



Immediate appendectomy for appendiceal mass

Apendiküler kitlelerde erken apendektomi

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BACKGROUND

The aim of this retrospective study was to evaluate the safety and effectiveness of immediate appendectomy in patients presenting with appendicular mass.

METHODS

Forty-seven patients with appendicular mass were operated within 24 hours after admission to Vakıf Gureba Training and Research Hospital, General Surgery Department, from January 2004 to April 2010. The appendiceal mass was diagnosed with physical examination, abdominal ultrasonography, and computed tomography, or during surgical exploration. Age and sex, duration of symptoms, physical examination findings at admission, operation details, intraoperative and postoperative complications, and length of hospital stay were analyzed for each patient.

RESULTS

There were 25 males (53.2%) and 22 females (46.8%), with a mean age of 37.23±15.60 (range: 14-75) years. The mean time from the onset of the symptoms to operation was 4.06±2.50 (range: 1-15) days. A simple appendectomy was performed in 38 (80.9%) patients. Twenty-nine (61.8%) patients were discharged and followed up without any complication after surgery. Wound infection was detected in 13 (27.7%) patients.

CONCLUSION

Immediate appendectomy in appendicular mass is a safe and effective alternative to conservative management.

Key Words: Appendicitis; appendicular mass; immediate appendectomy.

AMAÇ

Bu retrospektif çalışmanın amacı, apendiküler kitle tespit edilen hastalarda erken apendektominin güvenilirliğini ve etkinliğini araştırmaktır.

GEREÇ VE YÖNTEM

Vakıf Gureba Eğitim ve Araştırma Hastanesi Genel Cerrahi Kliniği'ne Ocak 2004 ile Nisan 2010 tarihleri arasında başvuran 47 hasta apendiküler kitle nedeni ile 24 saat içerisinde ameliyat edildi. Apendiküler kitle tanısı fiziksel inceleme, karın ultrasonografisi, bilgisayarlı tomografi ya da ameliyat sırasında konuldu. Yaş ve cinsiyet, semptomların süresi, başvuruda fiziksel inceleme bulguları, ameliyat bulguları, intraoperatif ve postoperatif komplikasyonlar ile hastanede yatış süresi her hasta için analiz edildi.

BULGULAR

Çalışmaya 25 erkek (%53,2) ve 22 kadın (%46,8) hasta alındı. Ortalama yaş 37,23±15,60 (dağılım 14-75 yaş) idi. Semptomların başlaması ile ameliyat arasında geçen ortalama zaman 4,06±2,50 gündü (dağılım 1-15 gün). Apendektomi 38 hastada (%80,9) uygulandı. Yirmi dokuz hasta (%61,8) cerrahi sonrası herhangi bir komplikasyon olmaksızın taburcu edildi. Yara yeri enfeksiyonu 13 hastada (%27,7) saptandı.

SONUÇ

Erken apendektomi, apandiküler kitlelerde konservatif tedaviye alternatif güvenli ve etkili bir yöntemdir.

Anahtar Sözcükler: Apandisit; apendiküler kitle; erken apendektomi.

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Acute appendicitis is one of the most common surgical emergencies worldwide. Appendiceal mass is detected in approximately 10% of patients with acute appendicitis.^[1] The inflammatory mass results from untreated appendicitis and may represent a pathological spectrum ranging from phlegmon (a conglomeration of the inflamed appendix, adjacent viscera and the greater omentum) to periappendiceal abscess.^[2]

The surgical management of appendiceal mass remains controversial. An initial non-operative treatment introduced by Ochsner^[3] in 1901 has become popular over the years. This approach involves the administration of intravenous fluids and broad-spectrum antibiotics. Non-operative management of the appendiceal mass requires continued assessment of the patient's progress. Any appendix abscess should be drained during the follow-up. Elective appendectomy is recommended after the resolution of the appendiceal mass. An interval period of about 4-8 weeks is usually advised.

Immediate appendectomy in patients with appendiceal mass is an alternative to conventional conservative treatment. Early recovery and complete cure during the first admission are the main advantages of immediate appendectomy. On the other hand, it has a complication rate of approximately 36% in patients with appendiceal mass.^[4] The common complications after immediate appendectomy are wound infection, intestinal fistula, small bowel obstruction, intra-abdominal abscess, and sepsis.^[5,6]

The aim of this study was to determine whether immediate appendectomy is a safe alternative to conservative management in patients with appendiceal mass.

