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Original Article

Assessment of the Relevance of Interval Appendicectomy in Treatment of Appendicular Lump: A Prospective Study

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Abstract

Introduction: In the case of appendicular lump, nowadays, multiple options have emerged including emergency appendicectomy by open or laparoscopically, conservative management with interval appendicectomy and conservative management without interval appendicectomy.

Aims and Objectives: This study was undertaken to prove or disprove the relevance of interval appendicectomy following successful conservative management of cases of appendicular lump.

Materials and Methods: All cases of appendicular lump were included in the study and divided into three Groups - (a) those undergoing emergency appendicectomies, (b) Those undergoing conservative treatment followed by interval appendicectomies after 6-12 weeks interval after lump subsided, (c) Those undergoing conservative management without interval appendicectomies after lump subsides.

Results: Out of 165 cases of appendicular lump 55 were operated within 24 h of admission and rest 110 were treated conservatively on Ochsner-Sherren regime of which 102 cases (92.7%) responded successfully with complete resolution of lump. Among these 102 cases, 49 patients were masterly followed up at regular interval and no operation was required at all with only 4 (8.16%) cases reported with mild recurrence which got relieved on nonoperative treatment. In 53 patients of interval appendicectomy, post-operative complication occurred in 9 (17%) with longer hospital stay because of need for the second admission for interval appendicectomy.

Conclusion: The role of interval appendicectomy has come under serious doubt after successful emergence of emergency appendicectomy and purely conservative treatment without appendicectomy.

Key words: Appendicular lump, Interval appendicectomy, Treatment

INTRODUCTION

Among cases of acute abdomen coming to surgical emergency, acute appendicitis is one of the most common of which 2-10% of cases present with appendicular lump.[1-3] Appendicular lump is formed by inflamed appendix surrounded by greater omentum, bowel loops including edematous cecal wall and ileum.[1,4] The lump is one of the outcomes of acute appendicitis on the 3rd day of commencement of acute appendicitis which can be felt as tender mass in right iliac fossa.[5]

Although appendicectomy is the treatment of choice in acute appendicitis without lump but management of appendicular lump remains controversial still today with the emergence of multiple options.[6,7] Age old classical management is of initial conservative regimen as advocated by Ochsner in 1901 with intravenous fluid and wide broad-spectrum antibiotics until lump resolves followed by interval appendicectomy after 6-12 weeks.[7] This conservative approach was advocated due to fear of spreading infection which nature is localizing by

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early operative intervention. With the improvement in anesthesia, introduction of effective antibiotics and better supportive care immediate appendicectomy during initial admission[8] was recommended with pleas of cost-effective, shorter hospital stay, and obviating the need for the second admission. Recently another option of initial conservative management of appendicular lump without interval appendicectomy has been put forward on the argument that only 5-20% of these cases develop recurrent appendicitis[9-11] and risk becomes minimal after first 2 years of initial attack.

Thus, this study was undertaken to assess the relevance of interval appendicectomy in the light of emergence of options of early appendicectomy and no-appendicectomy at all.

MATERIALS AND METHODS

This prospective study was conducted from May 2010 to April 2016 (6 years) in the Department of Surgery of R. D. Gardi Medical College, Ujjain, Madhya Pradesh, Sri Guru Ram Rai Institute of Medical & Health Sciences, Dehradun, Uttarakhand and SGT Medical College, Gurgaon, Haryana. All the patients presenting with appendicular lump were included in the study. All these patients were clinically evaluated and properly investigated including routine investigations, ultrasound and if in doubt, computed tomography (CT) abdomen to confirm the diagnosis of appendicular lump excluding another differential diagnosis. All three treatment options were explained in detail to each patient and his relatives and well-informed consent was taken. Thus, the patients were divided into three groups - Group A, B and C according to treatment option undertaken. The patients in Group A were operated at the earliest (within 24 h of admission), in Group B and C were initially treated conservatively according to Ochsner-Sherren regimen comprising hospitalization with intravenous fluids, broad-spectrum antibiotics like cefixime, gentamicin, metronidazole, etc., and analgesics/antispasmodics. The progress of vitals such as pulse, blood pressure, temperature, respiration and size, tenderness, guarding, and consistency of appendicular lump was checked regularly to monitor the response of conservative management. The patients in Group B and C were discharged after satisfactory resolution of lump and asked to report for follow-up after 6-8 weeks. The patients in Group B were readmitted after 6-12 weeks and subjected to interval appendicectomy while those in the group see were asked to report for follow-up initially 6 weekly and later, 3 monthly after 6 months of initial episodes or immediately if symptoms including pain recur. The variables studied included failure of conservative treatment, total duration of hospital stay, total cost incurred, total loss of days at work, incidence of recurrent appendicitis and severity of recurrence in Group C patients with or without need for operation, the operative difficulties, total operative time, operative and post-operative complications, operative and histological findings in Group A and B as well as patient's compliance in Group B and C. Data were collected and manually and statistically analyzed.

RESULTS

The study included 165 cases of appendicular lump varying in age from 11 years to 68 years and included 55 females and 110 males (Tables 1 and 2). The major clinical features included pain, (mostly migrating), nausea/vomiting, anorexia, low-grade pyrexia, tachycardia, and tenderness in right iliac fossa with a palpable lump. More than 70% of patients had leukocytosis of >11000/cm^3 with neutrophilia of >75% in more than 2/3rd of total cases. 55 patients were operated within 24 h and belonged to Group A while rest 110 cases were treated conservatively. Complete resolution of lump occurred in 102 patients (92.7%) out of 110 treated conservatively and in 8 cases (7.3%) abscess developed which was drained operatively without delay and excluded from the study.

