e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(9); 834-841

Original Research Article

Comparison of Open versus Laparoscopic Appendectomy in Uncomplicated Appendicitis

Naveen Kumar Dekonda[1], Bhaskar Anasuri[2], Balaji K.[3]

[1]Assistant Professor, Department of General Surgery, Government Medical College, Mancherial, Telangana, India

[2]Assistant Professor, Department of General Surgery, Government Medical College, Mancherial, Telangana, India

[3]Assistant Professor, Department of General Surgery, Government Medical College, Mancherial, Telangana, India

Received: 20-07-2026 / Revised: 19-08-2026 / Accepted: 21-09-2026

Corresponding Author: Dr. Balaji K.

Conflict of interest: Nil

Abstract:

Background: Open appendectomy remains a widely used treatment for uncomplicated appendicitis, while laparoscopic appendectomy may provide better postoperative recovery through a minimally invasive approach.

Objective: To compare the perioperative and early postoperative outcomes of open and laparoscopic appendectomy in patients with uncomplicated appendicitis.

Methods: This prospective comparative study included 100 patients aged 18–60 years with uncomplicated appendicitis. Patients were divided equally into open appendectomy and laparoscopic appendectomy groups. Operative time, blood loss, postoperative pain, analgesic requirement, oral intake, ambulation, hospital stay, complications, return to normal activity and cosmetic satisfaction were compared. A p-value <0.05 was considered statistically significant.

Results: Baseline characteristics were comparable between the groups. Laparoscopic appendectomy required a longer operative time than open appendectomy (52.4±10.2 versus 38.6±8.7 minutes; p<0.001) but resulted in significantly lower blood loss. Postoperative VAS pain scores were significantly lower in the laparoscopic group at all assessment times. Laparoscopic patients required fewer analgesic doses, resumed oral fluids and ambulation earlier, and had a shorter hospital stay (2.4±0.8 versus 3.8±1.1 days; p<0.001). The overall complication rate was lower after laparoscopic appendectomy, although the difference was not statistically significant. Return to normal activity was earlier, and cosmetic satisfaction was significantly higher in the laparoscopic group.

Conclusion: Laparoscopic appendectomy provided better postoperative recovery than open appendectomy in uncomplicated appendicitis, despite requiring a longer operative time.

Keywords: Uncomplicated Appendicitis; Laparoscopic Appendectomy; Open Appendectomy; Postoperative Pain; Hospital Stay; Surgical Outcomes.

DOI: 10.25258/ijcpr.18.9.118

Introduction

Acute appendicitis is one of the most common causes of acute abdominal pain requiring emergency surgical intervention. It occurs across all age groups but is particularly frequent among adolescents and young adults. Obstruction of the appendiceal lumen, followed by bacterial proliferation, inflammation and increasing intraluminal pressure, is considered the principal mechanism underlying the disease. If treatment is delayed, uncomplicated inflammation may progress to gangrene, perforation, appendicular abscess or generalized peritonitis. Uncomplicated appendicitis generally refers to an inflamed appendix without perforation, gangrene, periappendiceal abscess or diffuse peritonitis. Early diagnosis and timely treatment are therefore important for reducing morbidity and facilitating rapid recovery.

Appendectomy has traditionally been considered the definitive treatment for acute appendicitis. Open appendectomy, usually performed through a gridiron or Lanz incision, has remained a safe, effective and widely practised procedure for more than a century. Its principal advantages include technical simplicity, relatively short operative time, low equipment requirements and suitability for hospitals with limited laparoscopic facilities. However, the open approach involves a relatively larger abdominal incision and may be associated

with greater postoperative pain, wound infection, delayed mobilization and a longer recovery period.

The introduction of laparoscopic appendectomy provided a minimally invasive alternative to the conventional open technique. The laparoscopic procedure is generally performed through three small abdominal ports and offers complete visualization of the abdominal cavity. This improved visualization may be particularly helpful in patients with an uncertain diagnosis, atypical appendiceal position, obesity or coexisting pelvic pathology. The proposed advantages of laparoscopic appendectomy include reduced postoperative pain, fewer wound-related complications, earlier resumption of oral feeding, shorter hospitalization, improved cosmetic results and an earlier return to normal activity. Nevertheless, laparoscopic appendectomy requires specialized instruments, trained personnel and general anaesthesia and may involve greater operative expenditure and a longer operating time, particularly during the initial learning period.

