

COMPARATIVE STUDY BETWEEN LAPAROSCOPIC AND OPEN APPENDICECTOMY AMONG ADULT SAMPLE FROM NINEVEH PROVINCE

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ABSTRACT

Background: Appendicitis typically requires surgery to prevent rupture in the abdomen. Laparoscopic appendicectomy offers several benefits, including faster recovery time, less discomfort, improved cosmetic outcomes, shorter hospital stay, and lower risk of wound infection and postoperative morbidity. **Objectives:** Is to identify the safest and most successful appendectomy approach based on clinical outcomes. **Methods:** A cross-sectional study of recorded data from the department of general surgery at Hamdanyia General Hospital, from April 2024 to the end of April 2025. The study included 200 subjects diagnosed with acute appendicitis. 50 patients did laparoscopic appendicectomy and 150 did open appendicectomy. Patients having past laparotomy incisions or general anesthesia contraindications were excluded from the study. The questionnaire form consisted from four parts. Part one for demographic information of the study participants. Part two for patients' preoperative information, while part three and part four for patients' operative and postoperative details and complications respectively. **Results:** The mean age \pm standard deviation of the study participants 27.08 ± 6.96 years. Moreover; male: female ratio was 1:64. Furthermore; there is no statistically significant difference between the study groups regarding their gender, ages, WBC counts, past medical history, appendicitis preoperative complexity, vomiting, pelvic abscess, port site infection, and pus drainage (P value > 0.05). On the other hand; there is statistically significant difference between the study groups regarding return to normal life, starting oral intake, hospital stay, starting bowel motion, operation time and wound infection (P value < 0.05). **Conclusion:** Laparoscopic appendicectomy offers advantages over open appendicectomy. The advantages of this operation include a decreased risk of complications, faster return to regular activities, improved food tolerance, shorter hospital stay, faster resumption of bowel motions, and longer surgical time. Laparoscopy is the most efficient and safe a approach for appendicectomy, as long as the surgeons have the necessary skills and the surgical instruments are available.

KEYWORDS: Appendicectomy, Iraq, Laparoscopy, Nineveh, Open.

1- INTRODUCTION

The appendix has long been regarded as a vestigial organ.^[1] But the appendix can become inflamed, which is frequent in children and young adults and is known as appendicitis.^[2] Appendicitis typically requires surgery to prevent rupture in the abdomen, known as an appendicectomy. This will need surgical removal of the appendix.^[3] Laparoscopic appendicectomy (LA) is a popular surgical option that has been utilized since the 1980s and is now regarded the gold standard.^[4] Laparoscopic appendicectomy enables the use of three tiny ports, each measuring between 5 and 10 mm,

making the procedure significantly safer. The appendix may be readily seen and moved.^[5]

Laparoscopic appendicectomy offers several benefits, including faster recovery time, less discomfort, improved cosmetic outcomes, shorter hospital stay, and lower risk of wound infection and postoperative morbidity.^[6-7] However, there is debate around laparoscopic appendicectomy, particularly in cases of severe appendicitis.^[8] The main reason has been attributed to its longer operating time and increased risk of infection and abscess following the surgical procedure.^[9]

Open appendectomy is another surgical operation performed to manage appendicitis. The method has been utilized for centuries since its original description in 1894.^[10] Although laparoscopic appendectomy is often regarded as the preferred option over open appendectomy, its effectiveness and superiority are still controversial. While some studies suggest that laparoscopic appendectomy improves patient outcomes, meta-analyses and randomized trials have produced mixed findings.^[11-13]

This study aimed to identify the safest and most successful appendectomy approach based on clinical outcomes, as previous studies had shown inconsistent findings.

2-PATIENTS AND METHODS

After obtaining ethical approval from the ethical committee of Nineveh Health directorate. A cross-sectional prospective study of recorded data from the department of general surgery at Hamdanyia General Hospital in Nineveh/ Iraq, from April 2024 to the end of April 2025. Parents provided written consent for participating in this study.

The study included 200 subjects diagnosed with acute appendicitis who presented to the surgical team of the study's setting were included in this study, including female with previous cesarean sections through a Pfannenstiel incision. Out of 200 patients, 50 patients did laparoscopic appendectomy and 150 did open appendectomy. Patients having past laparotomy incisions or general anesthesia contraindications were excluded from the study.

Clinical data collected included demographics, hospital stay, postoperative oral intake, bowel movement, operating time, surgical findings, co-morbidities, WBC count, body mass index and postoperative problems. The laparoscopic appendectomy was performed through three ports: a 10 mm optical port (supraumbilical), a 10 mm port (right subcostal) for securing the mesoappendix with a vessel sealing system (LigaSure COVIDIENTM) (Maryland Jaw Open Sealer/Divider 5 mm - 23 cm), and a 5 mm port in the left iliac fossa for appendix handling. The standard gridiron incision was used to execute an open appendectomy. A pelvic drain was used in difficult cases of both open and laparoscopic appendectomy.

Statistical analysis: the demographic, clinical findings, and surgical outcomes were recorded and analyzed in Microsoft Excel. Data were entered into SPSS version 30.0, a statistical analysis tool for social sciences. Scale variables were reported as mean and standard deviation and compared using parametric testing. In all statistical tests and procedures, level of significance P value was set at ≤ 0.05 considered as significant difference or association.

