

# Analysis of the Surgical Treatment for 77 Cases of Acute Appendicitis and Review of the Relevant Literature

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## ABSTRACT

The identification of acute appendicitis in clinical settings relies on a combination of the patient's medical history, physical examination, lab tests, and imaging studies. Typical signs of appendicitis encompass indistinct pain around the navel, loss of appetite/nausea/erratic vomiting, a shift in pain localization to the lower right quadrant, and a mild fever[1]. When patients exhibit these symptoms, there is a roughly 90% chance that they will be diagnosed with acute appendicitis. The standard surgical intervention is laparoscopic appendectomy. Nevertheless, growing research indicates that a regimen of broad-spectrum antibiotics—either piperacillin-tazobactam as a single therapy or in combination with cephalosporins or fluoroquinolones alongside metronidazole—can effectively manage uncomplicated acute appendicitis in around 70% of cases. On computed tomography (CT) scans, specific diagnostic indicators such as an enlarged appendix (with a diameter of 7 mm or more) or the presence of appendicoliths, which are accumulations of fecal matter within the appendix, can signal that a patient is less likely to respond well to an initial antibiotic treatment approach. This article combines our experiences from the treatment of 25 cases of appendicitis and shares insights, while also conducting a review and study of the literature.

**Keywords:** Acute Appendicitis, Surgical Treatment, Laparoscopic Appendectomy.

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## INTRODUCTION

Acute appendicitis is a common surgical emergency that accounts for a significant proportion of emergency department visits and surgical interventions worldwide. Characterized by inflammation of the appendix, it can progress rapidly from a manageable condition to a life-threatening one if not diagnosed and treated promptly. The gold standard for treatment has long been surgical intervention, with laparoscopic appendectomy being the preferred method due to its minimally invasive nature and associated benefits such as reduced postoperative

pain and faster recovery times. In this article, we aim to contribute to the existing body of knowledge by presenting an analysis of the surgical treatment outcomes in a series of 77 consecutive cases of acute appendicitis managed at our institution. Our objective is to evaluate the efficacy and safety of the surgical approaches employed, as well as to identify any patterns or factors that may influence patient outcomes. Additionally, we will conduct a comprehensive review of the relevant literature to contextualize our findings within the broader scope of current practices and advancements in the management of acute appendicitis.

## CLINICAL DATA

### General Information

This group consisted of 45 males and 32 females, aged 12 to 73 (average 39.6) years old. Among them: 56 cases of acute simple appendicitis, 16 cases of acute purulent appendicitis, 3 cases of gangrenous perforated appendicitis, and 2 cases of appendiceal abscess. Among the 3 cases of gangrenous perforated appendicitis: 2 cases with localized peritonitis, and 1 case with diffuse peritonitis.

### Selection of Surgical Timing

56 cases of acute simple appendicitis and 16 cases of acute purulent appendicitis were all subjected to emergency appendectomy within 4-6 hours to 24 hours after admission; 3 cases of gangrenous perforated appendicitis were all subjected to emergency appendectomy within 4-6 hours to 10 hours after admission (with abdominal drainage in 2 cases); 2 cases of appendiceal abscess, after standard antibiotic use for 1 week, still had fever, worsening or not obvious regression of lower right abdominal signs, and underwent abscess drainage surgery within 8-14 days after admission (1 case underwent appendectomy).

## RESULTS

In this group, there were 1 cases of incisional infection in gangrenous perforated appendicitis, 1 case of incisional infection in appendiceal abscess, and no intra-abdominal bleeding or residual abscess formation in the entire group. There were no postoperative intestinal fistulas, adhesive intestinal obstruction, or appendiceal stump inflammation, and the incidence of postoperative complications was 2.6%.

## DISCUSSION

Appendicitis is one of the common diseases in abdominal surgery, and the most effective treatment is appendectomy. Appendicitis is usually caused by obstruction of the appendix lumen, with the most common bacteria including *Escherichia coli*, as well as others such as *Bacteroides*, *Peptostreptococcus*, and *Pseudomonas*<sup>[1]</sup>.