MATERIALS AND METHODS

Forty-seven patients with appendicular mass were operated in Vakıf Gureba Training and Research Hospital, General Surgery Department, from January 2004 to April 2010. The medical records of 47 patients were analyzed. The appendiceal mass was either diagnosed on the basis of physical examination with the help of abdominal ultrasonography and computed tomography (CT) (Fig. 1) or during surgical exploration. The diagnosis was confirmed by intraoperative findings of an inflammatory mass in the right iliac fossa. The patients were operated within 24 hours of admission. McBurney or midline incision was used in all patients. Two patients were operated with laparoscopic technique. Intravenous antibiotics were given for 7 days after surgery in uncomplicated cases. Patients were reviewed in the outpatient clinic between 1 and 4 weeks after discharge.

All medical charts were reviewed retrospectively. The following data were collected for each patient:

Table 1. Characteristics of 47 patients with appendicular mass

	Number/ mean	Percentage (%)
Preoperative symptoms		
Abdominal pain in RIF	47	100
Anorexia	32	68.1
Nausea and vomiting	30	63.8
Duration of symptoms	4.06±2.50	
Physical examination		
Abdominal tenderness	45	95.6
Rebound tenderness	37	78.7
Defense	15	31.9
Leukocytosis >10.000/mm ³	38	80.8
Duration of hospitalization	5.48±5.21	

RIF: Right iliac fossa.

age and sex, duration of symptoms, physical examination findings at admission, operation details, intra-operative and postoperative complications, and length of hospital stay. For statistical analysis, the statistical software package SPSS (Statistical Package for the Social Sciences) 11.0 for Windows (SPSS Inc., Chicago, IL) was used.

RESULTS

There were 25 men (53.2%) and 22 women (46.8%), with a mean age of 37.23±15.60 (range: 14-75) years. The major clinical symptoms were abdominal pain in the right iliac fossa in 47 (100%) patients, anorexia in 32 (68.1%), and nausea and vomiting in

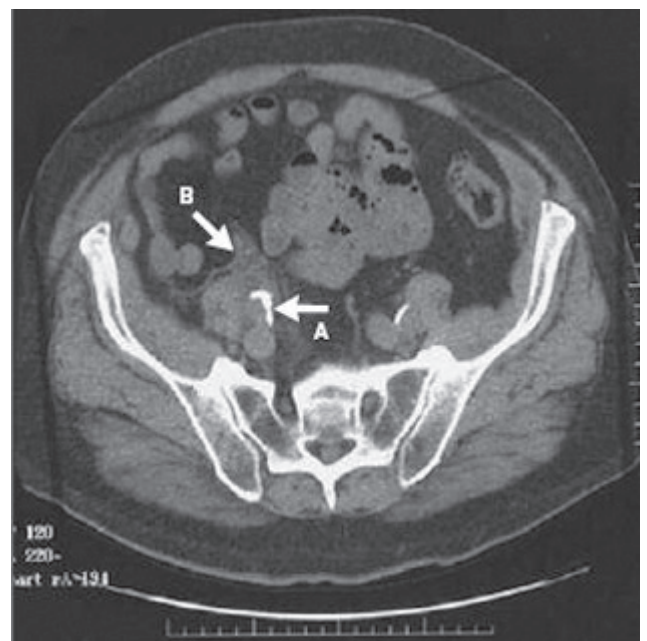


Fig. 1. Computed tomography shows the appendix (A) with appendiceal mass (B) in the right iliac fossa.

Table 2. Operations for appendiceal mass

Operation	n (%)
Appendectomy	38 (80.9%)
Right hemicolectomy and ileocolic anastomosis	5 (10.7%)
Drainage (without appendectomy)	2 (4.2%)
Appendectomy and ileum resection	1 (2.1%)
Appendectomy and oophorectomy	1 (2.1%)

Table 3. Postoperative surgical complications

Complication	n (%)
Wound infection	13 (27.7%)
Wound dehiscence	1 (2.1%)
Postoperative ileus	3 (6.3%)
Intra-abdominal sepsis	1 (2.1%)

30 (63.8%). Thirty-eight patients had a leukocytosis of $>10000/\text{mm}^3$. The mean time from the onset of the symptoms to operation was 4.06 ± 2.50 (range: 1-15) days.

Patient demographics are summarized in Table 1. A simple appendectomy was performed in 38 (80.9%) patients. Two of the appendectomies were performed laparoscopically. Right hemicolectomy was performed due to suspicion of cecal tumor or severe inflammation around the ileocecal region in 5 patients. One of the patients underwent appendectomy and ileum resection. Another was treated with appendectomy and oophorectomy. The appendectomy could not be performed in 2 patients, and abdominal drainage was the surgical intervention (Table 2). The operation time was 30-60 minutes in 29 patients, 60-90 minutes in 10 patients and 90-150 minutes in 8 patients. Intra-abdominal drain was used in 35 (74.5%) patients. There was no malignancy in histopathological examination, including the patients operated with right hemicolectomy.

