

A Comparative Study between Open Appendicectomy and Laparoscopic Appendicectomy: A Single-center Experience

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ABSTRACT

Appendicitis is a surgical emergency that is encountered by surgeons all over the world. Today, laparoscopic appendicectomy is the ideal procedure that is done for a case of appendicitis.

Aim: The aim of the study is to show the benefits of laparoscopic appendicectomy and to determine the advantages of laparoscopic appendicectomy over the conventional open method of appendicectomy.

Materials and methods: This was a prospective study that was carried out from March 2016 to February 2019. The study was conducted at SRM Medical College Hospital and Research Centre, Kattankulathur, Tamil Nadu, India. Investigations, such as complete blood count (CBC), X-ray of the abdomen, ultrasound abdomen, and CT scan of the abdomen, were done. A total of 101 patients were studied, and the results obtained were tabulated. The statistics were analyzed using SPSS package 16.0. Ethical clearance was obtained from the institutional ethics committee.

Results: From our study, it was found that for most of the patients who presented with appendicitis, laparoscopic appendicectomy was the procedure of choice (66.33%). The duration of surgery for most of our patients was 60 minutes or less. Moreover, 82.35% of patients who underwent open appendicectomy and 89.55% of patients who underwent laparoscopic appendicectomy stayed in the hospital for only 3 days or less after surgery.

Conclusion: Our study shows the benefits of laparoscopic appendicectomy and the reason that it is the procedure of choice in cases of appendicitis.

Keywords: Appendicitis, Laparoscopic appendicectomy, Open appendicectomy, Ultrasound abdomen.

World Journal of Laparoscopic Surgery (2021); 10.5005/jp-journals-10033-1468

INTRODUCTION

Appendicitis is a surgical emergency that is encountered by surgeons all over the world. In order to diagnose a condition of appendicitis accurately, a detailed history and a thorough clinical examination must be done. Investigations, such as complete blood count (CBC), ultrasound abdomen, and CT scan of the abdomen, are very useful that may be done to arrive at the diagnosis of appendicitis. As far as the intervention for a case of appendicitis is concerned, surgery may be done either through open or laparoscopic method. Today, laparoscopic appendicectomy is the ideal procedure that is done for a case of appendicitis. However, it is also important to know when to convert a case of laparoscopic appendicectomy to open appendicectomy.

AIM

The aim of the study is to show the benefits of laparoscopic appendicectomy and to determine the advantages of laparoscopic appendicectomy over the conventional open method of appendicectomy.

MATERIALS AND METHODS

This was a prospective study that was carried out from March 2016 to February 2019, for a period of 3 years. The study was conducted at SRM Medical College Hospital and Research Centre, Kattankulathur, Tamil Nadu, India. A detailed history was collected and a thorough clinical examination was done. Investigations, such as CBC, X-ray of the abdomen, ultrasound abdomen, and CT scan of the abdomen, were done. The CT scan of the abdomen was done only when absolutely required. A total of 101 patients were studied, and the results obtained were tabulated. The statistics

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How to cite this article: Yogish V, Grover H, Bharath V. A Comparative Study between Open Appendicectomy and Laparoscopic Appendicectomy: A Single-center Experience. *World J Lap Surg* 2021;14(3):205–207.

Source of support: Nil

Conflict of interest: None

were analyzed using SPSS package 16.0. Ethical clearance was obtained from the institutional ethics committee.

RESULTS

From the results of our study, it was found that for most of the patients who presented with appendicitis, laparoscopic appendicectomy was the procedure of choice (66.33%). The patients usually presented to the hospital with complaints of abdominal pain over the right lower quadrant. The hospital stay for most of our patients was 3 days or less. Moreover, 82.35% of patients who underwent open appendicectomy and 89.55% of patients who underwent laparoscopic appendicectomy stayed in the hospital for only 3 days or less after surgery. The duration of surgery for most of our patients was 60 minutes or less. It was also seen that the patients who underwent laparoscopic appendicectomy were able to return to work faster than those who had to undergo the conventional open method of appendicectomy (Tables 1 to 6).

Table 1: Age-group of patients who underwent appendicectomy

Age (years)	Open appendicectomy (n = 34)		Laparoscopic appendicectomy (n = 67)	
	Number	Percentage	Number	Percentage
20–30	7	20.58	31	46.26
31–40	10	29.41	15	22.38
41–50	5	14.70	10	14.92
51–60	8	23.52	4	5.97
61–70	4	11.76	7	10.44

Table 2: Gender of patients who underwent appendicectomy

Gender	Open appendicectomy (n = 34)		Laparoscopic appendicectomy (n = 67)	
	Number	Percentage	Number	Percentage
Male	20	58.82	40	59.70
Female	14	41.17	27	40.29