Out of those successfully treated conservatively 53 patients opted for interval appendicectomy (Group B) and remaining 49 patients were masterly followed up for 1-3 years without being subjected to any operation (Group C). In Group C out of 49 patients, only 4 (8.16%) developed recurrence within 1 year during follow-up with mild clinical presentation which subsided on conservative treatment and did not require surgery. The total hospital stay in all 3 groups is compared in Table 3 and post-operative complications in operative Group B and C are shown in Tables 3 and 4.

Table 1: Sex distribution of patients (*n*=165)

Sex	Number of cases (%)
Male	110 (66.7)
Female	55 (33.3)

Table 2: Age distribution of patients (*n*=165)

Age groups	Number of cases (%)
5-15	5 (3)
16-25	36 (21.8)
26-35	65 (39.4)
36-45	32 (19.4)
46-55	16 (9.7)
56-65	9 (9)
>65	2 (1.2)
Total	165 (100)

Table 3: Total hospital stay

Number of days	Group A early appendectomy (*n*=55)	Group B interval appendectomy (*n*=53)	Group C conservative (*n*=49)	*P* value
2-5	16 (29.1)	0 (0)	26 (53.1)	<0.001*
6-10	26 (47.3)	15 (28.3)	23 (46.9)	>0.001
11-15	8 (14.6)	32 (60.4)	0 (0)	<0.001*
16-20	3 (5.5)	3 (5.7)	0 (0)	>0.001
>20	2 (3.6)	3 (5.7)	0 (0)	>0.001

*P<0.001: Significant

Table 4: Post-operative complications

Complications	Group A (*n*=55)	Group B (*n*=53)	*P* value
Wound infections	6 (10.9)	3 (5.7)	<0.001*
Residual abscesses	3 (5.5)	1 (1.9)	>0.001
Fecal fistula	2 (3.6)	3 (5.7)	>0.001
Chest complications	4 (7.3)	1 (1.9)	<0.001*
Adhesive intestinal obstruction	2 (3.6)	1 (1.9)	>0.001
Total	17 (30.9)	9 (17)	<0.001*

*P<0.001: Significant

DISCUSSION

The treatment of appendicular mass is taking a topsy-turvy turn in recent years from traditional approach of initial conservative management followed by interval appendicectomy to early appendicectomy (either by open or laparoscopic method) or purely conservative treatment without interval appendicectomy questioning the very relevance of interval appendicectomy though consensus has not reached yet. Ochsner in 1901 introduced nonoperative regime for cases of appendicular mass.[12] Murphy in 1904 proposed elective interval appendicectomy after complete resolution of lump.[13] Although recently challenged by many authors, a large number of surgeons prefer interval appendicectomy as per survey in North America and England because of their concern for recurrent appendicitis.[14-16] However, many studies have revealed low recurrence rate varying from 5% to 20% with mean recurrence rate of 13.7%[17-19] as in our study too (8.16%). Most of these recurrences occur within first 2 years and milder than primary appendicitis in severity[20] which can be managed easily nonoperatively or operatively. However, this means so many patients (more than 80%) being subjected to unnecessary interval appendicectomy which itself carries post-operative complications rate, reported to be 12-23%[21,22] as well as requires second hospital admission with further cost addition and loss of work days. A recent prospective randomized controlled trial showed purely conservative treatment without interval appendicectomy had the shortest hospital stay with minimal work days loss and only 10% recurrence rate in median follow-up of more than 33.5 months.[17] This correlates well with similar findings in Group C patients of our study. In another study, too, 83% of appendicular lump cases did not require any intervention in mean follow-up of 15.5 months.[18] Another argument put up in favor of interval appendicectomy is to avoid misdiagnosis of other pathology including cecal or appendicular malignancy, Crohn's disease or ileocecal tuberculosis masquerading as appendicular lump which is reported to be in 10.3% in a recent prospective study with 3% having colon cancer.[23] Thus, cases treated conservatively without interval appendicectomy should be properly investigated during follow-up by barium enema, colonoscopy or CT scan/CT colpography, if need be, to rule out any hidden pathology.

On the other hand early appendicectomy has an edge over conservative management of being curative, obviating the need for second admission, shorter hospital stay, early return to work, and higher patient compliance than interval appendicectomy[24,25] as well as removes the fear of misdiagnosis. Our study highlights the feasibility and effectiveness of early appendicectomy in appendicular lump and the results are consistent with a number of similar studies.[26] Earlier belief that surgery is difficult in appendicular lump with chances of more bleeding, or perforating friable bowel loops is no more valid argument with advancement in anesthesia, supportive care, and better antibiotics. The operative difficulties such as localizing appendix, adhesions, and bleeding are more troublesome in interval appendicectomy rather than in early appendicectomy as findings of present and other studies suggested. However, higher wound infection rate remains a common post-operative complication in early appendicectomy.

CONCLUSION

Traditional conservative management of appendicular mass holds good result in vast majority of cases with complete resolution. Low incidence of recurrent appendicitis following successful conservative treatment obviates the need of interval appendicectomy except in few cases not willing to take that low risk of recurrence or to exclude alternative diagnosis. The success of emergency appendicectomy by open or laparoscopic method further erodes the relevance of interval appendicectomy in the treatment of appendicular lump though last word is yet to be said and requires further prospective randomized controlled trials in larger groups in different global areas.

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