

# Study finds good long-term outcomes for appendicitis treated without surgery

August 10 2023, by Alan Mozes

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Most people with appendicitis who are given antibiotics—instead of

having their appendix removed—fare well over the long haul, new research indicates.

The conclusion follows roughly two decades spent tracking patient outcomes in Sweden.

The study found that among those initially treated solely with antibiotics, rather than [surgery](#), less than half ended up experiencing another attack or needing any appendix-related surgery years down the road.

"Neither option is 'best,'" emphasized study author [Simon Eaton](#), a senior lecturer in [pediatric surgery](#) and metabolic biochemistry at University College London's Great Ormond Street Institute of Child Health, in the United Kingdom. "But we are now better able to tell someone with appendicitis that if they are treated non-operatively, more than half will never need an operation."

Before the 20th century, many patients actually died of appendicitis, "a painful inflammation and swelling of the appendix, a 2- to 4-inch long pouch of the bowel," he noted.

"Surgical advances then made it possible to remove the appendix safely," said Eaton, who said that the standard of care now is minimally invasive "keyhole surgery" (laparoscopy), which he characterized as "very safe."

Still, "this was in the era before antibiotics," Eaton stressed, adding that "because we are now understanding more about bacteria in the gut, including the appendix, there may be long-term advantages to keeping the appendix."

And at the same time, "some people are terrified of having an operation, so would sooner try [alternative treatments](#) first," he added.

As for antibiotics, Eaton explained that they first entered the [treatment](#) picture back in the 1990s. But since that time, tracking efforts involving patients treated solely with antibiotics only explored short-term outcomes, five years or less.

To gain insight into [patient outcomes](#) over a much longer follow-up period, Eaton and his colleagues focused on a pool of nearly 300 Swedish appendicitis patients.

Between 1992 and 1996, all of the patients—the vast majority of whom were men—either underwent surgery or were instead treated with antibiotics.

None of the patients had chosen one treatment over the other. Treatment decisions were made randomly at the time, with about half of the patients undergoing surgery and half receiving antibiotic treatment alone.

Follow-up data was available on about 260 of the patients, some of whom were tracked for up to 26 years after their initial treatment.

On the downside, about 1 in 10 of the antibiotic-only patients ended up seeking outpatient care for abdominal pain at some point over the multi-decade study timeframe, compared with only a single patient among those who underwent surgery.

The investigators also noted that 15% of those who initially had only been treated with antibiotics ended up having an appendectomy while still hospitalized. In addition, almost 30% of the antibiotic-only group ended up having an appendicitis operation at some point down the road.

But on the upside, that meant that overall roughly 6 in 10 of those patients who were treated with antibiotics only back in the 1990s never faced the need for appendectomy since that time. Nor did those in the

antibiotic group appear to face a higher risk for [inflammatory bowel disease](#), relative to the surgery group.

"We were reassured that actually only a few patients had their appendix removed after the first year, and that we saw no evidence for other harms," said Eaton.

His bottom line: "We believe that there are now two [treatment options](#) for appendicitis."

"Given this information, some people might choose to have an operation for fear that there is a chance that the terrible pain of appendicitis might come back," Eaton acknowledged.

On the other hand, "others might be so afraid of the knife that they are happy to take the opportunity not to have surgery. After all, maybe if [antibiotics](#) had been discovered before [surgical treatment](#) for appendicitis was safe, then maybe non-operative treatment might have been the default."

The report was published online Aug. 9 in [JAMA Surgery](#).

[Dr. Paulina Salminen](#) is a professor of surgery at the University of Turku in Finland.

Though not involved in the study, Salminen has herself conducted extensive research into the issue. She stressed the importance of recognizing a big distinction between appendicitis cases that are mild and those that are "complicated."

The latest study, she noted, looked at mild cases, meaning the majority of appendicitis patients who "may not require [surgical intervention](#), and might experience even spontaneous resolution, avoiding unnecessary

surgery, and also resulting in major health care cost and hospital resource savings."

With that important caveat, Salminen expressed little surprise at the largely positive outcomes following antibiotic-only treatment.

Her take: The main message here is that these long-term results further confirm this existing strong evidence that surgery is not necessary for all patients with uncomplicated acute appendicitis, and antibiotic treatment is feasible and safe also at long-term.

That thought was seconded by [Dr. Salomone Di Saverio](#), a consultant surgeon with the Cambridge Colorectal Unit at Cambridge University Hospitals NHS Foundation Trust's Addenbrooke's Hospital, in Cambridge, U.K.

"I am not surprised," he said. The finding of a high success rate among non-surgical patients may be particularly valuable for older patients, many of whom "have significant co-morbidities and might be at high risk for general anesthesia and surgery, even for an appendectomy," Di Saverio added.

"Let's just imagine an elderly patient with COPD [[chronic obstructive pulmonary disease](#)], cardiac failure and under anticoagulants [anti-clotting medication]," said Di Saverio. Doctors might prefer to handle that kind of patient far differently than they would a young and otherwise healthy man, who could more easily and safely handle "a quick laparoscopy, [and] can return to work and physical activities within a few days," he explained.

On the other hand, [Dr. Philip Barie](#), a professor emeritus of surgery and of public health in medicine at Weill Cornell Medicine in New York City, offered a far less rosy assessment, suggesting that "there is much

less here than meets the eye."

For one thing, Barie noted that the pool of patients covered by the analysis is "tiny."

And Barie, who is also the executive director of the Surgical Infection Society Foundation for Education and Research, further suggested that patients treated non-surgically "are far more likely to need another urgent evaluation of acute abdominal pain later in life. The 'worry' doesn't go away, at least for the first five years, unless the appendix does, by surgical removal."

"Surgery remains the treatment of choice for appendicitis," Barie said. "It is curative, carries low risk of complications and is cost-effective. Some patients choose to not undergo surgery after informed consent. They have an approximately 40% risk of needing surgery later, and a higher risk of additional evaluations for acute [abdominal pain](#) later in life."

**More information:** There's more on appendicitis at the [U.S. National Institute of Diabetes and Digestive and Kidney Diseases](#).

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Citation: Study finds good long-term outcomes for appendicitis treated without surgery (2023, August 10) retrieved 27 April 2024 from <https://medicalxpress.com/news/2023-08-good-long-term-outcomes-appendicitis-surgery.html>

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