E-ISSN 2250-0944

ISSN 2250-1150
doi: 10.48047/ijprt/15.01.182

Clinical outcomes of combined laparoscopic abscess drainage and appendicectomy in the management of appendicular abscess

Dr. Abhinav Puri1, Dr. Rishab Sharma[2], Dr. Anil Kumar Mongia[3]

1. Dr. Abhinav Puri, Asistant Professor, Department of General Surgery, Gautam Buddha Chikitsa Mahavidyalaya and Dr. KKBM Subharti Hospital , Dehradun, Uttarakhand

2. Dr. Rishab Sharma, Asistant Professor, Department of General Surgery, Gautam Buddha Chikitsa Mahavidyalaya and Dr. KKBM Subharti Hospital , Dehradun, Uttarakhand

3. Dr. Anil Kumar Mongia, Director Professor and Head , Department of General Surgery, Gautam Buddha Chikitsa Mahavidyalaya and Dr. KKBM Subharti Hospital , Dehradun, uttarakhand

Corresponding Author:
Dr. Abhinav Puri, Asistant Professor, Department of General Surgery, Gautam Buddha Chikitsa Mahavidyalaya and Dr. KKBM Subharti Hospital , Dehradun, Uttarakhand

Abstract:
Background: Appendicular abscess frequently arises as a complication of acute appendicitis, typically requiring surgical treatment. This research assesses the clinical results of a combined laparoscopic technique that includes both abscess drainage and appendicectomy for treating appendicular abscess. **Methods:** A forward-looking analysis was carried out on 28 patients identified with appendiceal abscess. The group consisted mainly of males (78.6%) with an average age of 32 years. The typical duration of symptoms before seeking help was 3 days. Every patient experienced pain and tenderness in the right iliac fossa (100%), and 60% exhibited fever. Laboratory tests showed increased total leukocyte counts with a predominance of neutrophils in every case. **Results:** All patients had emergency laparoscopic drainage of the abscess and an appendectomy performed. The volume of the abscess varied between 20 ml and 100 ml. Localized peritonitis occurred in all instances, with no cases of generalized peritonitis recorded. The typical duration of the procedure was 1 hour and 30 minutes. In 6 cases (21.4%), a change to open surgery was necessary because of technical difficulties. The postoperative complication comprised one instance (3.6%) of fecal fistula, which settled conservatively in two weeks. **Conclusion:** The combined approach of laparoscopic drainage and appendicectomy is a viable and efficient method for treating appendicular abscess, resulting in positive outcomes and few complications. Though the conversion rate is modest, the method provides advantages of minimally invasive surgery and should be regarded as a feasible choice for appropriate patients.

Keywords: laparoscopic appendicectomy, appendicular abscess, abscess drainage

Introduction: Acute appendicitis is among the most frequent surgical emergencies seen worldwide [1]. Complications include gangrene, perforation, or the emergence of an appendicular abscess might result from delayed diagnosis or treatment [2]. A localized accumulation of pus that arises from perforated or gangrenous appendicitis, an appendicular abscess is typically controlled by the body's natural defenses through surrounding tissues such as the omentum, bowel loops, and nearby organs [3]. It accounts for 2% to 10% of all appendicitis cases and is challenging to treat clinically due to the associated inflammatory response and the possibility of extensive peritonitis if treatment is not received [4].

An appendicular abscess is typically managed in two stages. In the initial phase, the abscess is conservatively treated with broad-spectrum antibiotics and image-guided percutaneous drainage. A few weeks later, after the acute inflammation has decreased, an interval appendectomy is carried out. This approach has drawbacks even though its goal is to lower the risk of surgery during the acute inflammatory phase. These include extended hospital stays, a higher chance of developing appendicitis again while waiting, discomfort for patients, and the requirement for repeated hospital stays. Furthermore, there is a chance of recurrence and additional complications because some patients might not return for interval appendicectomy [5].

The single-stage surgical management of appendicular abscess is becoming more popular due to improved perioperative care and the development of sophisticated laparoscopic techniques. Abscess drainage and definitive appendectomy are both possible with laparoscopic surgery. This minimally invasive method offers the advantages of laparoscopy, including less postoperative pain, fewer wound complications, early mobilization, and improved cosmetic results, and may shorten the duration of treatment overall, prevent the need for a second hospital stay, and encourage a quicker recovery [6].