Several studies conducted in India have compared the clinical outcomes of laparoscopic and open appendectomy. De, in a study from West Bengal, reported that laparoscopic appendectomy was associated with fewer postoperative complications, shorter hospitalization, faster recovery and earlier return to work, although the laparoscopic procedure required slightly more operative time [1]. Geetha et al., in a prospective study conducted at Kasturba Medical College, Manipal, observed that laparoscopic appendectomy resulted in less postoperative pain, reduced analgesic requirement, earlier oral feeding, fewer wound infections and earlier return to normal activities. However, these advantages were accompanied by a longer operative duration and higher procedural cost [2].

Similarly, Gundavda and Bhandarwar reported lower analgesic requirements, a shorter mean hospital stay and earlier recovery among patients undergoing laparoscopic appendectomy in Mumbai [3]. Bhosle and Degloorker found a significantly lower overall incidence of postoperative complications and a shorter duration of hospitalization following laparoscopic appendectomy than after open appendectomy [4]. A more recent prospective study by Shaikh et al. at a tertiary-care hospital in Mumbai also evaluated the relative advantages of laparoscopic and open appendectomy in Indian patients, reflecting the continuing clinical relevance of selecting the most appropriate operative approach [5].

Despite the increasing acceptance of laparoscopy, open appendectomy continues to be performed frequently in India because of its affordability, easy availability and shorter learning curve. Moreover, many earlier studies included heterogeneous groups comprising uncomplicated, perforated, gangrenous and recurrent appendicitis. Disease severity can substantially influence operative duration, complications and hospital stay and may therefore confound comparisons between the two procedures. Recent Indian evidence suggests that complication rates may be low with either procedure in uncomplicated cases, although laparoscopic appendectomy may reduce the duration of hospitalization [6].

A focused comparison restricted to uncomplicated appendicitis can provide a more balanced assessment of the two techniques. Evaluation of operative time, postoperative pain, analgesic requirement, surgical-site infection, time to oral intake, duration of hospital stay, cosmetic satisfaction and return to normal activity may help identify the approach that offers the greatest overall benefit. Therefore, the present study was undertaken to compare open and laparoscopic appendectomy in patients with uncomplicated appendicitis and to evaluate their intraoperative and early postoperative outcomes.

Materials and Method

A hospital-based prospective comparative study was conducted in the Department of General Surgery. The study compared perioperative and early postoperative outcomes of open appendectomy and laparoscopic appendectomy among patients diagnosed with uncomplicated acute appendicitis.

Study Population: Patients admitted to the surgical department with clinical and radiological evidence of uncomplicated acute appendicitis and who underwent appendectomy during the study period were considered eligible.

Inclusion Criteria

- Patients aged 18–60 years.
- Patients of either sex.
- Patients diagnosed with uncomplicated acute appendicitis based on clinical examination, laboratory investigations and ultrasonography and/or computed tomography.
- Patients who underwent either open or laparoscopic appendectomy.
- Patients who provided written informed consent.

Exclusion Criteria

- Perforated, gangrenous or complicated appendicitis.
- Appendicular mass, appendicular abscess or generalized peritonitis.
- Recurrent or interval appendectomy.
- Previous major abdominal surgery likely to interfere with laparoscopy.
- Pregnancy.

- Severe cardiopulmonary disease or contraindication to general anaesthesia.
- Patients requiring conversion from laparoscopic to open appendectomy were recorded separately and excluded from the primary comparative analysis.
- Patients unwilling to participate or unavailable for follow-up.

Sample Size: The sample size was calculated by considering postoperative pain at 24 hours as the primary outcome. Kulkarni et al. reported mean postoperative day-one VAS pain scores of 6.03±1.81 after open appendectomy and 2.87±1.67 after laparoscopic appendectomy. Considering a minimum clinically meaningful difference of 1 point in the VAS score, a 95% confidence level, 80% statistical power and equal allocation between the groups, the minimum calculated sample size was approximately 48 patients per group. It was rounded to 50 patients in each group. Therefore, the final study sample consisted of 100 patients, with 50 undergoing open appendectomy and 50 undergoing laparoscopic appendectomy.

Method

Preoperative Assessment: A detailed clinical history was obtained, including the onset, duration and location of abdominal pain, nausea, vomiting, fever and loss of appetite. General and abdominal examinations were performed. The diagnosis of acute appendicitis was supported by complete blood count, renal and liver function tests, urine examination and abdominal ultrasonography. Computed tomography was performed when the diagnosis remained uncertain.