Twenty-nine (61.8%) patients were discharged and followed up without any complication after surgery. Wound infection was detected in 13 (27.7%) patients. Three patients were treated with postoperative ileus. Conservative measures (stopping oral intake, nasogastric drainage, intravenous fluid replacement) were successful in these patients. One patient had open abdomen procedure due to intra-abdominal sepsis. The postoperative complications are shown in Table 3. The mean hospital stay was 5.48 ± 5.21 (range: 1-30) days. There was no mortality in the postoperative period.

DISCUSSION

An appendiceal mass results from a walled-off appendiceal perforation, and it can be further complicated by formation of intra-abdominal abscess and generalized peritonitis. It is detected more frequently

in women, the elderly and children, in whom delay in diagnosis of appendicitis is more common.^[7] Patients are usually presented with fever, leukocytosis and abdominal pain. The appendiceal mass may be missed clinically in the obese and patients with muscular rigidity. Both ultrasonography and CT are helpful in diagnosing appendiceal mass.

Management of late-presenting appendicitis with appendiceal mass remains controversial.

There are three main treatment methods for managing appendiceal mass:^[8] initial conservative management followed by interval appendectomy, immediate appendectomy in presentation and totally conservative approach without interval appendectomy. Each treatment modality has some advantages and disadvantages.

Currently, most surgeons prefer conservative management of appendiceal mass with or without interval appendectomy. The patients are treated with broad-spectrum antibiotics at presentation. Interval appendectomy is usually performed in 4-8 weeks after resolution of the inflammatory mass. Appendiceal masses may have an abscess component, and 42-86% heal without any surgical approach.^[4,9-11] Drainage may be necessary in case of unresolved periappendicular abscess despite antibiotherapy. Failure of conservative treatment may be encountered in 10-20% of the patients.^[12] Sustained fever, tachycardia, peritoneal irritation signs, and increased leukocyte count under conservative therapy can indicate the surgery. It is also argued that some ileocecal pathologies other than appendicitis, like cecal malignancy and ileocecal tuberculosis, may be undiagnosed in patients treated with conservative management. Recurrent appendicitis and increased hospital costs are other disadvantages of a conservative approach.

Immediate appendectomy became an alternative treatment method for appendiceal mass in recent years.^[13,14] With the advent of antibiotics and supportive care, surgical intervention at any stage of appendicitis can be performed without major complications. Immediate appendectomy was shown to be safe and feasible with a shorter hospital stay. It also has advantages of cost-effectiveness and early diagnosis of unexpected pathologies like malignancy.^[15] We performed appendectomy successfully in 40 (85.1%) patients. It was reported that the appendix cannot be resected in up to 30% of patients with appendiceal mass. Samuel et al.^[13] compared the two groups of patients who were treated with either immediate appendectomy or interval appendectomy after non-surgical management.

They concluded that although serious adhesions were found in 100% of patients in the immediate appendectomy group, the appendix had been identified

and appendectomy could be performed in all patients.

Some authors reported that immediate appendectomy has a high complication rate.^[15,16] It can cause dissemination of infection, intestinal injury and fecal fistula. Kumar et al.^[17] reported longer operation time, higher incidence of adhesions and incision extension with more postoperative complications for early appendectomy in appendiceal mass. However, in a recent study reported by Cunnigaiper,^[18] there were no major complications in 114 patients operated with appendiceal mass. No major complications such as bowel injury or intestinal fistula were detected in our series. One patient was managed with open abdomen due to intra-abdominal sepsis. There was also no mortality. Wound infection, as a minor problem, can be seen more frequently in patients with immediate appendectomy.^[19,20] The rate of wound infection was found as 27.7% in our series, which is relatively high. Arshad et al.^[21] reported wound sepsis in 19.31% of their patients after immediate appendectomy due to appendiceal mass.

Post-operative ileus is a common problem after abdominal surgery. Three of our patients had adynamic ileus after surgery. All of these patients had been operated with midline laparotomy.

A conservative approach, including cessation of oral intake and nasogastric drainage with intravenous fluid resuscitation, was sufficient for treatment.

In conclusion, immediate appendectomy in appendicular mass is a safe and effective alternative to classical conservative management. The most important morbidity after immediate appendectomy is wound infection. Protection of the wound during surgery using broad-spectrum antibiotics may decrease the infection rate.

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