ORIGINAL RESEARCH PAPER
Volume - 10 | Issue - 03 | March - 2021 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

APPENDICEAL MASS: DILEMMA OF DIAGNOSIS AND MANAGEMENT

General Surgery

Dr. Saroj Chhabra Kapoor Associate Professor, Department Of General Surgery, Mahatma Gandhi Medical College And Hospital, Jaipur, Rajasthan.

Dr. Reedhi Garg* PG Resident, Department Of General Surgery, Mahatma Gandhi Medical College And Hospital, Jaipur, Rajasthan.*Corresponding Author

Dr. Anshul Mathur PG Resident, Department Of General Surgery, Mahatma Gandhi Medical College And Hospital, Jaipur, Rajasthan.

ABSTRACT

Background: Acute appendicitis is the commonest reason for emergency abdominal surgeries. Acute appendicitis ranges from mild inflammation of mucous membrane to gangrene, perforation and peritonitis. Appendicular mass is one of its early complications developing within 48 hours of attack of acute appendicitis in 2 to 6 % cases . Objective of this study was to evaluate the outcome of early surgical exploration and its complications in respect to conservative management followed by interval appendicectomy for management of appendicular mass.
Methods: A total 60 cases with clinical feature suggestive of appendicular mass presenting in MGMCH, Jaipur were included in study. All cases divided into two equal groups based on mode of management of appendicular mass.
Group I (early exploration) and Group II (conservative followed by interval appendicectomy).
Result : Result will be analysed in terms of hospital stay, morbidity, complication and cost.
Discussion: My study included total of 60 patients out of which 30 underwent early appendicectomy and remaining 30 underwent conservative management followed by interval appendicectomy.
Conclusion: Early exploration for appendicular mass has advantages of total curative treatment in terms of the admission index, shorter duration of hospital stay, minimal morbidity and ensures early return to work and higher compliance.
Operative problems such as localization of appendix, adhesiolysis and bleeding are more pronounced with interval appendicectomy.
Wound infection is a common postoperative complication of early appendicectomy in appendicular mass but the rate of wound infection is not so high as to rule out this early operative approach.

KEYWORDS

Appendicular mass, Morbidity, Perforation,

INTRODUCTION

Acute appendicitis is the commonest surgical emergency requiring hospitalisation. It can range from mild inflammation of mucous membrane to gangrene, perforation and peritonitis. It is most common acute condition requiring hospitalisation.[1] Most serious complication of appendicitis is rupture or perforation. Complications are more common at extremes of ages and in immunocompromised patients. Definite treatment of acute appendicitis is appendectomy to avoid complications.

In severe acute appendicitis localisation can occur by omentum and dilated ileum without pus inside forming appendicular mass. It occurs 48 hours after the onset of acute appendicitis. It is due to the host resistance to contain the infection locally. Inflamed appendix gets circumscribed by fourth or fifth day and forms a mass. Mass increases in size up to tenth day and subsides usually by third week. Increases in size after ten days if an abscess has formed, which presents with classical features of acute appendicitis followed by a painful mass in the right iliac fossa.

General features of inflammation as pyrexia, malaise and tachycardia are present.

Differential diagnosis of appendicular mass is ileocaecal tuberculosis, carcinoma caecum, amoeboma, crohn's disease and external iliac lymphadenitis, ovarian disease, actinomycosis. Intussception in children and tubo-ovarian masses, ruptured ectopic pregnancy in females.[2]

As traditionally it was managed by conservative management approach i.e. Ochsner-Sherren regimen, followed 6 to 8 weeks by interval appendectomy, as it was assumed that early exploration entails the risk of damaging the inflamed and friable bowel in the vicinity and will spread the infection to the peritoneal cavity. Some 10 to 20 % of such patients fail to respond by conservative management and requires a delayed and potentially more difficult appendectomy with a possible laparotomy and bowel resection. Moreover over 7 to 46% of patients suffer a recurrence of acute appendicitis or appendicular mass following discharge from the hospital, after successful conservative treatment of appendicular mass. This study was performed to compare early exploration of appendicular mass complications and benefits in respect to conservative management followed by interval appendectomy approach.

METHODS

This study was a Prospective study. It was carried out in the Mahatma Gandhi Medical College and Hospital , Jaipur, Rajasthan after approval from the ethical committee and obtaining written and informed consent from the patients.

All the patients with more than 12 years of age with features suggestive of acute appendicitis, investigated and diagnosed to be having appendicular mass in absence of any other obvious pathology were considered in the study.

A detailed clinical history of patient was taken including abdominal pain (site, onset, migration, duration and severity), nausea, vomiting (duration, episodes, contents), fever (duration, grade, nature, associated with chills/ rigor) and anorexia.

