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ORIGINAL RESEARCH

To study the early exploration versus conservative approach for management of appendiceal mass: A comparative study

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ABSTRACT

Aim: To study the early exploration versus conservative approach for management of appendiceal mass.

Methods: This prospective observational study included all the patients with more than 14 years of age and features suggestive of acute appendicitis, investigated and diagnosed to be having appendicular mass in absence of other obvious pathology were considered in the study. A detailed clinical examination was also done including general condition, pulse rate, respiratory rate, temperature, pallor, peristaltic movement, any obvious mass, hyperesthesia, abdominal tenderness (localized or diffuse), site, rebound tenderness, muscle guarding and rigidity. To confirm the diagnosis of appendicular mass HRUSG abdomen was done. USG shows that as appendix has poor echo texture irregular and asymmetric contour and surrounded by large heteroechoic non-compressible mass of inflamed mesentery, omentum, caecum and terminal ileum.

Results: Total 40 consecutive patients fulfilling inclusion and exclusion criterion with confirmed diagnosis of appendicular mass were considered in this study. Benefits will be analysed in terms of hospital stay, morbidity, complications and hospital cost. Among total 40 patients 80% i.e. 32 presents with complain of nausea and vomiting along with pain. 5 patients in present study presented with complain of mass per abdomen. 31 (77.5%) patients in present study complained of reduced oral intake to nearly half and felt generalized malaise. 28 (70%) patients presented with history of fever which was low grade intermittent and relieved by analgesics and cold sponging. In the present study 87.5%of the total patients presented with tachycardia (P.R.>110) i.e. 35 out of 40 patients. Among 40 patients in present study 36 patients (90%) patients presented with abdominal tenderness in which 30 patients (75%) presented with tenderness localized to right iliac fossa and tender mass on palpation. Among which 24 had rebound tenderness and 24 had tender mass also and 6 patients (15%) presented with diffuse abdominal tenderness, tender mass and rebound tenderness. Group I was managed by early exploration within 1 to 2 days of admission after proper pre-surgical workup while group II was initially hospitalized kept on conservative management i.e. with ochsner- Sherren's regimen up to the resolution of acute inflammatory mass and discharged. Thereafter and was followed regularly in surgery OPD and was readmitted after 6-8 weeks with the plan of interval appendectomy.

Conclusion: Early exploration for appendicular mass is more effective and feasible mode of management.

Keywords:acute appendicitis, appendicectomy

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Introduction

Acute appendicitis is the most common acute surgical condition of the abdomen. The definitive treatment of acute appendicitis is appendicectomy. If timely appendectomy is not done, 2 – 6% of the patients develop a mass in the right iliac fossa (Appendicular lump) as one of the early complications.[1,2] The conventional conservative treatment followed by delayed appendectomy in patients with appendicular mass is well recommended. Majority of the times appendicular lump resolve after conservative management but some 10 – 20% of such patients fail to respond and require urgent and more difficult operation.[1] Moreover 7-46% of the patients suffer a recurrence of acute appendicitis or appendicular mass following discharge from the hospital after successful conservative treatment of appendicular mass. Misdiagnosis is another problem. Condition such as caecal carcinoma in middle aged or elderly, intussusceptions in children and ileocaecal tuberculosis at any age may mimic appendicular mass.[1-7]With the availability of modern operative &anesthesia facilities and to avoid the uncertain natural course and misdiagnosis, an early exploration of the appendicular mass is recommended. This shortens the hospital stay, cures and diagnoses the disease and obviates the need of a second hospital admission with no added morbidity and mortality.[1,8,9] In this modern era where facilities and expertise of laparoscopic surgery is available, laparoscopic appendicectomy for both complicated (appendicular lump) and uncomplicated appendicitis is recommended where possible which further lessen morbidity.