All patients received intravenous fluids, prophylactic antibiotics and appropriate analgesia before surgery. Written informed consent was obtained after explaining the procedure, its possible benefits, risks and potential complications.

Surgical Procedure: All procedures were performed under general anaesthesia by qualified surgeons following standard operative protocols.

In the open appendectomy group, the appendix was approached through a gridiron or Lanz incision in the right lower abdomen. The mesoappendix was ligated, the appendiceal base was secured, and the appendix was removed. The wound was closed in layers.

In the laparoscopic appendectomy group, pneumoperitoneum was created, and the procedure was performed using the standard three-port technique. The appendix was identified, the mesoappendix was divided, and the appendiceal base was secured using endoloops or clips. The specimen was retrieved through one of the ports, and the port sites were closed appropriately.

All removed appendices were sent for histopathological examination.

Data Collection: Patient information was recorded using a predesigned case-record form. The following variables were documented:

- Age, sex and body mass index.
- Duration of symptoms and preoperative laboratory findings.
- Operative time, measured from skin incision to completion of skin closure.
- Intraoperative findings and complications.
- Conversion from laparoscopic to open surgery.
- Postoperative pain assessed using a 10-point visual analogue scale at 6, 12, 24 and 48 hours.
- Total postoperative analgesic requirement.
- Time to resumption of oral fluids and normal diet.
- Time to independent ambulation.
- Duration of postoperative hospital stay.
- Surgical-site infection, postoperative fever, ileus, intra-abdominal collection, bleeding and readmission.
- Cosmetic satisfaction assessed during follow-up.
- Time required to return to normal daily activity and work.

The primary outcomes were postoperative pain and duration of hospital stay. Secondary outcomes included operative time, analgesic requirement, surgical-site infection, other postoperative complications, cosmetic satisfaction and time to return to normal activity.

Postoperative Management and Follow-up: All patients received standardized postoperative antibiotics, analgesics, intravenous fluids and wound care according to institutional protocol. Oral fluids were initiated after the return of bowel sounds and absence of significant nausea or vomiting. Patients were discharged when they were afebrile, ambulatory, tolerating oral food and had adequate pain control.

Follow-up examinations were conducted on the 7th and 30th postoperative days. The surgical wound, postoperative complications, cosmetic satisfaction and return to normal activity were assessed during follow-up.

Statistical Analysis: Data were entered into Microsoft Excel and analysed using SPSS version 25. Continuous variables were expressed as mean with standard deviation or median with interquartile range, depending on data distribution. Categorical variables were presented as frequencies and percentages.

The independent-samples t-test or Mann–Whitney U test was used to compare continuous variables between the two groups. The chi-square test or

Fisher's exact test was used to compare categorical variables. A p-value of less than 0.05 was considered statistically significant.

Observation and Results

Table 1. Baseline characteristics of the participants

Variable	Open appendectomy (n=50)	Laparoscopic appendectomy (n=50)	t-test/χ^2-test	p-value
Age (years), mean ± SD	28.9 ± 8.4	29.6 ± 8.1	0.424	0.672
Male, n (%)	31 (62.0)	30 (60.0)	0.042	0.838
Female, n (%)	19 (38.0)	20 (40.0)		
BMI (kg/m²), mean ± SD	23.7 ± 3.2	24.1 ± 3.4	0.606	0.546
Duration of symptoms (days)	1.46 ± 0.58	1.40 ± 0.55	0.531	0.597
Total leukocyte count (×10³/mm³)	12.7 ± 3.1	12.4 ± 2.9	0.5	0.618

The mean age was 28.9±8.4 years in the open appendectomy group and 29.6±8.1 years in the laparoscopic group. Both groups were also similar regarding sex distribution, BMI, duration of symptoms and total leukocyte count. All p-values were greater than 0.05, indicating that there were no statistically significant baseline differences between the groups.