In case of female patient menstrual and obstetric history was evaluated to rule out gynaecological pathology.

A detailed clinical examination was also done including general condition, pulse rate, respiratory rate, temperature, pallor, any obvious mass, hyperesthesia, abdominal tenderness (localized or diffuse), rebound tenderness, muscle guarding and rigidity.

Various laboratory parameters will be measure- CBC, serum electrolytes.

To confirm the diagnosis of appendicular mass USG 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. Peri appendiceal phlegmon 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 30 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 ileocolic 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 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 taken in both groups includes:
Per-operative findings as simple mass, gangrenous/perforated appendix, loculated collection, appendicular abscess, adhesions.

Per-operative difficulties as difficulty in localizing appendix, difficulty in adhesiolysis, minor trauma to bowel, bleeding.

Total operative duration.
Post-operative complications as wound sepsis, partial wound dehiscence, residual abscess, chest complications, adhesive intestinal obstruction and faecal fistula.

Total duration of hospital stays which in group II includes stay during conservative management and also the stay during interval appendectomy while in group I includes there stay during initial management.

And these predictor variables were compared amongst two modes of management of appendicular mass and data was evaluated by SPSS and chi square and independent t test done to carry out result among these two groups.

RESULT

Total 60 consecutive patients fulfilling inclusion and exclusion criteria with confirmed diagnosis of appendicular mass were considered in this study. Benefits were analysed in terms of hospital stay, morbidity, complications and hospital cost.

Table 1: Baseline preoperative characteristics.

Characteristics	No. of patients	%
Age group (in years)		
12-20	16	26.66
21-30	29	48.33
31-40	6	10
41-50	5	8.33
>50	4	6.66
Sex		
Male	38	63.33
Female	22	36.66
Site of pain		
Periumbilical	32	53.33
Epigastric	8	13.33
Right lower abdomen	12	20
Generalized abdominal pain	8	13.33
Confirmation of diagnosis of appendicular mass		
Ultrasound	36	60
Contrast enhanced CT Scan	6	10
Suspicious mass confirmed preoperatively	18	30

Among total 60 patients 80% i.e. 48 presents with complain of nausea and vomiting along with pain. 8 patients in present study presented with complain of mass per abdomen. 30 (50%) patients in present study complained of reduced oral intake to nearly half and felt generalized malaise. 38 (63.33%) patients presented with history of fever which was low grade intermittent and relieved by analgesics and cold sponging. In the present study 90%of the total patients presented with tachycardia (P.R.>110) i.e. 54 out of 60 patients.

Among 60 patients in present study 40 patients (66.66%) patients presented with abdominal tenderness in which 35 patients (58.33%) presented with tenderness localized to right iliac fossa and tender mass on palpation. Among which 28 had rebound tenderness and 30 had tender mass also and 10 patients (16.66%) presented with diffuse abdominal tenderness, tender mass and rebound tenderness.

Table 2: Intraoperative characteristics.

Procedures Interval	Early exploration	Conservative f/b
Appendicectomy		
Surgeries performed for appendicular mass		
Simple appendectomy	25 (41.6%)	22 (36.6%)
Appendectomy with Drainage	5 (8.33 %)	3 (5%)
Emergency laparotomy in patients who were managed conservatively		
	0	5(8.33%)
Rt. Hemicolectomy with Ileocolic Anastomosis	0	0
Per operative findings		
Simple Mass	15 (25%)	8 (13.33%)
Gangrenous/ Perforated Appendix	4 (6.66%)	0
Loculated collection	1 (1.6%)	0
Appendicular abscess	6 (10%)	0
Firm adhesions	4 (6.66%)	22 (36.66 %)
Operative problems		
Difficulty in localizing appendix	14 (23.33%)	12 (20%)
Difficulty in adhesiolysis	11 (18.33%)	14 (23.33%)
Minor Trauma to Bowel	2 (3.33%)	1 (1.6%)
Bleeding	3 (5%)	3 (5%)
Total operative time		
60-90 min.	24 (40%)	7 (11.66%)
90-120 min.	4(6.66%)	18 (30%)
>120 min.	2 (3.33%)	5 (8.33%)

Leucocytosis >11,000 was present in 30(50%) of the total patients. On X-ray whole abdomen AP erect view 4 (6.6%) patients presented with pneumoperitoneum. After confirming the diagnosis of appendicular mass patients were randomly divided into 2 groups of 30 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		
Complications	**Early exploration**	**Conservative followed by interval appendectomy**
Wound sepsis	2 (3.33%)	4 (6.66%)
Partial wound dehiscence	1 (1.66%)	3 (5%)
Residual abscess	0	3 (5%)
Chest complications	0	1 (1.6%)
Adhesive intestinal obstruction	0	5 (8.33%)
Faecal Fistula	0	4 (6.66%)
No complications	27 (45%)	10(16.66 %)