The laparoscopic method in the case of an appendicular abscess is still up for debate, despite these possible benefits. The technical challenge of the procedure in the presence of friable inflammatory tissues, distorted anatomy, and dense adhesions has been questioned [7, 8]. Furthermore, postoperative complications like surgical site infections or intra-abdominal collections may be exacerbated by the possibility of intra-abdominal contamination during appendectomy and abscess drainage [9].

The purpose of this study is to evaluate the clinical results of appendicular abscess patients who undergo both laparoscopic abscess drainage and appendicectomy. The study will assess a number of factors, such as recovery time, length of hospital stay, postoperative complications, intraoperative findings, operative time, and overall patient outcomes. The study aims to ascertain the safety, effectiveness, and viability of this single-stage laparoscopic procedure by methodically examining these results. Enhancing surgical procedures and raising the bar for patients with appendicular abscesses may be made possible by a better knowledge of the clinical advantages and restrictions of combined laparoscopic management. If successful, this method could provide a practical and effective substitute for the traditional two-phase treatment plan.

Materials and Methods

This prospective observational study was carried out over a two-year period, from November 1, 2022, to October 30, 2024, in the general surgery department of Dr. K.K.B.M. Subharti Hospital in Dehradun. After giving their informed agreement, 28 patients with appendicular abscesses were included in the study.

Inclusion Criteria: Patients with an appendicular abscess who were clinically and radiologically identified, hemodynamically stable, and suitable for laparoscopic surgery were included in the study. These patients ranged in age from 18 to 60.
Exclusion Criteria: The study excluded patients who had generalized peritonitis, were unsuitable for general anesthesia, required open surgery because of significant adhesions or intraoperative difficulties, or were pregnant.

Preoperative Assessment

All patients underwent a detailed clinical examination on presentation with acute abdomen. Baseline investigations including complete blood counts (CBC) was performed. Ultrasonography (USG) of the whole abdomen was done initially to identify the presence of intra-abdominal collection. In all suspected cases of appendicular abscess, the diagnosis was confirmed and further assessed by contrast-enhanced computed tomography (CECT) of the abdomen.

Surgical Procedure

The patient was stabilized and the diagnosis confirmed, and then emergency laparoscopic surgery was performed under general anesthesia. Laparoscopic drainage of the appendicular abscess, concurrent laparoscopic appendicectomy, thorough peritoneal lavage with lukewarm normal saline, and, depending on the intraoperative findings, the implantation of a 20 French (FG) abdominal drain in the pelvis or right iliac fossa were all part of the procedure to reduce intra-abdominal contamination.

Postoperative Care and Follow-up: Patients were monitored postoperatively for signs of infection, drain output, return of bowel function, and other complications. Antibiotic therapy was tailored according to culture sensitivity (where available) and clinical response. Data regarding operative time, postoperative complications, duration of hospital stay, and recovery outcomes were recorded and analyzed.

Data Analysis: The collected data were entered into Microsoft Excel and analyzed using appropriate statistical tools. Continuous variables were expressed as mean ± standard deviation, and categorical variables as frequencies and percentages.

Results

A total of 28 patients suffering from appendicular abscess were part of the study. Most of the patients were male (22 patients, 78.6%), with an average age of 32 years. Symptoms typically lasted for an average of 3 days before presentation. All patients showed intense pain and tenderness in the right iliac fossa (100%), and fever was noted in 60% of the instances. Total leukocyte count (TLC) was raised in all patients, with a steady predominance of neutrophils, signifying acute inflammation. All patients received emergency laparoscopic drainage of abscesses and appendectomy. The size of the abscess varied between 20 ml and 100 ml. Localized peritonitis was seen in every instance, while none exhibited generalized peritonitis. The typical length of surgery was around 1 hour and 30 minutes. In 6 patients (21.4%), it was necessary to convert to open appendectomy because of technical difficulties. One patient (3.6%) experienced a fecal fistula after surgery, which healed on its own within two weeks without requiring surgical treatment shown in table 1.