3. RESULTS

The study includes 200 patients with the mean age \pm standard deviation of the study participants was 27.08 ± 6.96 years. Moreover; male: female ratio was 1:64. Furthermore; there is no statistically significant difference between the study groups regarding their gender and ages. As shown in table 3.1.

Table 3.1: Some of the patients' demographic information (Number = 200).

Variable	Laparoscopic appendectomy = 50	Open appendectomy =150	P-Value
Sex:			
- Male	27 (54%)	89 (59.34%)	0.138
- Female	23 (46%)	61 (40.66%)	
Age (years), mean \pm standard deviation	27.21 ± 6.89	26.87 ± 7.04	0.739

Table 3.2 displays a comparison of the preoperative data between the study groups. There is no statistically

significant difference between the study groups regarding their WBC counts and past medical history.

Table 3.2: Patients' preoperative information (Number = 200).

Variable	Laparoscopic appendectomy = 50	Open appendectomy = 150	P-Value
WBC count per mm³, mean \pm standard deviation	13.478 ± 3.293	14.219 ± 2.738	0.356
Past medical history:			0.891
- Hypertension	3 (6%)	10 (6.66%)	
- Diabetes mellitus	2 (4%)	7 (4.66%)	

Table 3.3 displays a comparison of the appendicitis complexity between the study groups. There is no statistically significant difference between the study

groups regarding their appendicitis preoperative complexity.

Table 3.3: Appendicitis complexity.

Variable	Laparoscopic appendicectomy = 50	Open appendicectomy = 150	P-Value
Surgical findings:			
-Uncomplicated acute appendicitis	45 (90%)	141 (94%)	0.214
-Complicated acute appendicitis	5 (10%)	9 (6%)	

Table 3.4 displays a comparison of the operative information between the study groups. There is statistically significant difference between the study

groups regarding return to normal life, starting oral intake, hospital stay, starting bowel motion, and operation time.

Table 3.4: Operative information.

Variable	Laparoscopic appendicectomy = 50	Open appendicectomy = 150	P-Value
Return to normal life activity	6.72 ± 2.78	12.53 ± 3.21	<0.001
Oral intake, mean ± standard deviation	4.36 ± 2.23	7.37 ± 4.12	<0.001
Hospital stay, mean ± standard deviation	0.78 ± 0.21	2.55 ± 1.17	<0.001
Starting bowel movement	1.29 ± 0.43	2.77 ± 1.28	<0.001
Operation time	45.16 ± 7.28	28.23 ± 11.27	<0.001

Table 3.5 displays a comparison of the postoperative complication between the study groups. There is statistically significant difference between the study

groups regarding their wound infection, while no statistically significant difference regarding vomiting, pelvic abscess, port site infection, and pus drainage.

Table 3.5: Postoperative complications.

Complication	Laparoscopic appendicectomy = 50	Open appendicectomy = 150	P-Value
Vomiting	1 (2.5%)	0 (0%)	0.672
Wound infection	1 (2.5%)	51 (34%)	<0.001
Pelvic abscess	0 (0%)	7 (4.6%)	0.082
Port site infection	1 (2.5%)	0 (0%)	0.672
Pus drainage	1 (2.5%)	4 (2.66%)	0.917

4. DISCUSSION

The study that the mean age of patients with acute appendicitis was around 27 years, which is closed to what was found by Tabarek Yaseen et al^[14] and Alferdo Alvarado^[15] Moreover; the study found that male gender was slightly predominate over female gender regarding appendicitis, this is in the same way of Theofanis F Kollias et al^[16] and Muhammad A. Albahadili^[17] studies' findings.

The current study found that patients with laparoscopic appendicectomy returned to their usual life activities and starting bowel motion earlier than those with open appendicectomy, which is consistent with Jakob Kleif et al^[18] and Ahmed H. Hussein^[19] studies' results. In addition to that; most of the study patients who had laparoscopic appendicectomy started oral intake sooner than those with open appendicectomy, which is in agreement of Sun Gu Lim et al^[20] and Manish Bhadoo et al^[21] studies' results. Furthermore; the study consistently showed that patients undergoing laparoscopic appendectomy were typically discharged earlier than those who had open appendectomy. This is one of the key advantages of the laparoscopic approach, due to reduced pain and faster recovery. Mustafa Adil Abbas Hilmiet al had comparable findings.^[22] In addition to

that; laparoscopic appendicectomy operation found in this study to last more than open appendicectomy. This is consistent to Tariq Al-Aubaidi study findings.^[23]

Laparoscopic appendectomy is associated with fewer overall postoperative complications and a significantly lower rate of wound infection compared to open appendectomy. This is in agreement with Ali Ridha Hassoon Al-Dujaili et al study findings.^[24]

5-CONCLUSION

The study concluded that laparoscopic appendicectomy offers advantages over open appendicectomy. The advantages of this operation include a decreased risk of complications, faster return to regular activities, improved food tolerance, shorter hospital stay, faster resumption of bowel motions, and longer surgical time. Laparoscopy is the most efficient and safe approach for appendicectomy, as long as the surgeons have the necessary skills and the surgical instruments are available.

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Conflict of interest

About this study, the authors disclose no conflicts of interest.

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