DISCUSSION

Appendicular mass is a common surgical entity encountered in 2 to 6% of patients presenting with diagnosis of acute appendicitis. It forms a spectrum of disease ranging from an inflamed appendix walled off by omentum (an appendicular phlegmon) to a large collection of pus surrounded by adherent and inflamed omentum that is appendicular abscess. As the management of appendicular mass is controversial, we

have performed present study to compare early exploration of appendicular mass in contrast to conservative management followed by interval appendectomy approach.

As the management of appendicular mass is controversial, we have performed present study to compare early exploration of appendicular mass in contrast to conservative management followed by interval appendectomy approach.

Traditionally it was believed that surgery during the phase of acute appendicitis with a mass was potentially dangerous and could lead to life threatening complications because of edema and the fragility of important structures like the terminal ileum and caecum. Failure of the conservative regime was reported in 2-3% and urgent exploration was considered essential.

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).[3,4] Rate of success was reported to range between 88-95% (Safir Ullah 2007).[5] 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.[6] 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.[7]

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 abscess as a complication. Poor compliance and increased loss to follow up along with increased hospital stay present in conservative followed by interval appendectomy group.

So in comparison 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.[8-10]

It was also reported that about 10% of patients need exploration due to deterioration on a conservative regimen.[11]

Key to early surgery is good resuscitation, expert anaesthesia, broad spectrum antibiotics and an experienced surgeon.[9] This approach obviates the need of readmission, 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.[8,12,13]

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. [14] 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.[15]

Longer duration of surgery and more hospital stays in conservative followed by interval appendectomy group in present study as well as Malik Arshad et al study. [8]

CONCLUSION

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

Operative problems such as appendix localisation and identification, adhesiolysis and bleeding are more pronounced with interval appendectomy. Wound infection remains common postoperative complication of early appendectomy in appendicular mass but the rate of wound infection is not so high as to exclude this early operative approach.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Ali S, Rafique HM. Appendicular mass; Early exploration vs conservative management. Professional Med J. 2010;17(2):180-4
2. Senapathi PS, Bhattacharya D, Amori BJ. Early laparoscopic appendectomy for appendicular mass. Surg Endosc. 2002;16:1783-5.
3. Tingstedt B, Bexe-Lindskog E, Ekelund M, Andersson R. Management of appendiceal masses. Eur J Surg. 2002;168(11):579-82.
4. Kumar S, Jain S. Treatment of appendiceal mass: Prospective randomized control trial. Indian J Gastro Enterol. 2004;23(5):165-7. 5. Ssfirullah. Conservative treatment of appendicular mass without interval appendectomy. JPMI. 2007;21(1):55-9.
6. Friedell ML and Perez-Izquierdo M. Is there a role for interval appendectomy in the management of acute appendicitis? Am Surg. 2000;68:1158-62.
7. Garg P, Dass BK, Bansaal AR, Chitkara N. comparative evaluation of conservative management versus early surgical intervention in appendicular mass- A clinical study. J Indian Med Assoc. 1997;95(6):179-80.
8. Arshad M, Aziz LA, Qasim M, Talpur KA. Early appendectomy in appendicular mass. A liaquat University hospital experience. J Ayub Med Coll Abbottabad. 2008;20(1):70-2.
9. De U, Ghosh S. Acute appendectomy for appendicular mass. A study of 87 patients. Ceylon Med J. 2002;47(4):117-8.
10. Samuel M, Hosie G, Holmes K. Prospective evaluation of nonsurgical versus surgical management of appendiceal mass. J Pediatr Surg. 2002;37:882-6.
11. Olika D, Yamini D, Udani VM. Non-Operative management of perforated appendicitis without periappendiceal mass. Am J Surg. 2000;179:177-81.
12. Vakili C. Operative treatment of appendix mass. Am J Surg. 1976;131:312-4.
13. Marya SK. Is a long delay necessary before appendectomy after appendiceal mass formation? A preliminary report. Can J Surg. 1993;36:268-70.
14. Sardar Ali, Rafique HM. Early exploration versus conservative management. Professional Med J. 2010;17(2):180-4.
15. Aranda-Narváez JM, Montiel-Casado MC, GonzálezSánchez AJ, Jiménez-Mazure C, Valle-Carbajo M, Sánchez-Pérez B, et al. Radiological support for diagnosis of acute appendicitis: use, effectiveness and clinical repercussions. Cir Esp. 2013;91(9):574-8.