

# Postoperative outcome of early appendectomy in patients having appendicular mass by laparoscopic surgery

Abdul Razaque Shaikh<sup>1</sup>, Aijaz Ahmed Shaikh<sup>2</sup>, Saba Gul<sup>3</sup>

Professor<sup>1</sup>, Assistant Professor<sup>2</sup>, Registrar Surgery<sup>3</sup>

(Department of Surgery Liaquat University of Medical and Health Sciences, Jamshoro)

## Author's Contribution

<sup>1</sup>Drafting the work or revising it critically for important intellectual content, Final approval of the version to be published

<sup>2,3</sup>Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work,

Funding Source: None

Conflict of Interest: None

Received: Sept 1, 2020

Accepted: Nov 30, 2020

Address of Correspondent

Prof Abdul Razaque Shaikh

Department of Surgery Liaquat university of Medical and Health Sciences, Jamshoro

razaque\_shaikh@yahoo.com

## ABSTRACT

**Objective:** To determine the frequency of postoperative outcome of early appendectomy in patients having appendicular mass by laparoscopic surgery.

**Methodology:** It was a descriptive & case series study. Study was conducted in the department of surgery Liaquat University Hospital Jamshoro/Hyderabad, during the time period of Jan 2015 to Dec 2017. Patients were both gender and patients aged between 10-40 years having tender and palpable right iliac fossa mass on clinical examination confirmed on ultrasound abdomen as appendicular mass. The postoperative hospital stay was counted and wound infection was noted.

**Results:** During the study period of one year, total of 73 patients with appendicular mass were included in this study. The age range 10 to 40 years with mean age  $\pm$  SD (range) was 25.75 $\pm$ 9.2 years. Out of them 46 (63.0%) were male whereas 27(37.0 %) were females During operation we found appendicular abscess in 12(16.43%) cases followed by perforated appendix in 10(13.69%) cases, while during operations we found in adhesions in 15(20.5%) cases and difficulty in localisation of appendix 06 (8.21%) cases. The mean hospital stay + SD (range) was 4.91 $\pm$ 1.65 (3-9 days). Wound infection was seen in 15(20.5 %) cases.

**Conclusion:** Early appendectomy can be safely performed in appendix mass without any increased risk of mortality and morbidity. The outcome of early surgical management of appendicular lump showed benefits for single hospitalization, shorter hospital stay and lower treatment costs.

**Keywords:** Early appendectomy; Appendicular mass: Laparoscopic surgery.

**Cite this article as:** Shaikh AR, Shaikh AA, Gull S. Postoperative outcome of early appendectomy in patients having appendicular mass by laparoscopic surgery. *Ann Pak Inst Med Sci.*2020; 16(4):166-169.

## Introduction

Appendicular mass is an inflammatory condition in the right iliac fossa consist of localization of inflamed appendix, adjacent viscera, and greater omentum. After the 3 to 5 days of initial attack of acute appendicitis right iliac fossa mass results from a walled-off appendicular perforation.<sup>1</sup> As a natural defense mechanism, the omentum, and small bowel wrap up the inflamed appendix in an attempt to prevent infection from spreading by isolating the inflamed organ from the rest of the abdominal cavity.<sup>2</sup> In the united states reported appendectomy is one of the most common surgical procedures was performed, with over three lacs appendectomies performed annually

for up to 20 percent of adults with complicated appendicitis.<sup>3</sup>

Appendiceal lump management is controversial; Immediate appendicectomy is taking a surge over traditional interval appendicectomy, however, there were problems during the surgery due to the distorted inflamed tissues. So, they were approved by a few surgeons who continued to perform interval appendectomy.<sup>4,5</sup> Early surgical intervention of appendiceal mass is a safe method, reduces hospital stay, readmission in hospitals, and allows early treatment of unexpected pathology like carcinoma or tuberculosis.<sup>6</sup> Innovative laparoscopic is a great step into new technology as a method that is as safe as possible and reduces the patient's economic burden. Many surgeons

now choose lap appendectomy for acute appendicitis and appendicular mass. We conducted this study to assess the outcome of laparoscopic appendectomy in patients with complicated appendicitis in our institution.