Table 1: Clinical and Operative Profile of Patients (n = 28)

Parameter	Result
Total number of patients	28
Male patients	22 (78.6%)
Mean age (years)	32
Mean duration of symptoms (days)	3
Right iliac fossa pain and tenderness	28 (100%)
Fever present	17 (60%)
Total leukocyte count (TLC)	Raised in all patients
Neutrophil predominance	Present in all patients
Surgical procedure performed	Laparoscopic abscess drainage + appendicectomy in all patients
Volume of abscess	20 ml -100 ml
Localized peritonitis	Present in all patients
Generalized peritonitis	Absent in all patients
Average duration of surgery	1 hour 30 minutes
Conversion to open appendicectomy	6 patients (21.4%)
Postoperative fecal fistula	1 patient (3.6%), resolved in 2 weeks

Discussion

Appendicular abscess is a known complication of acute appendicitis, and its best management practices are still developing. Traditionally, an approach that involved first draining the abscess and then performing an interval appendicectomy was widely used. Nonetheless, with the progress in minimally invasive surgical techniques, the combination of laparoscopic abscess drainage and appendectomy has surfaced as a favorable option. This research assessed the clinical results of this integrated method in a group of 28 patients. The demographic characteristics of the patients in our study align with the epidemiological trends seen in other research, indicating that appendicular abscess is more common in young males. In our research, 78.6% of the patients were male, with an average age of 32 years, consistent with results noted by other researchers [10,11] .

All patients exhibited typical signs of appendicular abscess, such as intense pain and tenderness in the right iliac fossa, and a considerable percentage (60%) experienced fever. Globally raised TLC with neutrophil dominance emphasized the acute inflammatory characteristics of the condition. These clinical observations align with the usual presentation detailed in the literature [12]. All 28 participants in our research received emergency laparoscopic abscess drainage together with appendicectomy. The choice to carry out concurrent appendicectomy is backed by numerous recent studies that claim it eliminates the necessity for a second hospitalization and operation, without a notable rise in complication rates [13, 14]. The abscess volume ranged from 20 ml to 100 ml, indicating differences in disease progression and timing of presentation. Localized peritonitis was observed in every case, yet no patients exhibited symptoms of generalized peritonitis. This discovery indicates that prompt diagnosis and treatment are crucial, since late presentation frequently results in widespread contamination. The typical operative duration was 1 hour and 30 minutes, which is considered acceptable for a laparoscopic procedure related to abscess management similar with other study finding [15].

The need for conversion to open appendicectomy occurred in 21.4% of cases, primarily because of severe adhesions or challenging anatomical access. Despite differences in conversion rates among studies, this number falls within acceptable ranges for complex appendicitis situations [16]. A single patient (3.6%) experienced a postoperative fecal fistula that resolved on its own in two weeks [17]. This minimal complication rate supports the safety of the laparoscopic method, even in cases of abscess and localized sepsis. Significantly, no patient needed a second surgery or extended hospital stay owing to complications. In summary, our research endorses the practicality and efficacy of performing combined laparoscopic abscess drainage and appendicectomy as a single-stage process in suitably chosen patients. It provides multiple benefits, such as shorter hospital stays, prevention of additional surgery, and quicker recovery, without a notable rise in morbidity.

Conclusion

This study shows that, even in an emergency situation, a safe and efficient method for managing an appendicular abscess is to combine laparoscopic abscess drainage with appendicectomy. In most cases, the treatment was successfully performed laparoscopically, with a low rate of complications and a conversion rate of 21.4%. Patients displayed the classic clinical signs of an appendicular abscess, and prompt surgery produced positive results. Effective drainage, appendectomy, and peritoneal lavage were made possible by the laparoscopic technique, which also offered the advantages of minimal invasiveness and quick recovery. Given these results, if surgical skill and suitable facilities are available, single-stage laparoscopic therapy may be a good substitute for the conventional tiered method in certain patients with isolated appendicular abscess.