Material and methods

This prospective observational study was carried out in the Department of Surgery, after taking the approval of the protocol review committee and institutional ethics committee. All the patients with more than 14 years of age and features suggestive of acute appendicitis, investigated and diagnosed to be having appendicular mass in absence of other obvious pathology were considered in the study. A detailed clinical examination was also done including general condition, pulse rate, respiratory rate, temperature, pallor, peristaltic movement, any obvious mass, hyperesthesia, abdominal tenderness (localized or diffuse), site, rebound tenderness, muscle guarding and rigidity. To confirm the diagnosis of appendicular mass HRUSG abdomen was done. USG shows that as appendix has poor echo texture irregular and asymmetric contour and surrounded by large heteroechoic non-compressible mass of inflamed mesentery, omentum, caecum and terminal ileum. Appendicular abscess was diagnosed as rounded/irregularly sonolucent structure containing small echogenic particles close to caecum. If USG abdomen was not conclusive than CECT abdomen with pelvis was done. Periappendicealphlegmon appears as soft tissue high density mass while abscess are significantly lower in density. In present study patient were randomly divided into two groups of 23 each. Group I include patient undergoing early exploration within 1 to 2 days of admission after presurgical workup and informed written consent. All patients in group I were explored by lower midline. Operative procedure involved exploratory laparotomy with adhesiolysis with appendectomy or appendectomy with drainage or right hemicolectomy with iliocolic anastomosis. Group I include patient undergoing early exploration within 1 to 2 days of admission after presurgical workup and informed written consent. All patients in group I were explored by lower midline. Operative procedure involved exploratory laparotomy with adhesiolysis with appendectomy or appendectomy with drainage or right hemicolectomy with iliocolic anastomosis. Group II includes patients initially kept on conservative treatment comprising hospitalization with Ochsner- Sherren regimen. Progression of mass was observed, vitals recorded regularly to monitor response to conservative treatment. Patients were discharged after complete resolution of acute inflammatory mass and were followed up weekly in surgical OPD and were readmitted 6-8 weeks later for interval appendectomy. Presurgical workup and informed written consent of

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the patient was done as in group I. Patients were explored by grid iron incision. Operative procedure involved simple appendectomy or right hemicolectomy with ileocolic anastomosis. Predictor variables were compared amongst two modes of management of appendicular mass and data was evaluated by SPSS version 25.0 and chi square and independent t test done to carry out result among these two groups.

RESULTS

Total 40 consecutive patients fulfilling inclusion and exclusion criterion with confirmed diagnosis of appendicular mass were considered in this study. Benefits will be analysed in terms of hospital stay, morbidity, complications and hospital cost.

Table 1: demographic profile of the patients

demographic profile	**No. of patients**	**%**
Age group (in years)		
14-20	9	22.5
20-30	17	42.5
30-40	6	15
40-50	3	7.5
Above 50	5	12.5
Sex		
Male	28	70
Female	12	30
Site of pain		
Periumblical	27	67.5
Epigastric	4	10
Right lower abdomen	3	7.5
Generalized abdominal pain	6	15
Confirmation of diagnosis of appendicular mass		
Ultrasound	28	70
Contrast enhanced CT Scan	2	5
Suspicious mass confirmed preoperatively	10	25

Among total 40 patients 80% i.e. 32 presents with complain of nausea and vomiting along with pain. 5 patients in present study presented with complain of mass per abdomen. 31 (77.5%) patients in present study complained of reduced oral intake to nearly half and felt generalized malaise. 28 (70%) patients presented with history of fever which was low grade intermittent and relieved by analgesics and cold sponging. In the present study 87.5%of the total patients presented with tachycardia (P.R.>110) i.e. 35 out of 40 patients.

Among 40 patients in present study 36 patients (90%) patients presented with abdominal tenderness in which 30 patients (75%) presented with tenderness localized to right iliac fossa and tender mass on palpation. Among which 24 had rebound tenderness and 24 had tender mass also and 6 patients (15%) presented with diffuse abdominal tenderness, tender mass and rebound tenderness.

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Table 2: Intraoperative characteristics.

Procedures	Early exploration	Conservative followed by interval appendectomy
Operations performed for appendicular mass		
Simple appendectomy	14 (70%)	18(90%)
Appendectomy with drainage	3(15 %)	0 (0%)
Rt. Hemicolectomy with Iliocolic Anastomosis	3(15%)	2 (10%)
Peroperative findings		
Simple Mass	9 (45%)	3 (15%)
Gangrenous/ Perforated Appendix	4(20%)	0
Loculated collection	1(5%)	0
Appendicular abscess	3(15%)	0
Firm adhesions	3(15%)	17(85%)
Operative problems		
Difficulty in localizing appendix	4 (20%)	10(50%)
Difficulty in adhesiolysis	5 (25%)	14(70%)
Minor Trauma to Bowel	2(10%)	1(5%)
Bleeding	2(10%)	5(25%)
Total operative time		
60-90 min.	11(55%)	4(20%)
90-120 min.	7(35%)	13(65%)
>120 min.	2(10%)	3(15%)

Leucocytosis>11,000 was present in 17(85%) of the total patients. On X-ray whole abdomen AP erect view 4 (10%) patients presented with pneumoperitoneum.