Postoperative complications of appendicitis mainly include incisional infection, intestinal adhesion, and fecal fistula, but a considerable part can be avoided. The incidence of postoperative complications in this group was only 2.6%, which is basically consistent with the literature<sup>[2]</sup>.

Based on the data of this group, we feel that: first, it is important to pay attention to the timing of appendectomy, especially choosing to perform surgery on acute appendicitis after sufficient preparation of 4-6 hours after admission. At the same time, satisfactory anesthesia effects, exquisite surgical operations, and perfect perioperative

management, the organic combination of the three can significantly reduce the occurrence of complications. The toxic manifestations of acute abdomen caused by gangrenous perforated appendicitis are often overlooked. Most acute purulent peritonitis is accompanied by water and electrolyte disorders, insufficient effective circulating blood volume<sup>[3]</sup>. Intestinal bacteria and endotoxins can activate inflammatory cells through multiple links, release oxygen free radicals and inflammatory mediators, becoming the main cause of systemic inflammatory response syndrome (SIRS), and may eventually lead to sepsis or multiple organ dysfunction syndrome<sup>[4]</sup>.

Adequate preparation after admission for acute appendicitis provides a basic guarantee for postoperative recovery, including: first, selecting an adequate and effective semi-daily dose of antibiotics for rapid intravenous infusion to quickly reach the peak concentration of antibiotics in plasma and tissues; repeatedly inquiring about the medical history and observing changes in abdominal pain to further confirm the diagnosis of appendicitis; accurately estimating the pathological type, which can be operated according to the steps designed by the operator during the operation, without neglecting one aspect for another; rapid fluid replenishment can correct most patients' existing water and electrolyte disorders, promote metabolism, and dilute bacteria and toxins; gastrointestinal preparation, trying to give patients the opportunity to defecate; examination and treatment of coexisting diseases; preparation for possible situations in advance, so that patients and surgical team members can enter the operation in the best condition. For those who have formed inflammatory masses or appendiceal abscesses, the principle is mainly conservative treatment; if there is persistent or intermittent fever, worsening or not obvious regression of lower right abdominal signs, enlargement of abscesses, no localized trend, or even systemic toxic symptoms, standard antibiotics should be applied for about 1 week, and abscess drainage surgery should be performed within 8-14 days after admission, and the appendix should also be removed at the same time when convenient. For acute appendicitis during the preparation stage, if abdominal pain has significantly reduced or disappeared, and the patient does not agree to surgical treatment or is hesitant, elective surgery should be chosen, which can significantly reduce complications; this is consistent with the views of Li Yuxiu et al<sup>[5]</sup>.

Secondly, in recent years, high-tech auxiliary examinations have not made qualitative progress in the diagnosis of appendicitis. Preoperative diagnosis still needs careful inquiry of medical history and systematic physical examination, repeated observation, and reference to auxiliary examinations to determine. During the examination, it is necessary to distinguish fixed pain points

and the difference from the pain area; the incision selection for appendicitis that has been determined should be through the pain point, a properly sized oblique incision, and McBurney's incision is the most reliable classic incision in the abdomen. It is better to be outside than inside to reduce abdominal interference. For those whose diagnosis is not yet certain, it is still better to use an exploratory incision; before opening the peritoneum, turn on the suction device, place gauze pads into the peritoneum, isolate with towels, and turn the peritoneum outside to protect the incision from pus contamination; try to use instrument operations to avoid glove contamination, pus mainly by suction and wiping, from far to near with an oval forceps to explore the left iliac fossa, interintestinal, and bladder (uterus) rectal fossa, do not advocate peritoneal lavage for non-diffuse peritonitis to avoid inflammation spread and incision contamination; for appendiceal abscess and diffuse peritonitis, abdominal drainage should be applied with oval forceps placed in the appropriate position, another puncture hole to lead out and fix properly; when closing the abdomen, be sure to change the instruments, remove all contaminants, including purse sutures, add sterile sheets, suture layer by layer, do not leave dead cavities, and do not place subcutaneous bowel flow for non-contaminated incisions, which can significantly reduce the incidence of complications.

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