## Methodology

We performed a prospective study conducted in the general surgery department Hyderabad/Jamshoro, during the period of Jan 2015 Dec 2017 were studied, on 73 patients with appendicular mass. The cases included in this were both gender and patients aged between 10-40 years having tender and palpable right iliac fossa mass on clinical examination confirmed on ultrasound abdomen as appendicular mass. Patients with a mass in right iliac fossa but with associated features like fixed and immobile mass for more than 1 month, bleeding per rectum, history of weight loss, cardiorespiratory diseases like recent myocardial infarction, congestive cardiac failure, chronic obstructive pulmonary disease, and renal diseases like glomerulonephritis, nephrotic syndrome, and renal failure etc, gynecological and obstetrical diseases in female patients were excluded from the study. All the patients underwent preoperative evaluation and optimization. After taking the written and informed consent for surgery under anesthesia. Patients were discharged when they were free of any complaints and able to take orally and they were advised for follow-up on 7<sup>th</sup> postoperative day. The postoperative hospital stay was counted and wound infection was noted and entered in proforma.

The data were analyzed through SPSS version 21. Mean and the standard deviation was calculated for a quantitative hospital stay. Frequencies and percentages were calculated for qualitative variables like gender and a postoperative outcome like wound infection. Stratification was done with regards to age and gender to see the impact of these on the outcome.

## Results

During the study period of one year, total of 73 patients with appendicular mass were included in this study. The age range 10 to 40 years with a mean age  $\pm$  SD (range) was 25.75 + 9.2 years. In this study, most of the patients i.e. 37(50.6%, n = 73) were found in the age group 10 to 20 years, 26(35.6%, n = 73) patients were observed in the age group 21 to 30 years whereas 10(13.6%, n = 73) patients were ranged between 31 to 40 years of age. Out of them 46 (63.0%) were male whereas 27(37.0 %) were females (Table I).

The mean operative time + SD (range) was 38.83 + 4.16 minutes (15 to 90). Out of 73 patients, 33(45.2%) were operated on between 30 to 60 minutes while 40(54.7%) patients were operated on from 61 to 90 minutes. Preoperative we found appendicular abscess 12(16.43%)

**Table I: Demographic variables (n-73)**

Variable	Patients	%
<b>Age in years</b>		
10 – 20	37	50.6%
21 – 30	26	35.6%
31 – 40	10	13.6%
<b>Gender</b>		
Male	46	63%
Female	27	37%

cases followed by perforated appendix 10(13.69%) cases, while intraoperative felt difficulties were in adhesiolysis 15(20.5%) cases and difficulty in localisation of appendix 06 (8.21%) cases. The mean hospital stay  $\pm$  SD (range) was 4.91 +1.65 (3-9 days). Most of the patients 58(79.4%) stayed for 2 to 6 days in the hospital, 10(13.69%) patients stayed between 7 to 10 days and 5(6.84%) patients had the hospital stay > 10 days. Postoperative wound infection was seen in 15(20.5 %) cases (Table No II).

**Table II: Operative and Postoperative variable**

Variable	Patients	%
<b>Operative time</b>		
30 to 60 minutes	33	45.20%
61 to 90 minutes	40	54.70%
<b>Per-operative findings</b>		
Appendicular abscess	12	16.43%
Perforated appendix	10	13.69%
Loculated pus collection	02	2.73%
Gangrenous appendix	06	8.21%
<b>Intra-operative Problems</b>		
Difficulty in localisation of appendix	06	8.21%
Difficulty in adhenolysis	15	20.5%
Bleeding	07	9.58%
<b>Hospital stay</b>		
2 to 6 days	58	79.40%
7 to 10 days	10	13.69%
> 10 days	05	6.84%
<b>Postoperative Complications</b>		
Wound infection	15	20.50%

## Discussion

There are many controversies about the optimal management of patients with the appendicular lump.<sup>7</sup> However, there are several management options like nonsurgical treatment, interval appendicectomy, and emergency appendicectomy. Each management option has its advantage and disadvantage.<sup>8,9</sup> Pedram penhai et al suggested conservative management and interval appendectomy after follow up of the case.<sup>10</sup> The early appendectomy is the best and safest method of

appendicular lump management in several studies in adults.<sup>11</sup>

In our study observed were mostly appendicular lump in the young age group 37(50.6%) cases because young patients tolerate more pain and avoid consult the surgeon regarding pain and males were predominant in our group. M. J. Fassi Fihri<sup>12</sup> also reported appendicular lump common in young age and males group.

