

Antibiotics versus appendicectomy in the management of acute appendicitis: an ongoing debate

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Title: Safety and efficacy of antibiotics compared with appendicectomy for treatment of uncomplicated acute appendicitis: meta-analysis of randomised controlled trials

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Summary

Appendicitis remains the commonest cause of the acute abdomen in young adults and the mainstay of treatment at most centres remains an appendicectomy [1]. This is despite the fact that many other intra-abdominal pathologies, such as diverticulitis, are routinely managed conservatively with antibiotics. A study by Varadhan *et al* (2012) aimed to assess the safety and efficacy of antibiotic treatment compared to appendicectomy, specifically in the management of uncomplicated appendicitis, through a meta-analysis of randomized controlled trials [2]. The authors included only randomized controlled trials with clearly defined management protocols and excluded all other types of studies including those related to complicated appendicitis. The primary outcome measures were complications such as wound infections or peritonitis, and secondary outcome measures included duration of hospitalization, readmission rate, and treatment efficacy. The authors completed a wide ranging literature search covering January 1966 to December 2011 with associated back-chaining of articles. The meta-analysis followed the Cochrane Collaboration guidelines, assessed outcomes on an intention-to-treat basis, and separately accounted for the potential confounder of alternate antibiotic regimens. Following evaluation of 6 trials, the study included a total of 900 patients (n = 470 antibiotic treatment, n = 430 appendicectomy) derived from four trials as the other two trials met the exclusion criteria. The results indicated a 63% (277 / 438 patients) success rate following antibiotic treatment at one year. There was a 31%

reduction in relative risk (95% CI 0.54 - 0.89, p = 0.004) in the antibiotic treatment group versus the appendicectomy group, which increased to 39% on exclusion of one of the trials due to crossover effects (p = 0.02). There were no significant differences found in the duration of hospitalization or risk of complicated appendicitis between the two groups. The authors concluded that antibiotics were both safe and effective as primary treatment strategies for patients with uncomplicated appendicitis.

Opinion

The management of acute appendicitis has traditionally followed a surgical approach, however there has been much recent debate regarding the potential use of antibiotics not only as a bridge to surgery but as a mainstay of treatment. The initial evidence has been limited and is of poor quality, with a general consensus that appendicectomy remains the current gold standard for the management of acute appendicitis, a finding that has been echoed in a number of more recent reviews into this topic including an earlier review by Varadhan *et al* (2010) [3-6]. Indeed, the main difference between their previous paper and this current paper is the inclusion of an additional randomized controlled trial by Vons *et al* [7]. A key point to elicit from that paper was that 21 patients (18%) of those randomized to undergo appendicectomy were found at surgery to have complicated appendicitis with peritonitis, despite an earlier CT scan diagnosing uncomplicated appendicitis [7].

By simply assessing the pathway of treatment for the antibiotic group in the Varadhan *et al* (2012) paper, significant disadvantages to antibiotic treatment have been demonstrated. 21% of patients (93 / 438) treated with antibiotics crossed over to surgery and underwent appendicectomy, with 10 of those patients demonstrating a perforation and 12 of those patients demonstrating a gangrenous appendix. In addition, 20% of patients (68 / 345) were readmitted to hospital following initial antibiotic treatment with 65 of these patients proceeding to

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appendicectomy and 20% of those had either a perforated or gangrenous appendix [2]. In the setting of modern surgical practice with such a common intra-abdominal pathology, recurrence and complication rates of this magnitude are unacceptable. With the additional utilization of laparoscopy to aid diagnosis and offer a treatment option, thus reducing the need for radiological imaging with the associated risks, and based on the current evidence, it is clear that antibiotics do not have a role in the primary management of appendicitis at present. It is important to note that Varadhan *et al* (2012) refer to uncomplicated appendicitis, however, as described earlier, Vons *et al* (2011) have shown that even CT imaging can fail to appropriately delineate complicated versus uncomplicated appendicitis in up to 1 in 5 patients [2,7].

Consequently, we continue to propose that the current evidence does not support the routine use of antibiotics as the mainstay of treatment of acute appendicitis and that appendicectomy remains the current gold standard. Despite this, we continue to advocate that definitive evaluation through an appropriately conducted randomized controlled trial should be undertaken to comprehensively examine the optimal management of such a common intra-abdominal pathology [3].

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