Table 3: Presentation of patients with appendicitis

Presentation	No. of patients	Percentage
Abdominal pain over the right lower quadrant	72	71.28
Nausea	20	19.80
Vomiting	25	24.75
Fever	45	44.55

Table 4: Duration of hospital stay for patients who underwent appendicectomy

Duration of hospital stay after surgery (days)	Open appendicectomy (n = 34)		Laparoscopic appendicectomy (n = 67)	
	Number	Percentage	Number	Percentage
3 days or less	28	82.35	60	89.55
4–7 days	4	11.76	5	7.46
8–15 days	2	5.88	2	2.98

Table 5: Duration of surgery for patients who underwent appendicectomy

Duration of surgery (minutes)	Open appendicectomy (n = 34)		Laparoscopic appendicectomy (n = 67)	
	Number	Percentage	Number	Percentage
60 minutes or less	20	58.82	37	55.22
61–90 minutes	10	29.41	23	34.32
91–120 minutes	4	11.76	7	10.44

DISCUSSION

Today, laparoscopic appendicectomy is considered a safe and effective method to treat appendicitis. When a patient is admitted in the hospital with appendicitis, initially antibiotics must be started and then a decision must be taken on the need for appendicectomy. A large series of laparoscopic appendicectomy for acute appendicitis

Table 6: Return to routine work time for patients who underwent appendicectomy

Return to routine work (days)	Open appendicectomy (n = 34)		Laparoscopic appendicectomy (n = 67)	
	Number	Percentage	Number	Percentage
7 days or less	15	44.11	45	67.16
8–14 days	10	29.41	15	22.38
More than 15 days	9	26.47	7	10.44

initially came from Germany and was published by Pier et al.¹ Laparoscopic appendicectomy has several advantages over the conventional open method of appendicectomy. In the laparoscopic method, the patient's recovery is quicker, and the patient can also return to his or her routine work at the earliest. The amount of pain that the patient may endure is far less in the laparoscopic method than in the open method. Ortega et al., in their study of 135 patients, showed that the pain level was much less in the laparoscopic method as compared to the open method.² The problem of wound infection is also much less in the laparoscopic method. Marzouk et al. also showed in his study that the postoperative wound infection rate was much less in the laparoscopic method.³ The length of hospital stay is significantly reduced if a laparoscopic appendicectomy is done as compared to the open method. In their studies, Ray-Offor et al.,⁴ Rbihat et al.,⁵ and Vellani et al.,⁶ showed that the length of hospital stay was much shorter for the patients who underwent laparoscopic appendicectomy. In our study, the patients who underwent laparoscopic appendicectomy had a hospital stay of 3 days or less after surgery. The operative time is also reduced quite a bit in case of laparoscopic appendicectomy. Our study also shows that most of our patients had an operative time of 60 minutes or less. The need for analgesia reduces significantly in the case of laparoscopic appendicectomy. Biondi et al., in their study of 593 patients, showed that laparoscopic appendicectomy was associated with a shorter hospital stay, with a less need for analgesia and with a faster return to daily activities.⁷ Shaikh et al. also showed in their study the need for lesser requirement of analgesia following laparoscopic appendicectomy.⁸ Li et al. also reported similar findings in their meta-analysis.⁹ In the case of young women, further care is needed while making a diagnosis of appendicitis since the differential diagnosis of right lower quadrant pain is extensive and includes gynecologic pathology as well.¹⁰ In addition, Azaro et al. had previously conducted studies to show that laparoscopic appendicectomy is a safe procedure.¹¹ The port placement and the sites of the incisions are extremely important while performing laparoscopic appendicectomy. Studies have been done to improve cosmesis in cases of laparoscopic appendicectomy (Tables 7 and 8).¹²

CONCLUSION

From our study, it was found that laparoscopic appendicectomy (66.33%) was the preferred choice of surgery for appendicitis. The hospital stay was 3 days or less for most of our patients. Moreover, 82.35% of patients who underwent open appendicectomy and 89.55% of patients who underwent laparoscopic appendicectomy stayed in the hospital for only 3 days or less after surgery. The duration of surgery was 60 minutes or less in 58.82% of patients



Table 7: Comparison of presentation of patients with appendicitis

Presentation	Our study	Rangarajan et al. ¹³	Yakan et al. ¹⁴
Abdominal pain over the right lower quadrant	71.28%	66.67%	89%

Table 8: Comparison of procedure done between our study and another study

Procedure	Our study	Yau et al. ¹⁵
Open appendicectomy	33.66%	28.27%
Laparoscopic appendicectomy	66.33%	71.72%

who underwent open appendicectomy and in 55.22% of patients who underwent laparoscopic appendicectomy. The patients who underwent laparoscopic appendicectomy were able to return to work faster (67.16%) than those who underwent open appendicectomy. This shows that laparoscopic appendicectomy has a clear advantage over open appendicectomy and the reason that laparoscopic appendicectomy is the procedure of choice in cases of appendicitis.

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