Horwitz et al, has recommended avoiding the laparoscopic method in complex appendicitis due to the fact of the increased chance of post-operative, intra-abdominal abscesses.<sup>13</sup> Several factors may be involved in this outcome. All procedures performed by laparoscopic surgeons and good peritoneal cleansing with a large amount of saline were common in these cases, in addition to very strict intravenous and oral antibiotic regimens. Some studies have provided this method as safe and possible without serious injury. The laparoscopic method provides a less invasive condition with a less hospital stay and faster recovery<sup>14</sup>, however it requires a specialist to manipulate the intestines and dissect the appendicular lump safely.<sup>15</sup>

In our study during operation we found appendicular abscess in 12(16.43%) cases, perforated appendix in 10(13.69%) cases, loculated pus collection in 2(2.73%) cases and gangrenous appendix in 06(8.21%) cases. Compared with study of Vikesh Agrawal<sup>8</sup> reported patients were developed appendicular complications along with appendicular mass, which included appendicular abscess (62.5%), gangrenous appendicitis (25%), sloughed-out appendix (8.33%) and appendicular perforation (4.16%).

There are so many advantages of the laparoscopic procedure in appendicular lump. It allows the visualization of the entire abdominal cavity and the complete peritoneal wash with saline, which is difficult with small incision. In open surgery, an atypical location of the appendix or improper diagnosis may also require an extension of the incision as well. The laparoscopic method also allows patients to move and relieve pain very quickly, due to less trauma to the muscles and fascia.<sup>16</sup> Another benefit of laparoscopy is the 30% adherence rate, which is a very common late complication especially in perforated appendicitis. In our study we encountered some problems during laparoscopic procedure like difficulty in localisation of appendix 06(8.21%) cases and adhesions in 15(20.5%) cases. While in the international study reported intraoperative difficulties were difficulty in appendix

identification, localization and dissection, separation of appendix in appendicular lump.<sup>17</sup>

The average length of hospital stay was five days (range 3-9 days) with mean hospital stay was 4.91±1.65 days. while 10 days stay was observed in five (6.84%) patients due to postoperative complication like wound infection in 15(20.50%) cases. However, in the study of Ballapalli Hari Prasad reported mean hospital stay was 3±0.25 day and wound infection had occurred in 9% (4) patients.<sup>18</sup>

## Conclusion

This study concluded that early appendectomy can be safely performed in appendix mass without any increased risk of mortality and morbidity. The outcome of early surgical management of appendicular lump showed benefits for single hospitalization, shorter hospital stay and lower treatment costs.