Table 2: Distribution of Clinical presentation

Clinical Feature	Open Appendectomy (n=50)	Laparoscopic Appendectomy (n=50)
Right lower abdominal pain	50 (100.0%)	50 (100.0%)
Loss of appetite	38 (76.0%)	36 (72.0%)
Nausea or vomiting	32 (64.0%)	30 (60.0%)
Fever	20 (40.0%)	18 (36.0%)
Rebound tenderness	35 (70.0%)	34 (68.0%)
Leukocytosis	39 (78.0%)	37 (74.0%)

Right lower abdominal pain was present in all patients in both groups. Other common clinical features were leukocytosis, loss of appetite, rebound tenderness, nausea or vomiting and fever. The distribution of these clinical findings was nearly similar in both groups, suggesting comparable disease presentation before surgery.

Table 3: Distribution of Operative outcomes

Outcome	Open Appendectomy	Laparoscopic Appendectomy	t-test	p-value
Operative time (minutes)	38.6 ± 8.7	52.4 ± 10.2	7.279	<0.001
Intraoperative blood loss (mL)	31.4 ± 10.8	18.6 ± 7.5	6.886	<0.001
Intraoperative complication, n (%)	1 (2.0%)	1 (2.0%)	0	1
Conversion to open surgery	Not applicable	0 (0.0%)		

The mean operative time was significantly longer for laparoscopic appendectomy than for open appendectomy (52.4±10.2 versus 38.6±8.7 minutes; p<0.001). However, blood loss was significantly lower in the laparoscopic group (18.6±7.5 versus 31.4±10.8 mL; p<0.001). Intraoperative complications were equally uncommon in both groups, and no laparoscopic procedure required conversion to open surgery.

Table 4: Comparison of postoperative pain

Assessment Time	Open Appendectomy	Laparoscopic Appendectomy	t-value	p-value
VAS at 6 hours	6.8 ± 1.2	5.3 ± 1.1	6.516	<0.001
VAS at 12 hours	5.8 ± 1.1	4.1 ± 1.0	8.086	<0.001
VAS at 24 hours	4.7 ± 1.0	2.9 ± 0.9	9.461	<0.001
VAS at 48 hours	3.1 ± 0.9	1.8 ± 0.7	8.062	<0.001

Postoperative VAS pain scores were significantly lower in the laparoscopic group at 6, 12, 24 and 48 hours, with all p-values below 0.001. At 24 hours, the mean VAS score was 2.9±0.9 after laparoscopic appendectomy compared with 4.7±1.0 after open appendectomy. These findings show that laparoscopic appendectomy provided better postoperative pain control.

Table 5. Distribution of postoperative recovery

Outcome	Open Appendectomy	Laparoscopic Appendectomy	t-test/χ^2-test	p-value
Postoperative analgesic doses	4.2 ± 1.1	2.8 ± 0.9	6.965	<0.001
Time to oral fluids (hours)	18.6 ± 5.2	11.4 ± 4.1	7.688	<0.001
Oral fluids tolerated within 24 hours, n (%)	33 (66.0%)	44 (88.0%)	6.832	0.009
Time to independent ambulation (hours)	20.2 ± 5.8	13.1 ± 4.6	6.782	<0.001
Hospital stay (days)	3.8 ± 1.1	2.4 ± 0.8	7.278	<0.001

Patients undergoing laparoscopic appendectomy required fewer analgesic doses and resumed oral fluids and independent ambulation significantly earlier than patients undergoing open appendectomy. Oral fluids were tolerated within 24 hours by 88% of laparoscopic patients compared with 66% of open surgery patients. The mean hospital stay was also significantly shorter after laparoscopic appendectomy (2.4±0.8 versus 3.8±1.1 days). These findings demonstrate faster postoperative recovery following laparoscopic surgery.

Table 6: Distribution of postoperative complications

Complication	Open Appendectomy (n=50)	Laparoscopic Appendectomy (n=50)	p-value
Surgical-site infection	6 (12.0%)	1 (2.0%)	0.112
Postoperative fever	4 (8.0%)	1 (2.0%)	0.362
Postoperative ileus	3 (6.0%)	1 (2.0%)	0.617
Intra-abdominal collection	0 (0.0%)	1 (2.0%)	1
Readmission within 30 days	1 (2.0%)	0 (0.0%)	1
At least one complication	9 (18.0%)	3 (6.0%)	0.121
Mortality	0 (0.0%)	0 (0.0%)	—

The overall complication rate was lower in the laparoscopic group than in the open group (6% versus 18%). Surgical-site infection, postoperative fever and ileus were more frequent following open appendectomy. However, none of these differences was statistically significant because all p-values were greater than 0.05. No mortality occurred in either group.

