

Original Research Article

Is there is a role for laparoscopy for treatment of appendicular mass?

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ABSTRACT

Background: The surgical intervention for acute appendicitis presenting with appendicular mass is not well established. The aim of this study was to evaluate the benefits of early laparoscopy and laparoscopic appendectomy (LA) in the treatment of appendicular mass.

Methods: During a 1-year period, 48 patients underwent LA for suspected appendicitis (n = 39), generalized peritonitis (n = 1), and an appendicular mass (n = 8).

Results: All appendectomies were attempted and done laparoscopically except in one case (appendicular abscess), converted to an open approach. None of appendicular mass patients developed complications. There were no deaths. There was no significant difference between appendicular mass forming patients and non-mass-forming patients who underwent LA for an early appendicular mass as regard to the operative time (median [interquartile range]: 50 [36–60] vs 45 [25–50] min, p = 0.085) and postoperative hospital stay (median [interquartile range]: 2 [1–2] vs [1–2] days, p = 0.1).

Conclusions: Early LA for appendicular mass patients is feasible, safe, and avoids misdiagnoses and the need for hospital readmission.

Keywords: Acute appendicitis, Appendicular mass, Laparoscopic appendectomy, Peritonitis

INTRODUCTION

About 10% of acute appendicitis patients present as an appendicular mass. Its management still not well established. Conservative management is the treatment of choice by most surgeons and provides a good high success rate.¹ this is usually followed by interval appendectomy.²

However, early laparoscopic appendectomy provides a less hospital stay, low morbidity, and decreases the occurrence of recurrent appendicitis.³

Recently, LA has been used in patients with complicated appendicitis, such as gangrenous, perforated or that presented as generalized peritonitis.⁴⁻⁶

METHODS

Between September 2012 and December 2013, 48 patients with a median age of 26 years underwent LA (Table 1). During that period, 8 patients (2 female) with a median age of 22 years (range, 18-60) were managed as appendicular mass, and underwent LA for 7 patients while one patient was converted to open approach that was presented as appendicular abscess (Table 1). Operative findings in 48 patients who underwent laparoscopic appendectomy

Early laparoscopic appendectomy

The 8 patients who presented acutely as suspected appendicular mass, 7 of them underwent early LA. The

other patient presented with appendicular abscess had an open appendectomy due to too much adhesion. The diagnosis of an appendicular mass was considered due to a long preoperative duration of abdominal symptoms (≥ 4 days), palpable mass on preoperative examination (and detectable on abdominal imaging), and intra operative findings of appendicular mass.

The median duration of preoperative hospital stay in the 8 patients was 1 day (range, 0-3); mean duration of preoperative symptoms was 5 days (range, 3-15). Postoperative antibiotics were given for 24 h in patients without abscess formation and for 48-72 h in the patient with appendicular abscess.

Operative technique

A careful blunt dissection is useful using three ports technique. An edematous and friable base of appendix or cecal wall was carefully ligated. The appendix was routinely removed from 12 mm port to prevent wound infection. In the presence of an appendicular abscess or free pus, the peritoneal cavity was lavaged with warm normal saline. Abdominal drains were usually applied.

Statistical methods

All data were collected prospectively and entered into a computerized database. The appendicular mass patients who had early LA (group I, n = 8) were compared with those who underwent LA for non-mass-forming appendices (group II, n = 40) regarding the operating time, conversion rate, and postoperative hospital stay.

Data were analyzed using the software package SPSS 10. Results were expressed as median and interquartile ranges. Statistical analysis was performed by the Mann-Whitney U test. Statistical significance was accepted at $p < 0.05$. according to the protocols.

RESULTS

All 48 appendectomies completed laparoscopically except in one case. The operative findings are listed in Table 1.

Table 1: Operative findings.

Diagnosis	No. of patients
Early laparoscopic appendectomy	48
Uncomplicated acute appendicitis	36
Perforated appendicitis with generalized peritonitis	1
Appendicular mass	8
Noninflamed appendix (undiagnosed RIF pain)	3

There were no intraoperative complications. No postoperative complications developed in patients who underwent LA for an appendicular mass. There were no postoperative deaths. There was no significant difference between the two groups in the operative time (50 [36-60] min vs 45 [25-50] min $p=0.085$) and postoperative hospital stay (2 [1-2] days vs 1 [1-2] days, $p=0.1$).

DISCUSSION

It is considered that early open appendectomy could be done in most patients with an appendicular mass. Although this was associated with a considerable risk of complications, such as wound infection.

According to Pedersen et al Sauerland et al, it is advisable to apply the laparoscopic approach in appendicular mass treatment, because this was associated with a low wound infection rate. None of our LA patients with appendicular mass developed wound infection.⁷⁻⁹

Some 10–20% of such patients does not respond and needs delayed and may be difficult appendectomy with a more possible complications. Moreover, some 7–46% of patients may show recurrent appendicitis/appendicular mass.¹⁰⁻¹³

Another drawback of the conservative treatment of appendicular masses is misdiagnosis. Conditions such as cecal carcinoma in the middle-aged or elderly and intussusception in children. Early surgery could avoid the chance of misdiagnoses, and this could be done laparoscopically.^{3,14}

While Ball et al and Wullstein et al stated that laparoscopic appendectomy for appendix mass or abscess can be very challenging and might be associated with higher conversion rates and morbidity.^{15,16}

Regarding Ball et al and Yau et al, they have shown positive results with lowered hospital stay, analgesia needed, abdominal wall complications, operative blood loss, pulmonary complications, bowel obstruction/ileus, and comparative operative times and length of stay.^{15,17}

According to Thomson et al and Taguchi et al supported laparoscopic appendectomy as safe and feasible in the setting of complicated appendicitis.^{18,19}

Horvath et al approved that the laparoscopic approach in complicated appendicitis can lead to a potentially higher incidence of intra-abdominal abscesses, and as such the use of endobags and careful irrigation of the abdomen is recommended.²⁰

Okune et al. recorded that in early surgical interference for appendicular mass, the operation time was about 50 min on the average and wound infection occurred in 3/11 patients $\frac{1}{4}$ 27.3%. No bowel injury or fecal fistula occurred.²¹

Erdogan et al. reported in early appendectomy group, 5 of the 19 (26.3%) had complications during the operation or the post-operative period. There were two cases of ileal perforation and an appendectomy could not be performed in one patient because of extensive adhesions. A pelvic abscess developed in the 4th patient. They recommended conservative treatment followed by elective appendectomy in patients with an appendix mass.²²

According to Simillis et al, conservative management was associated with fewer wound infections and deep surgical site infections, while hospital stay was not affected.²³

Regarding Thompson et al, when dealing with appendicular mass, aggressive treatment, such as the necessity of cecectomy, may be considered to avoid leakage from an inflamed stump, such an operation is likely to be done “open” rather than laparoscopically.²⁴

CONCLUSION

Early LA in patients with an appendicular mass is feasible, safe and has a short postoperative hospital stay. Early surgery avoids the need for hospital readmission and misdiagnosis and mistreatment of other surgical serious pathologies. We therefore recommend early laparoscopic appendectomy for appendicular mass patients.

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