## References

1. Reddy LM, Bai VR, Lakshmi VV. A study on need of emergency laparoscopic appendectomy for appendiceal masses. *Int J Contemporary Med Surg Radiol.* 2020;5(1):228-31. <http://dx.doi.org/10.21276/ijcmsr.2020.5.1.49>.
2. Ali M, Israt Jahan K. Early Appendectomy in Appendicular Mass-Review of Literature. *Journal of Surgical Sciences.* 2017;21(1):33-5. <https://doi.org/10.3329/jss.v21i1.43859>
3. Buckius MT, McGrath B, Monk J. Changing epidemiology of acute appendicitis in the United States: study period 1993-2008. *J Surg Res.* 2012;175:185e190. [https:// DOI: 10.1016/j.jss.2011.07.017](https://doi.org/10.1016/j.jss.2011.07.017).
4. Erdogan D, Karaman I, Narci A, Karaman A, Cavuşoğlu YH, Aslan MK, et al. Comparison of two methods for the management of appendicular mass in children. *Pediatr Surg Int.* 2005; 21(2):81-3. [https://doi: 10.1007/s00383-004-1334-0](https://doi.org/10.1007/s00383-004-1334-0).
5. Kaya B, Sana B, Eris C, Kutanis R. Immediate appendectomy for appendiceal mass. *Ulus Travma Acil Cerrahi Derg.* 2012;18(1): 71-4. [https://doi: 10.5505/tjtes.2012.07448](https://doi.org/10.5505/tjtes.2012.07448)
6. E Zerem, S Kunosic A. Handanagic D. Jahic D, Zerem O Zerem. Minimally invasive treatment for appendiceal mass formed after acute perforated appendicitis Surg. *Laparosc. Endosc. Percutaneous Tech.* 2017;27: 132-138. [10.1097/SLE.0000000000000404](https://doi.org/10.1097/SLE.0000000000000404)
7. Takami T, Yamaguchi T, Yoshitake H, Hatano K, Kataoka N, Tomita M, et al. A clinical comparison of laparoscopic versus open appendectomy for the treatment of complicated appendicitis: historical cohort study. *Eur J Trauma and Emerg Surg.* 2019 :1-5. <https://doi.org/10.1007/s00068-019-01086-5>.
8. Agrawal V, Acharya H, Chanchlani R, Sharma D. Early laparoscopic management of appendicular mass in children: Still a taboo, or time for a change in surgical

- philosophy?. *Journal of Minimal Access Surgery*. 2016 ;12(2):98-102.  
<https://doi.org/10.4103/0972-9941.178518>.
9. Hayes D, Reiter S, Hagen E, Lucas G, Chu I, Muñiz T, Martinez R. Is interval appendectomy really needed? A closer look at neoplasm rates in adult patients undergoing interval appendectomy after complicated appendicitis. *Surgical endoscopy*. 2020 :1-6.  
<https://doi.org/10.1007/s00464-020-07798-9>
  10. Panahi P, Ibrahim R, Veralakshmann P, Ackah J, Coleman M. Appendiceal phlegmon in adults: Do we know how to manage it yet? *Annals of Medicine and Surgery*.2020;49: 274–277. <https://doi.org/10.1016/j.amsu.2020.08.033>
  11. Symer MM, Abelson JS, Sedrakyan A, Yeo HL. Early operative management of complicated appendicitis is associated with improved surgical outcomes in adults. *The American Journal of Surgery*. 2018 ;216(3):431-7.  
<https://doi.org/10.1016/j.amjsurg.2018.04.010>
  12. Fihri MJF, Elguazzar A, Ramraoui ME, Mejdane A, Barni RE, Khader AE, et al. Management of inflammatory appendiceal mass: a retrospective study. *Int J Med Sci and Clin Inv*. 2017;4(5):2949-2952.  
<https://doi.org/10.1016/j.amjsurg.2018.04.010>.
  13. Shindholimath VV, Thinakaran K, Rao NT, Veerappa YV. Laparoscopic management of appendicular mass. *J Min Access Surg*. 2011;7:136-40.  
<https://DOI:10.4103/0972-9941.78345>
  14. Elsaady A. Management of Appendicular Mass; Comparative Study between Different Modalities. *Austin J Gastroenterol*. 2019;6(1):1097.
  15. Quah GS, Eslick GD, Cox MR. Laparoscopic appendicectomy is superior to open surgery for complicated appendicitis. *Surgical endoscopy*. 2019:1-1.  
<https://DOI:10.1007/s00464-019-06746-6>
  16. Paya K, Raunofer U, Rehbandi W, Deluggi S, Horcher E. Perforating appendicitis. An indication for laparoscopy? *Surg Endosc* 2000;14:182-4. <https://doi:10.1007/s004649900096>.
  17. Chaudhary MK, Shankar M, Baruah TD, Ray R, Samal S. Laparoscopic management of appendicular lump. *International Surgery Journal*. 2020;7(9):3065-7.  
 DOI: <http://dx.doi.org/10.18203/2349-2902.isj20203538>
  18. Prasad BH, Prasanth G. Laparoscopic management of appendicular mass. *Int Surg J*. 2018 Mar 23;5(4):1259-62.  
 DOI: <http://dx.doi.org/10.18203/2349-2902.isj20180963>