Table 7: Return to normal activity and satisfaction

Outcome	Open Appendectomy	Laparoscopic Appendectomy	t-test/χ^2-test	p-value
Return to normal activity (days)	10.6 ± 3.1	6.8 ± 2.4	6.854	<0.001
Cosmetic satisfaction score	7.2 ± 1.1	8.7 ± 0.9	7.463	<0.001
Satisfied or highly satisfied, n (%)	27 (54.0%)	42 (84.0%)	10.519	0.001

Patients returned to normal activity significantly earlier after laparoscopic appendectomy than after open appendectomy ((6.8±2.4) versus (10.6±3.1) days; p<0.001). The laparoscopic group also had a significantly higher cosmetic satisfaction score. Overall, 84% of laparoscopic patients were satisfied or highly satisfied compared with 54% of open appendectomy patients (p=0.001).

Discussion

The present study compared the perioperative and early postoperative outcomes of open and laparoscopic appendectomy in 100 patients with uncomplicated appendicitis. The two groups were comparable regarding age, sex, BMI, duration of symptoms and total leukocyte count. This baseline comparability suggests that the differences observed in postoperative outcomes were more likely related to the surgical approach than to differences in patient characteristics.

The operative time was significantly longer for laparoscopic appendectomy than for open appendectomy (52.4±10.2 versus 38.6±8.7 minutes; p<0.001). The additional time required for creating pneumoperitoneum, inserting ports, exploring the abdominal cavity and securing the appendix may explain this finding. Kulkarni et al. similarly reported a longer operative time for laparoscopic appendectomy than open appendectomy (51.26±11.67 versus 33.69±10.27 minutes) [7]. Srivastava et al. also observed a longer mean operative time with the laparoscopic procedure (53.17±12.4 versus 23.7±6.2 minutes) [8]. Pinate et al. reported the same pattern, with operative times of 95.2 minutes for laparoscopic surgery and 84.4 minutes for open surgery [9]. Thus, longer operative time remains a recognised disadvantage of laparoscopic appendectomy, although it may decrease with greater surgical experience and improved equipment.

Intraoperative blood loss was significantly lower in the laparoscopic group (18.6±7.5 mL) than in the open group (31.4±10.8 mL). This may be attributed to better magnification, precise identification of vessels and controlled division of the mesoappendix during laparoscopy. No laparoscopic operation required conversion to open surgery, which indicates that laparoscopic appendectomy was technically feasible in carefully selected patients with uncomplicated appendicitis.

Postoperative pain was significantly lower following laparoscopic appendectomy at 6, 12, 24 and 48 hours. At 24 hours, the mean VAS score was 2.9±0.9 in the laparoscopic group compared with 4.7±1.0 in the open group. Smaller incisions, reduced muscle separation and less tissue handling during laparoscopy may explain this difference. Gupta et al., in a prospective randomized Indian study, also reported lower postoperative pain scores and fewer wound-related complications following laparoscopic appendectomy [10]. Singh and Wadiwa found that a greater proportion of laparoscopic patients had low VAS scores compared with patients undergoing open appendectomy [11]. Srivastava et al. reported a mean postoperative VAS score of 2.17±1.13 after laparoscopic appendectomy compared with 4.30±0.64after open appendectomy [8]. These findings support the present observation that the minimally invasive approach provides better early postoperative pain control.

The lower pain scores were also reflected in the analgesic requirement. Patients in the laparoscopic group required 2.8±0.9 analgesic doses compared with 4.2±1.1 doses in the open group. Kulkarni et al. similarly found that the duration of intravenous analgesic use was shorter after laparoscopic surgery than after open appendectomy 2.38 days compared with 4.10 days [7]. Reduced postoperative pain and analgesic consumption may facilitate earlier mobilization, improve patient comfort and decrease medication-related adverse effects.

Recovery of gastrointestinal function was faster following laparoscopic appendectomy. Patients in the laparoscopic group started oral fluids after 11.4±4.1 hours compared with 18.6±5.2 hours in the open group. Furthermore, 88% of laparoscopic patients tolerated oral fluids within 24 hours compared with 66% of open appendectomy patients. Pinate et al. similarly observed earlier oral feeding, ambulation and resumption of routine activities after laparoscopic appendectomy [9]. Srivastava et al. reported that 96.7% of laparoscopic patients and 76.7% of open appendectomy patients tolerated oral liquids on the first postoperative day [8]. These findings suggest that reduced bowel manipulation and surgical trauma during laparoscopy may promote earlier postoperative recovery.