References:

1. Guan L, Liu Z, Pan G, Zhang B, Wu Y, Gan T et al. The global, regional, and national burden of appendicitis in 204 countries and territories, 1990–2019: a systematic analysis from the Global Burden of Disease Study 2019. BMC Gastroenterol 2023;23:44. https://doi.org/10.1186/s12876-023-02678-7.
2. Suleimanov V, Alhanabi FH, Al Saeed FH, Aldrazi HA, Fagir HA. A Rare Complication of Perforated Appendicitis: A Case of Necrotizing Fasciitis. Cureus. 2022 Sep 28;14(9):e29679. doi: 10.7759/cureus.29679.
3. Hassan M, Babiker Z, Alfatih Hamza M. Diagnosis and Management of Acute Appendicitis [Internet]. Appendicitis - Current Insights. IntechOpen; 2025. Available from: http://dx.doi.org/10.5772/intechopen.1009785
4. Elkbuli A, Diaz B, Polcz V, Hai S, McKenney M, Boneva D. Operative vs non-operative therapy for acute phlegmon of the appendix: Is it safer? Int J Surg Case Rep. 2018;50:75–79. doi: 10.1016/j.ijscr.2018.07.031.
5. Karn S, Kumar N, Singh K, Basu S. Treatment of Acute Appendicitis [Internet]. Appendicitis - Current Insights. IntechOpen; 2024. Available from: http://dx.doi.org/10.5772/intechopen.1008247
6. Weledji EP, Zisuh AV, Ngounou E. Management of appendicitis: appendicectomy, antibiotic therapy, or both? Ann Med Surg (Lond). 2023 Mar 27;85(4):897-901. doi: 10.1097/MS9.0000000000000401.
7. Tannoury J, Abboud B. Treatment options of inflammatory appendiceal masses in adults. World J Gastroenterol. 2013 Jul 7;19(25):3942-50. doi: 10.3748/wjg.v19.i25.3942.

8. Chau TCY, Lee NWS, Dunn D. An extremely rare case of appendiceal abscess causing extrinsic ureteric compression and secondary hydronephrosis. J Case Rep Images Surg 2021;7:100095Z12TC2021.
9. Pramod T, Prakashkumar MN. Surgical outcome in patients with complicated appendicitis treated at a medical college hospital. Int Surg J 2019;6:2379-85.
10. Diarra A, Keita K, Traoré A, Koné A, Tounkara I, Traore I et al. Appendicular Abscess in General Surgery at the Bocar Sidi Sall University Hospital in Kati. Surgical Science, 2020;11: 479-485. doi: 10.4236/ss.2020.1112050.
11. Hiremath SV. Appendicitis: Young adults are susceptible. J. Evid. Based Med. Healthc. 2016; 3(64), 3466-3469. DOI: 10.18410/jebmh/2016/746
12. Shafi SM, Afsheen M, Reshi FA. Total leucocyte count, C-reactive protein and neutrophil count: diagnostic aid in acute appendicitis. Saudi J Gastroenterol. 2009 Apr;15(2):117-20. doi: 10.4103/1319-3767.48969.
13. Clark JJ, Johnson SM. Laparoscopic drainage of intraabdominal abscess after appendectomy: an alternative to laparotomy in cases not amenable to percutaneous drainage. J Pediatr Surg. 2011 Jul;46(7):1385-9. doi: 10.1016/j.jpedsurg.2011.01.003.
14. Sartelli M, Chichom-Mefire A, Labricciosa FM, Hardcastle T, Abu-Zidan FM Adesunkanmi AK et al. The management of intra-abdominal infections from a global perspective: 2017 WSES guidelines for management of intra-abdominal infections. World J Emerg Surg 12, 29 (2017). https://doi.org/10.1186/s13017-017-0141-6
15. Ramesh K, Janapareddy KK. Role of laparoscopic appendicectomy in management of early appendicular mass. Int Surg J 2020;7:2337-41
16. Neogi S, Banerjee A, Panda SS, Ratan SK, Narang R. Laparoscopic versus open appendicectomy for complicated appendicitis in children: A systematic review and meta-analysis. J Pediatr Surg. 2022 Mar;57(3):394-405. doi: 10.1016/j.jpedsurg.2021.07.005
17. Nazari FA, Baset G, Zarif SK, Rahimdeen MA, Amiri A, Seyar F. Fecal Fistula Following Appendectomy as an Unusual Late Complication: A Rare Case Report. Int Med Case Rep J. 2025 Mar 20;18:381-386. doi: 10.2147/IMCRJ.S518439.