After confirming the diagnosis of appendicular mass patients were randomly divided into 2 groups of 20 each.

Group I was managed by early exploration within 1 to 2 days of admission after proper pre-surgical workup while group II was initially hospitalized kept on conservative management i.e. with ochsner- Sherren's regimen up to the resolution of acute inflammatory mass and discharged. Thereafter and was followed regularly in surgery OPD and was readmitted after 6-8 weeks with the plan of interval appendectomy.

Table 3: Postoperative variables.

Post-operative complications	Early exploration	Conservative followed by interval appendectomy
Wound sepsis	3 (15%)	4 (20%)
Partial wound dehiscence	2 (10%)	3 (15%)
Residual abscess	0	2 (10%)
Chest complications	1 (5%)	1 (5%)
Adhesive intestinal obstruction	0	0
Fecal Fistula	0	0
No complications	70%	50 %
Total hospital stays		

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Table 4 duration of hospital stay

Duration	Early exploration	Conservative followed by Interval appendectomy
<7 days	1 (5%)	0
8-14 days	14 (70%)	4 (20%)
15-21 days	4 (20%)	9 (45%)
21-28 days	1 (5%)	4 (20%)
>4 weeks	0	3 (15%)

Discussion

Operative problems such as localization of appendix, adhesiolysis and bleeding are more pronounced and troublesome with interval appendectomy as shown in findings of present study. Conservative management approach was considered to be associated with a substantially low rate of complications (Tingstedt B) and was safe (Kumar S and Jain S).[10,11] Rate of success was reported to range between 88-95% (SafirUllah 2007).[12] Interval appendectomy was considered essential believing that the rate of recurrence of appendicitis and mass formation is high after conservative treatment and resolution of the mass.[13] Another reason for an interval appendectomy was the confirmation of the diagnosis as it is possible to miss other pathology like ileocaecal tuberculosis or malignancy. These conditions mimic acute appendicitis and conservative therapy alone should be considered cautiously.[14]

In present study on comparing early exploration with conventional management we found a easily lysable simple mass with less dense adhesions with lower rate of difficulty in localizing appendix and adhesiolysis, less operative duration and reduced hospital stay with reduced hospital cost in early exploration group in contrast to dense adhesions, difficulty in localizing appendix and adhesiolysis with similar rates of wound sepsis, bleeding, trauma to bowel, chest complications with significant adhesive intestinal obstruction and residual abcess as a complication. Poor compliance and inceased loss to follow up along with increased hospital stay present in conservative followed by interval appendectomy group.So in comparision of early exploration with conservative followed by interval appendectomy we found early exploration for appendicular mass a more effective and feasible mode of management of appendicular mass and the results are consistent with a number of similar studies as Malik Arshad et al, De u Ghosh S et al, Samuel M et al, claiming early appendectomy to be a more appropriate and effective way of managing appendicular mass.[15-17]

It was also reported that about 10% of patients need exploration due to deterioration on a conservative regimen.[18]

Key to early surgery is good resuscitation, expert anesthesia, broad spectrum antibiotics and an experienced surgeon.[16]This approach obviates the need of re- admission, cures the problem totally and there is an opportunity to reach to a conclusive diagnosis at an early stage.

An early exploratory approach for appendicular mass was reported by Vakili in 34 patients who underwent surgery within 32 hours of admission, Marya et al, compared conservative treatment in 26 patients to operative treatment in 30 patients. Arshad Malik et al performed a study aimed to determine the feasibility and safety of an early appendectomy in 176 patients.[19,20]

In study by Sardar Ali et al there was 13.33% wound infection in early appendectomy group in comparison to 16.66% in interval appendectomy group and 20% patients in interval appendectomy group developed adhesive intestinal obstruction similar to present study.[21] In contrast to present study a study by JM Aranda-Narváez et al, there was 40% incidence of surgical site infection in immediate appendectomy group in contrast to 0% in interval appendectomy group.[22]

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CONCLUSION

Early exploration for appendicular mass is more effective and feasible mode of management. Advantages of early appendectomy include total curative treatment in the index admission, shorter hospital stay, and minimal morbidity and ensures early return to work and higher compliance. Earlier belief that surgery is difficult in such a state where the inflamed appendix is buried deeply in the mass and the bowel loops are friable is no more a valid argument at present due to a global improvement in anaesthesia, supportive care and antibiotics.

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