The duration of hospitalization was significantly shorter in the laparoscopic group (2.4±0.8 days) than in the open group (3.8±1.1 days). This finding agrees with several Indian studies. Yagnik et al., in a study restricted to uncomplicated appendicitis, reported mean hospital stays of 3.02 days after open appendectomy, 1.93 days after two-port laparoscopic appendectomy and 2.26 days after three-port laparoscopic appendectomy [12]. Kulkarni et al. observed hospital stays of 3.67±0.92days after laparoscopic surgery and 5.71±1.49 days after open surgery [7]. Srivastava et al. reported corresponding durations of 3.57±2.53 and 7.53±2.7 days [8]. In a recent Ahmedabad study, Patel et al. found that among patients with uncomplicated appendicitis, the median stay was three days after laparoscopic appendectomy and five days after open appendectomy [13].

The overall postoperative complication rate was lower following laparoscopic appendectomy than open appendectomy (6% versus 18%), although the difference was not statistically significant. Surgical-site infection occurred in 2% of laparoscopic patients and 12% of open surgery patients. The lower infection rate following laparoscopy may be related to smaller wounds and reduced direct contact between the inflamed appendix and the abdominal incision. Yagnik et al. reported surgical-site infection rates of 1.92% in laparoscopic patients and 10.63% in open appendectomy patients, with a statistically significant difference [12]. However, Srivastava et al. found no significant difference in the overall complication rate despite wound infections being more common after open surgery [8]. Patel et al. also reported more surgical-site infections after open appendectomy, but the difference was not statistically significant [13]. Thus, the direction of the findings is generally consistent across studies, while statistical significance varies according to sample size, case selection and the number of observed complications.

An intra-abdominal collection occurred in one laparoscopic patient and no open appendectomy patient. This isolated observation should be interpreted cautiously because the difference was not statistically significant. While laparoscopic surgery may reduce incisional infection, intra-abdominal collections can occasionally occur because of contamination, inadequate removal of infected material or insufficient peritoneal lavage. In the present study, only patients with uncomplicated appendicitis were included; therefore, the absolute risk of intra-abdominal infection was low.

The laparoscopic group achieved independent ambulation significantly earlier and returned to normal activity in 6.8±2.4 days compared with 10.6±3.1 days in the open group. Gupta et al. similarly reported earlier discharge and return to normal activity following laparoscopic

appendectomy [10]. Shaikh et al. found that patients resumed normal activity after 8.13±1.33 days following laparoscopic appendectomy compared with 10.10±2.20 days following open surgery [14]. Fatma et al. also reported that laparoscopic appendectomy was associated with less postoperative pain, earlier discharge and earlier return to routine work [15].

Cosmetic satisfaction was significantly higher after laparoscopic appendectomy. The mean cosmetic satisfaction score was 8.7±0.9 in the laparoscopic group and 7.2±1.1 in the open group. Overall, 84% of laparoscopic patients were satisfied or highly satisfied compared with 54% of open appendectomy patients. Srivastava et al. reported that 90% of laparoscopic patients were extremely satisfied compared with 60% of open surgery patients [8]. Smaller port-site scars and the avoidance of a comparatively larger right lower abdominal incision likely contributed to greater satisfaction.

No mortality was recorded in either group, and only one patient required readmission. These findings indicate that both open and laparoscopic appendectomy were safe for uncomplicated appendicitis. However, laparoscopic appendectomy provided important short-term benefits, including lower pain, fewer analgesic doses, earlier oral intake and ambulation, shorter hospital stay, faster return to normal activity and greater cosmetic satisfaction. Its principal disadvantage was a longer operative time.

The study had certain limitations. It included a relatively small sample from a single institution, and the follow-up period was limited to 30 days. The method of selecting the surgical procedure may have introduced selection bias if formal random allocation was not performed. Differences in surgeon experience could also have influenced operative time and postoperative outcomes. Cost-effectiveness and long-term complications were not evaluated. Furthermore, because only uncomplicated appendicitis was included, the findings cannot be directly generalized to patients with perforation, gangrene, appendicular abscess or generalized peritonitis.

