, K. (2009). Randomized clinical trial of antibiotic therapy versus appendicectomy as primary treatment of acute appendicitis in unselected patients. The British journal of surgery, 96(5), 473–481. https://doi.org/10.1002/bjs.6482

[21] Jumah, S., & Wester, T. (2022). Non-operative management of acute appendicitis in children. Pediatric Surgery International, 39(1), 11. https://doi.org/10.1007/s00383-022-05284-y

[22] Krzyzak, M. &. (2020). Acute Appendicitis Review: Background, Epidemiology, Diagnosis, and Treatment. Cureus,, 12(6), e8562. https://doi.org/10.7759/cureus.8562.

[23] Maita, S., Andersson, B., Svensson, J. F., & Wester, T. (2020). Nonoperative treatment for nonperforated appendicitis in children: a systematic review and meta-analysis. Pediatric Surgery International, 36(3), 261-269.269. https://doi.org/10.1007/s00383-019-04610-1.

[24] Meier, J., Stevens, A., Bhat, A., Berger, M., & Balentine, C. (2023). Outcomes of Nonoperative vs Operative Management of Acute Appendicitis in Older Adults in the US. JAMA surgery, 158(6), 625–632. https://doi.org/10.1001/jamasurg.2023.0284

[25] Mosuka, E. M., Thilakarathne, K. N., Mansuri, N. M., Mann, N. K., Rizwan, S., Mohamed, A. E., Elshafey, A. E., Khadka, A., & Mohammed, L. (2021). A Systematic Review Comparing Nonoperative Management to Appendectomy for Uncomplicated Appendicitis in Children. Cureus, 13(10), e18901. https://doi.org/10.7759/cureus.18901

[26] Pisano, M., Coccolini, F., Poiasina, E., Bertoli, P., Capponi, M. G., Poletti, E., ... & Ansaloni, L. (2013). Conservative treatment for uncomplicated acute appendicitis in adults. Emerg Med Health Care, 1(1), 2.

[27] Podda, M., Cillara, N., Di Saverio, S., Lai, A., Feroci, F., Luridiana, G., Agresta, F., Vettoretto, N., & ACOI (Italian Society of Hospital Surgeons) Study Group on Acute Appendicitis (2017). The antibiotics-first strategy for uncomplicated acute appendicitis in adults is associated with increased rates of peritonitis at surgery. A systematic review with meta-analysis of randomized controlled trials comparing appendectomy and non-operative management with antibiotics. The surgeon: journal of the Royal Colleges of Surgeons of Edinburgh and Ireland, 15(5), 303–314. https://doi.org/10.1016/j.surge.2017.02.001

[28] Poprom, N., Numthavaj, P., Wilasrusmee, C., Rattanasiri, S., Attia, J., McEvoy, M., & Thakkinstian, A. (2019). The efficacy of antibiotic treatment versus surgical treatment of uncomplicated acute appendicitis: Systematic review and network meta-analysis of randomized controlled trials. American journal of surgery, 218(1), 192–200. https://doi.org/10.1016/j.amjsurg.2018.10.009

[29] Prechal, D., Damirov, F., Grilli, M., & Ronellenfitsch, U. (2019). Antibiotic therapy for acute uncomplicated appendicitis: a systematic review and meta-analysis. International journal of colorectal disease, 34(6), 963-971.https://doi.org/10.1007/s00384-019-03296-0.

[30] Sakorafas, G. H., Mastoraki, A., Lappas, C., Sampanis, D., Danias, N., & Smyrniotis, V. (2011). Conservative treatment of acute appendicitis: heresy or an effective and acceptable alternative to surgery?. European journal of gastroenterology & hepatology, 23(2), 121–127. https://doi.org/10.1097/MEG.0b013e32834233b6

[31] Salminen, P., Paajanen, H., Rautio, T., Nordström, P., Aarnio, M., Rantanen, T., Tuominen, R., Hurme, S., Virtanen, J., Mecklin, J. P., Sand, J., Jartti, A., Rinta-Kiikka, I., & Grönroos, J. M. (2015). Antibiotic Therapy vs Appendectomy for Treatment of Uncomplicated Acute Appendicitis: The APPAC Randomized Clinical Trial. JAMA, 313(23), 2340–2348. https://doi.org/10.1001/jama.2015.6154

[32] Salö, M., Tiselius, C., Rosemar, A., Öst, E., Sohlberg, S., & Andersson, R. E. (2025). Swedish national guidelines for diagnosis and management of acute appendicitis in adults and children. BJS open, 9(2), zrae165. https://doi.org/10.1093/bjsopen/zrae165

[33] Scheijmans, J. C. G., Haijanen, J., Flum, D. R., Bom, W. J., Davidson, G. H., Vons, C., Hill, A. D., Ansaloni, L., Talan, D. A., van Dijk, S. T., Monsell, S. E., Hurme, S., Sippola, S., Barry, C., O'Grady, S., Ceresoli, M., Gorter, R. R., Hannink, G., Dijkgraaf, M. G., Salminen, P., … Boermeester, M. A. (2025). Antibiotic treatment versus appendicectomy for acute appendicitis in adults: an individual patient data meta-analysis. The Lancet. Gastroenterology & hepatology, 10(3), 222–233. https://doi.org/10.1016/S2468-1253(24)00349-2

[34] St Peter, S. D., Noel-MacDonnell, J. R., Hall, N. J., Eaton, S., Suominen, J. S., Wester, T., Svensson, J. F., Almström, M., Muenks, E. P., Beaudin, M., Piché, N., Brindle, M., MacRobie, A., Keijzer, R., Engstrand Lilja, H., Kassa, A. M., Jancelewicz, T., Butter, A., Davidson, J., Skarsgard, E., … Pierro, A. (2025). Appendicectomy versus antibiotics for acute uncomplicated appendicitis in children: an open-label, international, multicenter, randomized, non-inferiority trial. Lancet (London, England), 405(10474), 233–240. https://doi.org/10.1016/S0140-6736(24)02420-6

[35] Svensson, J. F., Hall, N. J., Eaton, S., Pierro, A., & Wester, T. (2012). A review of conservative treatment of acute appendicitis. European journal of pediatric surgery: official journal of Austrian Association of Pediatric Surgery ... [et al] = Zeitschrift fur Kinderchirurgie, 22(3), 185–194. https://doi.org/10.1055/s-0032-1320014

[36] Teng, T. Z. J., Thong, X. R., Lau, K. Y., Balasubramaniam, S., & Shelat, V. G. (2021). Acute appendicitis-advances and controversies. World journal of gastrointestinal surgery, 13(11), 1293–1314. https://doi.org/10.4240/wjgs.v13.i11.1293

[37] Yang, Z., Sun, F., Ai, S., Wang, J., Guan, W., & Liu, S. (2019). Meta-analysis of studies comparing conservative treatment with antibiotics and appendectomy for acute appendicitis in the adult. BMC surgery, 19(1), 110. https://doi.org/10.1186/s12893-019-0578-5