Conclusion

Laparoscopic appendectomy was a safe and effective treatment for uncomplicated appendicitis. Compared with open appendectomy, it was associated with less postoperative pain, reduced blood loss and analgesic requirement, earlier oral intake and ambulation, shorter hospital stay, faster return to normal activity, and greater cosmetic satisfaction. Although laparoscopic appendectomy required a longer operative time, its postoperative recovery benefits outweighed this limitation. Therefore, laparoscopic appendectomy may be preferred for uncomplicated appendicitis when appropriate surgical expertise and facilities are available.

Funding: None

Conflict of Interest: None

References

1. De U. Laparoscopic versus open appendectomy in West Bengal, India. Chin J Dig Dis. 2005;6(4):165-9. doi:10.1111/j.1443-9573.2005.00225.x.
2. Geetha KR, Kudva A, Bhavatej. Laparoscopic appendicectomy versus open appendicectomy: a comparative study of clinical outcome and cost analysis—Institutional experience. Indian J Surg. 2009;71(3):142-6. doi:10.1007/s12262-009-0038-z.
3. Gundavda MK, Bhandarwar AH. Comparative study of laparoscopic versus open appendicectomy. Indian J Med Sci. 2012;66(5-6):99-115.
4. Bhosle RV, Degloorker GG. A retrospective comparative study of laparoscopic appendectomy and open appendectomy. Int Surg J. 2018;5(7):2612-5. doi:10.18203/2349-2902.isj20182783.
5. Shaikh AH, Tandur AE, Sholapur S, Vangal G, Bhandarwar AH, Ghosh A, et al. Laparoscopic versus open appendectomy: a prospective comparative study and 4-year experience in a tertiary care hospital. Surg J (N Y). 2022;8(3):e208-14. doi:10.1055/s-0042-1751112.
6. Patel PY, Rathod R, Akhani MK. Laparoscopic versus open appendectomy in complicated and uncomplicated appendicitis in adults: a two-year single-center retrospective cohort study. Cureus. 2025;17(9):e92258. doi:10.7759/cureus.92258.
7. Kulkarni N, Rayate A, Gupta K, Barhate N. Comparison of open and laparoscopic appendicectomy in rural teaching hospital. Walawalkar Int Med J. 2021;8(1):14-9.
8. Srivastava S, Yadav GD, Shukla P, Verma S. A prospective and comparative study of laparoscopic appendectomy and open appendectomy in the surgical treatment of appendicitis. Cureus. 2025;17(1):e77631. doi:10.7759/cureus.77631.
9. Pinate AR, Shoeb MFR, Kumar SCR. Is the laparoscopic approach superior to open approach for treatment of acute appendicitis? A hospital based experience. Int Surg J. 2017;4(5):1726-30. doi:10.18203/2349-2902.isj20171629.
10. Gupta AK, Chawda V, Gupta S, Goel A, Bhagat TS, Agarwal A. Comparative evaluation of laparoscopic versus open appendicectomy in cases of acute appendicitis. Int Surg J.

2017;4(8):2637-41. doi:10.18203/2349-2902.isj20173403.
11. Singh LM, Wadiwa YS. A retrospective comparative study between laparoscopic and open appendectomy in teaching hospital of India. Int Surg J. 2018;5(9):3034-7. doi:10.18203/2349-2902.isj20183718.
12. Yagnik VD, Rathod JB, Phatak AG. A retrospective study of two-port appendectomy and its comparison with open appendectomy and three-port appendectomy. Saudi J Gastroenterol. 2010;16(4):268-71. doi:10.4103/1319-3767.70611.
13. Patel PY, Rathod R, Akhani MK. Laparoscopic versus open appendectomy in complicated and uncomplicated appendicitis in adults: a two-year single-center retrospective cohort study. Cureus. 2025;17(9):e92258. doi:10.7759/cureus.92258.
14. Shaikh AH, Tandur AE, Sholapur S, Vangal G, Bhandarwar AH, Ghosh A, et al. Laparoscopic versus open appendectomy: a prospective comparative study and 4-year experience in a tertiary care hospital. Surg J (N Y). 2022;8(3):e208-14. doi:10.1055/s-0042-1751112.
15. Fatma N, Kumar B, Jha AK, Thakur IS. Laparoscopic versus open appendicectomy a comparative study of clinical outcomes in an institutional centre. Int J Res Med Sci. 2023;11(6):1949-55. doi:10.18203/2320-6012.ijrms20231417.